Regional General Permit 20

U.S. ARMY CORPS OF ENGINEERS BUILDING STRONG®

MINIMAL IMPACT ACTIVITIES CONDUCTED UNDER THE WESTERN PLACER COUNTY IN-LIEU FEE PROGRAM COVERED BY THE WESTERN PLACER COUNTY HABITAT CONSERVATION PLAN/ NATURAL COMMUNITY CONSERVATION PLAN

EFFECTIVE: April 8, 2026
EXPIRES: April 7, 2031

The U.S. Army Corps of Engineers, Sacramento District (Corps), hereby issues Regional General Permit (RGP) 20 for activities conducted under the Western Placer County In-lieu Fee (WPILF) Program and covered by the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP), that result in the discharge of dredged and/or fill material into waters of the United States (U.S.) resulting in no more than minimal individual and cumulative impacts.

The activities authorized would be conducted to meet the Conservation Strategy as identified in the HCP/NCCP. An activity is authorized under this RGP after this office approves the individual In-lieu fee project under the WPILF Program.

Note: The term "you" and its derivatives, as used in this RGP, means the WPILF Program Sponsor or any future transferee. The term “this office” refers to the appropriate U.S. Army Corps of Engineers, Sacramento District office identified in the Contacts and Additional Information section below. After you receive written verification for your project under this RGP from this office, you are authorized to perform that work in accordance with the terms and conditions specified below, and any project specific special conditions included in the written verification.

ISSUING OFFICE: U.S. Army Corps of Engineers, Sacramento District

ACTION ID: SPK-2005-00485

AUTHORITIES: Section 404 of the Clean Water Act for the discharge of dredged or fill material in waters of the United States.

LOCATION: Activities authorized under this RGP would occur within the Placer County Conservation Program (PCCP) Plan Area boundaries. The PCCP Plan Area encompasses approximately 270,000 acres within western Placer County and eastern Sutter County. Within western Placer County, the Plan Area is bounded on the north by Nevada and Yuba Counties, on the east by the City of Auburn and California Highway 49, on the south by Sacramento County, and on the west by Sutter County. With the exception of activities

conducted by the Placer County Water Agency (PCWA), the Plan Area in western Placer County excludes the Cities of Auburn, Loomis, Rocklin, and Roseville. Within Sutter County, the Plan Area includes 1,724 acres along the Racoon Creek floodplain, and 33 miles of Auburn Ravine, Racoon Creek, Cross Canal, and East Side Canal. The Plan Area Boundaries can be seen on the attached May 2020*, Figure 1-1, Plan Area, Placer County Conservation Program – EIS/EIR* (attachment 1), prepared by ICF.

PURPOSE: This RGP is intended to expedite authorization under Section 404 of the Clean Water Act for establishment, re-establishment, enhancement, or rehabilitation activities that result in a net increase in aquatic resource functions and services and are approved by this office under the WPILF Program. The RGP is premised on the approval of an activity by this office, in consultation with the IRT, under the WPILF Program, conducted by the Placer Conservation Authority (PCA) in partnership with the HCP/NCCP Permittees (Placer County, City of Lincoln, South Placer Regional Transportation Authority [SPRTA], and PCWA). This RGP eliminates the need for project applicants to seek separate authorization from this office for those activities approved by this office under the WPILF Program. This RGP will reduce time and paperwork, and improve efficiency for this office, PCA, and the HCP/NCCP Permittees for those activities approved under the WPILF Program.

BACKGROUND: The PCCP is a regional approach to address issues related to planned development and species habitat conservation, consisting of the HCP/NCCP, County Aquatic Resources Program (CARP), and the WPILF Program. The HCP/NCCP provides coverage for fourteen species of wildlife, including seven that are federally listed as threatened or endangered. The U.S. Fish and Wildlife Service's Sacramento Field Office (USFWS) and National Marine Fisheries Service (NMFS) have approved the HCP/NCCP through a species incidental take permit (ITP) issued to the PCCP's Plan Permittees under Section 10 of the ESA. The CARP provides a program, implemented by Placer County and the City of Lincoln through local implementing ordinances, to evaluate activities that would impact aquatic resources considered to be waters of the U.S. or waters of the State. The WPILF Program provides compensatory mitigation for impacts associated with the Covered Activities, through funds paid to PCA.

ACTIVITIES COVERED: This RGP authorizes discharges of dredged and/or fill material into waters of the U.S. associated with aquatic resource establishment, re-establishment, enhancement, and/or rehabilitation activities, provided the activities result in a net increase in aquatic resource functions and services and are approved by this office under the WPILF Program.

EXCLUSIONS:

1. This RGP may not be used to authorize discharges of dredged and/or fill material into waters of the U.S. for activities that do not result in a net increase in aquatic resource functions and services.

2. This RGP may not be used to authorize discharges of dredged and/or fill material into waters of the U.S. for activities under the WPILF Program that are not approved by this office.

TERMS OF AUTHORIZATION:

1. Activity Completion: Activities authorized by this office under this RGP may be conducted until the expiration date of the RGP or by the date identified by the Corps in the approved WPILF project documentation appended to the WPILF Program instrument, whichever occurs sooner, unless modified, suspended, or revoked by the Corps.

2 RGP Authorization: The discharges of dredged and/or fill material into waters of the U.S. associated with implementation of the WPILF program are verified under this RGP when the Corps approves the WPILF project.

3. Discretionary Authority: This office has the discretion to suspend, modify, or revoke authorizations under this RGP. This discretionary authority may be used by this office to further WPILF Program RGP 20 condition or restrict the applicability of the RGP for cases in which it has concerns associated with the Clean Water Act Section 404(b)(1) Guidelines, or regarding any factor of the public interest. Should this office determine that a proposed activity may have more than minimal individual or cumulative adverse impacts to waters of the U.S. or otherwise be contrary to the public interest, this office will modify the authorization to reduce or eliminate those adverse effects, or notify you that the proposed activity is not authorized by the RGP and provide instructions on how to apply for authorization under another type of DA permit. Activities not meeting the terms and conditions of this permit may be authorized through another type of permit from this office, such as a Nationwide Permit, Regional General Permit, Letter of Permission, or Standard Permit. This office will determine on a case-by-case basis, as needed, whether an activity has a more than minimal impact, individually or cumulatively, on the aquatic environment or may be contrary to the public interest. This office may restore authorization under the RGP at any time it determines the reason for asserting discretionary authority has been resolved or satisfied by a condition, project modification, or new information. This office may also use its discretionary authority to modify, suspend, or revoke the RGP at any time.

4. Avoidance and Minimization: Impacts to waters of the U.S. shall be avoided and minimized to the maximum extent practicable. For purposes of the RGP, notwithstanding this office's discretionary authority described above, this term shall be considered satisfied when you have designed and implemented activities to comply with all applicable avoidance and minimization measures contained in Chapters 5 and 6 of the HCP/NCCP.

5. Single and Complete Project: The activities authorized under this permit must be a single and complete project. A single and complete project is the total project proposed or accomplished by one owner or developer and may not be divided into phases or components to avoid permit thresholds or review requirements. For linear projects (e.g., roads, utility lines,

pipelines), each crossing of a water of the United States at a separate and distant location is considered a single and complete project. However, separate channels of a braided stream or separate arms of a single wetland are considered one waterbody and may not be treated separately. For non-linear projects, the single and complete project is the total undertaking proposed by one owner or developer and must have independent utility, meaning it would be constructed and function absent the construction of other projects in the area.

6. Section 401 Water Quality Certification: A general Section 401 water quality certification (WQC) has been issued for this RGP. If you determine you cannot comply with one or more of the general WQC conditions, you must request individual WQC. A valid 401 WQC, or waiver thereof, is required to be obtained and evidence thereof in possession by you, prior to the commencement of activities authorized by this RGP (see General Condition 4).

GENERAL CONDITIONS:

1. Permit Transfer: If a WPILF project site associated with this permit is sold, you shall transfer the verification to the new owner by submitting a letter to this office, to validate the transfer. The letter must contain the name and address of the transferee, as well as the following statement and signature of the transferee: When the structures or work authorized by this regional general permit (RGP) are still in existence at the time the property is transferred, the terms and conditions of this RGP, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this RGP and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____
(Transferee)

_____
(Date)

2. Tribal Rights: No activity or its operation shall impair reserved Tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights. You are not authorized to initiate any activities in waters of the U.S. that have the potential to impair tribal rights under this RGP until this office has completed necessary tribal coordination/consultation or has determined the proposed action does not impair tribal rights, unless tribal coordination/consultation is addressed programmatically (e.g., by a PA).

3. Unanticipated Discovery: If you discover any previously unknown historic, cultural or archeological remains and/or artifacts while accomplishing the activity authorized by this RGP, you shall immediately notify this office of what has been found, and to the maximum extent practicable, shall avoid construction activities that may affect the remains and artifacts until the

required coordination has been completed. This office will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. Water Quality Certification: You shall comply with all terms and conditions of the enclosed October 16, 2020, Section 401 General Water Quality Certification (WDID# 5A31CR00539) (attachment 4), as amended (WDID# 5A31CR00539A1; dated August 28, 2025), which is expressly incorporated as condition of this permit. If you cannot comply with the terms and conditions of this 401 WQC, then you must obtain individual 401 WQC, or waiver thereof, for the proposed discharge in order for the activity to be authorized by this RGP.

FURTHER INFORMATION:

1. Congressional Authorities: Section 404 of the Clean Water Act (33 U.S.C. 1344)

2. Limits of this authorization:

a. This office has authority to determine if an activity complies with the terms and conditions of the RGP.

b. This permit does not obviate the need to obtain other federal, state, or local authorizations required by law.

c. This permit does not grant any property rights or exclusive privileges.

d. This permit does not authorize any injury to the property or rights of others.

e. This permit does not authorize interference with any existing or proposed federal projects.

3. Limits of Federal Liability: In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work. e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this RGP is not contrary to the public interest was made in reliance on the information provided by you.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this RGP at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of a permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

PERMIT DURATION: This RGP is valid for five (5) years from the date of issuance and will expire on **April 7, 2031**. At least sixty (60) calendar days prior to expiration, this office will issue a public notice, with an opportunity for public comment, describing the reasons for reissuing the RGP for another five years with or without modification, or not reissuing the RGP. If this office has not reissued the RGP by the expiration date, the RGP will no longer be valid. This RGP may also be modified, suspended, or revoked by this office at any time deemed necessary. In such instance, this office will issue a public notice concerning the proposed action.

CONTACTS AND ADDITIONAL INFORMATION: For additional information about this RGP, please contact this office by phone at 916-557-5250, or by email at SPKRegulatoryMailbox@usace.army.mil. For an updated list of contacts, please visit our website at http://www.spk.usace.army.mil/missions/regulatory.

ATTACHMENTS:

1. *Figure 1-1, Plan Area, Placer County Conservation Program – EIS/EIR (May 2020).*

2. *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; USFWS File Number 81420-2009-F-0520).

3. *Intra-Service Endangered Species Act Section 7 Consultation (WCR-2020-00XXX) for the Issuance of Section 10(a)(1)(B) Incidental Take Permit for the Placer County Conservation Program Habitat Conservation Plan authorizing take of California Central Valley steelhead (Oncorhynchus mykiss), Central Valley fall-run Chinook salmon (O. tshawytscha), and Central Valley late fall-run Chinook salmon (O. tshawytscha) and documentation of Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response* (March 15, 2021; NMFS File Number WCRO-2020-03651).

4. Central Valley Regional Water Quality Control Board, *General Order No. R5-2020-0050 Waste Discharge Requirements and Clean Water Act Section 401 Water Quality Certification* (October 16, 2020; WDID# 5A31CR00539), as amended (WDID# 5A31CR00539A1; dated August 28, 2025).

This RGP becomes effective when the federal official, designated to act for the Secretary of the Army has signed below.



Michael S. Jewell
Chief, Regulatory Division

08 April 2026
Date

Attachment 1

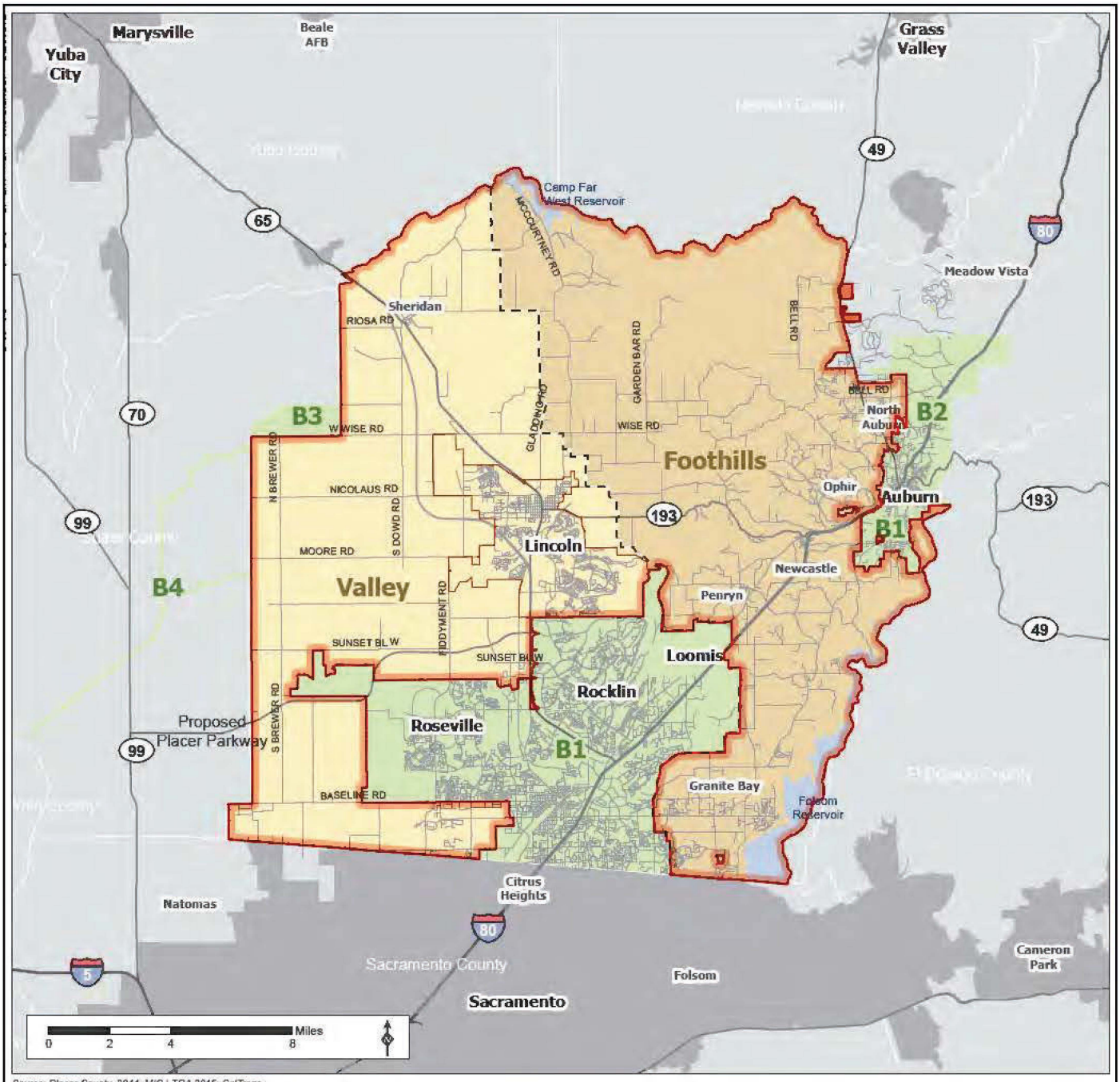


Figure 1-1
Plan Area
Placer County Conservation Program – EIS/EIR

Attachment 2

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
Sacramento Fish and Wildlife Office
Endangered Species Division
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

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.

TABLE OF CONTENTS

1. CONSULTATION HISTORY 8
2. BIOLOGICAL OPINION AND CONFERENCE OPINION 10
   2.1 Description of the Proposed Actions 10
      2.1.1 U.S. Fish and Wildlife Proposed Action 10
      2.1.2 U.S. Army Corps of Engineers Proposed Action 10
      2.1.3 Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan Overview 12
      2.1.4 Permit Area 13
      2.1.5 Permit Term 13
   2.2 Covered Activities 14
      2.2.1 Valley Potential Future Growth Area 15
      2.2.2 Valley Conservation and Rural Development Area 15
      2.2.3 Foothills Potential Future Growth Area 16
      2.2.4 Foothills Conservation and Rural Development Area 16
      2.2.5 Regional General Programs 17
      2.2.6 Conservation Program 25
      2.2.7 Other Placer County Conservation Programs 27
   2.3 Conservation Strategy 28
      2.3.1 Reserve System 28
      2.3.2 Stream Protection, Enhancement, and Avoidance 30
      2.3.3 Wetland Conservation and No Overall Net Loss of Wetland Functions and Services 30
      2.3.4 Avoidance and Minimization 30
      2.3.5 Biological Goals and Objectives and Conservation Measures 30
      2.3.6 Conditions on Covered Activities 33
      2.3.7 Monitoring and Adaptive Management 37
   2.4 Implementation 47
      2.4.1 Coordinated Implementation of the Placer County Conservation Program 47
      2.4.2 Implementation Structure 48
      2.4.3 Establishing the Reserve System 49
      2.4.4 Process for Acquiring Lands 49
      2.4.5 Stay Ahead Provision 50

2.4.6 Jump Start 50
2.4.7 Advance Acquisition of Vernal Pool Complex Lands 51
2.4.8 Private Mitigation and Conservation Banks 51
2.4.9 Mitigation for Activities not Covered Under the Plan 51
2.4.10 Conservation Easements 52
2.4.11 Land Dedication in Lieu of Land Conversion Fee 52
2.4.12 Management and Enhancement of the Reserve System 53
2.4.13 Restoration and Creation of Natural Communities and Covered Species Habitat 53
2.4.14 Monitoring and Adaptive Management 54
2.4.15 Take Authorization under the Plan 54
2.4.16 Coverage Option for Certain Minor Activities 55
2.4.17 Compliance Tracking and Data Management 55
2.4.18 Reporting and Schedule 56
2.5 Cost and Funding 56
2.6 Action Area 57
2.7 Analytical Framework for the Jeopardy and Adverse Modification Analysis 58
2.7.1 Jeopardy Determination 58
2.7.2 Adverse Modification Determination 58
2.8 Status of the Species and Critical Habitat 59
2.8.1 Swainson's Hawk 59
2.8.2 California Black Rail 60
2.8.3 Western Burrowing Owl 61
2.8.4 Tricolored Blackbird 62
2.8.5 Giant Garter Snake 63
2.8.6 Western Pond Turtle 63
2.8.7 Foothill Yellow-legged Frog 64
2.8.8 California Red-legged Frog 65
2.8.9 Valley Elderberry Longhorn Beetle 66
2.8.10 Vernal Pool Fairy Shrimp 66
2.8.11 Vernal Pool Tadpole Shrimp 66
2.8.12 Conservancy Fairy Shrimp 67
2.8.13 Critical Habitat 67
2.9 Environmental Baseline 67

2.9.1 General Baseline 68
2.9.2 Swainson's Hawk 71
2.9.3 California Black Rail 71
2.9.4 Western Burrowing Owl 72
2.9.5 Tricolored Blackbird 72
2.9.6 Giant Garter Snake 73
2.9.7 Western Pond Turtle 74
2.9.8 Foothill Yellow-legged Frog 74
2.9.9 California Red-legged Frog 75
2.9.10 Valley Elderberry Longhorn Beetle 76
2.9.11 Vernal Pool Fairy Shrimp 77
2.9.12 Vernal Pool Tadpole Shrimp 78
2.9.13 Conservancy Fairy Shrimp 79
2.9.14 Critical Habitat 80
2.10 Effects Analysis Development 80
2.10.1 Effects Mechanisms Producing Covered Species Responses 81
2.10.2 Effects Analysis Methods 81
2.11 General Effects Analysis 83
2.11.1 Habitat Loss and Fragmentation 83
2.11.2 Reduction in Habitat Function 97
2.11.3 Effects on Covered Species individuals 102
2.12 Effects to Covered Species 104
2.12.1 Swainson's Hawk 104
2.12.2 California Black Rail 106
2.12.3 Western Burrowing Owl 108
2.12.4 Tricolored Blackbird 110
2.12.5 Giant Garter Snake 112
2.12.6 Western Pond Turtle 114
2.12.7 Foothill Yellow-legged Frog 116
2.12.8 California Red-Legged Frog 117
2.12.9 Valley Elderberry Longhorn Beetle 119
2.12.10 Vernal Pool Fairy Shrimp 121
2.12.11 Vernal Pool Tadpole Shrimp 124

2.12.12 Conservancy Fairy Shrimp 125
2.12.13 Critical Habitat 126
2.13 Cumulative Effects 127
2.14 Conclusion 128
3. INCIDENTAL TAKE STATEMENT 130
3.1 Amount or Extent of Take 131
3.2 Effect of the Take 133
3.3 Reasonable and Prudent Measures 133
3.4 Terms and Conditions 133
4. CONSERVATION RECOMMENDATIONS 134
5. REINITIATION—CLOSING STATEMENT 134
6. LITERATURE CITED 136
7. APPENDIX A: Species List 146
8. APPENDIX B Species Evaluation 147

TABLES

Table 1. Extent of Natural Communities and the Maximum Allowable Loss (in acres; from Tables 4-1, 4-3, 5-3, 5-4 and 5-5 in the Plan). 86
Table 2. Maximum Allowable Loss by Geographic Area, in acres. 87
Table 3. Estimated extent of indirect effects, in acres. 99
Table 4. Maximum take allowed for Covered Species, using habitat as a surrogate. 132

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846
SFWO_mail@fws.gov

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

December 1, 2020

Mr. Michael Fris
Assistant Regional Director, Ecological Services
U.S. Fish and Wildlife Service, Pacific Southwest Region
2800 Cottage Way, Suite W2606
Sacramento, California 95825
michael_fris@fws.gov

Mr. Michael Jewell
Chief, Regulatory Division
U.S. Army Corps of Engineers, Sacramento District
1325 J Street, Room 1480
Sacramento, California 95814
Michael.S.Jewell@usace.army.mil

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 packardi)* (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 boylii*)
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	*Report of the Science Advisors for the Placer County Natural Communities Conservation Plan and Habitat Conservation Plan: Planning Principles, Uncertainties, and Management Recommendations* (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' habitat[1]. 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 Activiti*es 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 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 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 from32-50 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 at 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 (Kupeferberg 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, centrachid 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 packardi*) 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, *Communiti*es 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 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	*11,640*	*270*	*11,830*	*10*	*100*	*100*	*40*
Vernal Pool Wetlands	560	10	570	-	-	-	10
Vernal Pools	180	10	180	-	-	-	5
Seasonal Wetlands in VPC	*220*	*10*	*220*	-	-	-	*3*
Seasonal Wetland Swales	*170*	*10*	*170*	-	-	-	*2*
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	*50*	*10*	*50*	*40*	*10*	*50*	*3*
Non-VPC Seasonal Wetlands	*20*	*10*	*20*	*30*	*10*	*30*	*2*
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	*900*	*70*	*900*	*540*	*20*	*540*	*50*

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 *CM1 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 about100 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 Area[2]	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, *CM1 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 nests 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 ref-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 VOCG-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 Foraging Total	149 16,267 16,416	10 602 612
California Black Rail	Year-round	105	41
Western Burrowing Owl	Year-round	16,444	609
Tricolored Blackbird	Nesting Foraging Total	55 17,015 17,070	103 836 939
Giant Garter Snake	Aquatic Upland Rice Total	1,438 483 2,060 3,981	203 22 90 315
Western Pond Turtle	Aquatic Upland Total	750 1,407 2,157	250 40 290
Foothill Yellow-legged Frog	Year-round	155	39
California Red-legged Frog	Aquatic Upland Total	672 8,551 9,223	168 214 382
Valley Elderberry Longhorn Beetle	Year-round	476	18
Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp	Vernal Pool Complex Vernal Pool Constituent Habitat	12,550 580 (and no more than 185 of vernal pools)	455 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;

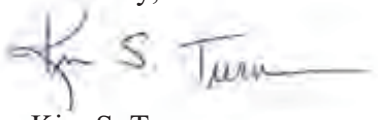
2) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;

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,



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 boylii*) 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/CNDDB/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, Ithica, 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 boylii*): 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 boylii*). 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 boylii*): 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 boylii*) 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 boylii*) 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.burowl.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 packardi*) 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 boylii* group. University of California Publications in Zoology 54:207-292.

APPENDIX A: Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

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 Fisheries[1], 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 *Thamnophis gigas* 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 *Rana draytonii* 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 *Ambystoma californiense* 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 *Hypomesus transpacificus* 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 *Desmocerus californicus dimorphus* 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 *Branchinecta conservatio* 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 *Branchinecta lynchi* 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 *Lepidurus packardi* 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 *Galium californicum ssp. sierrae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5209	Endangered
Layne's Butterweed *Senecio layneae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4062	Threatened
Pine Hill Ceanothus *Ceanothus roderickii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3293	Endangered
Pine Hill Flannelbush *Fremontodendron californicum ssp. decumbens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4818	Endangered
Sacramento Orcutt Grass *Orcuttia viscida* 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 *Calystegia stebbinsii* 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.

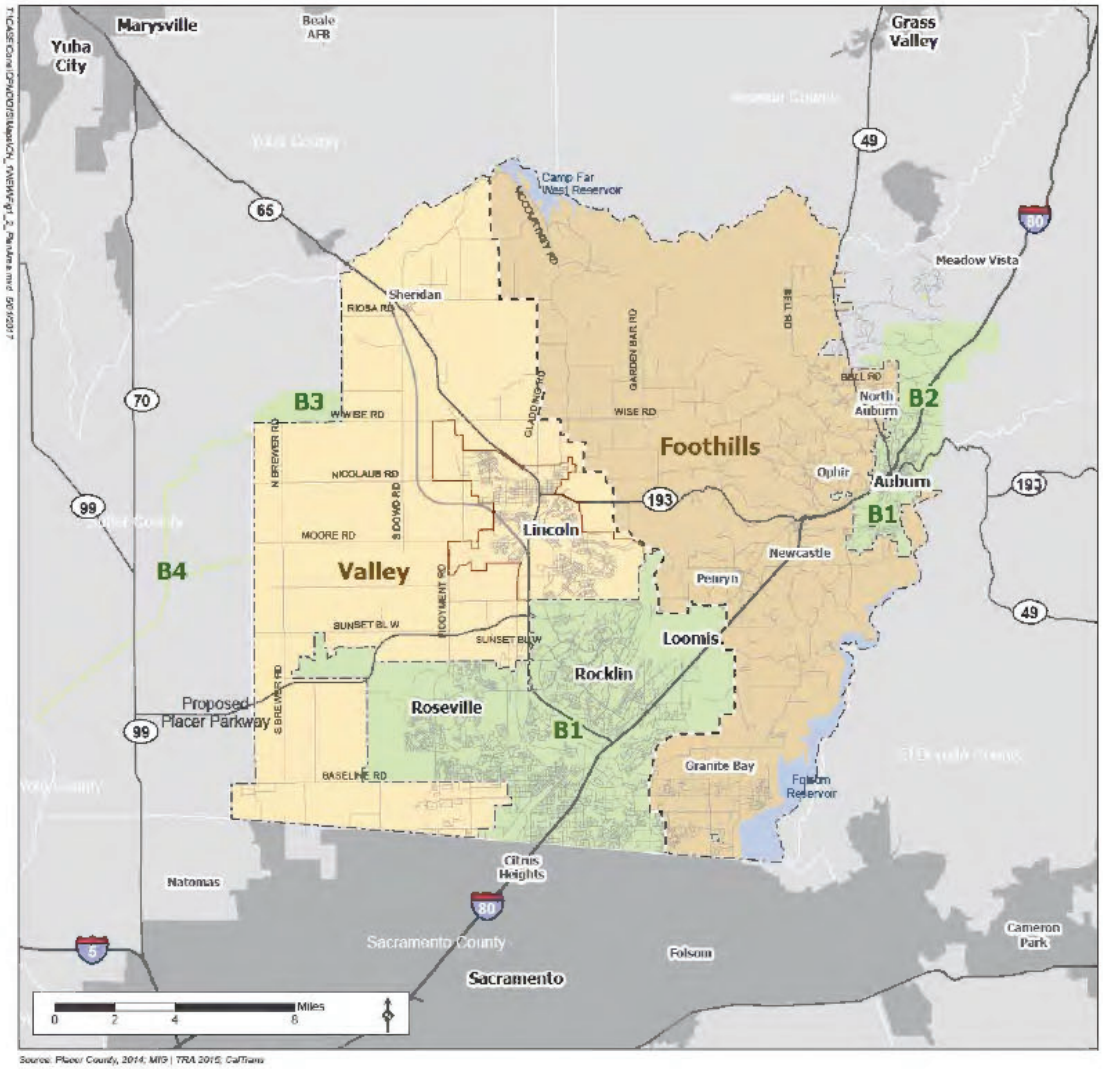
NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* https://ecos.fws.gov/ecp/species/498#crithab	Final

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	*Rana draytonii*	T	**Yes**	**Yes**	**Yes**
California tiger salamander, Central California DPS	*Ambystoma californiense*	T	**Yes**	**No**	**No**
Delta smelt	*Hypomersus transpacificus*	T	**No**	**No**	**No**
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	T	**Yes**	**No**	**Yes**
Conservancy Fairy Shrimp	*Branchinecta conservation*	E	**Yes**	**No**	**Yes**
Vernal pool fairy shrimp	*Branchinecta lynchi*	T	**Yes**	**Yes**	**Yes**
Giant garter snake	*Thamnophis gigas*	T	**Yes**	**No**	**Yes**
Vernal pool tadpole shrimp	*Lepidurus packardi*	E	**Yes**	**No**	**Yes**
El Dorado bedstraw	*Galium californicum* ssp. *sierrae*	E	**No**	**No**	**No**
Layne's butterweed	*Senecio layneae*	T	**No**	**No**	**No**
Pine Hill ceanothus	*Ceanothus roderickii*	E	**No**	**No**	**No**
Pine Hill flannelbush	*Fremontodendron californicum* ssp. *decumbens*	E	**No**	**No**	**No**
Sacramento Orcutt grass	*Orcuttia viscida*	E	**No**	**No**	**No**
Stebbin's morning-glory	*Calystegia stebbinsii*	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:



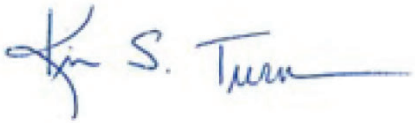
Date: December 1, 2020

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

Attachment 3

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OREGON 97232

Refer to NMFS ECO#: WCRO-2020-03651

March 15, 2021

MEMORANDUM FOR: Placer County Habitat Conservation Plan Project File
(Incidental Take Permit #25641)
(ARN: 151422-WCR2021-SA00059)

FROM: Cathy Marcinkevage
Assistant Regional Administrator
California Central Valley Office

SUBJECT: Intra-Service Endangered Species Act section 7 Consultation (WCR-2020-00XXX) for the Issuance of section 10(a)(1)(B) Incidental Take Permit for the Placer County Conservation Program Habitat Conservation Plan authorizing take of California Central Valley steelhead (*Oncorhynchus mykiss*), Central Valley fall-run Chinook salmon (*O. tshawytscha*), and Central Valley late fall-run Chinook salmon (*O. tshawytscha*) and documentation of Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response

The attached biological opinion and essential fish habitat (EFH) consultation (Attachment 1) represent NOAA's National Marine Fisheries Service (NMFS) West Coast Region, Endangered Species Act sections 7(a)(2) and (a)(4) biological opinion on the Placer County Conservation Program Habitat Conservation Plan (PCCP), dated May 22, 2020. This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR 402; 84 FR 44976, 45016).

The attached also includes a Magnuson-Stevens Fishery Conservation and Management Act EFH consultation for the proposed activities. NMFS assessed the effects of the proposed issuance of an incidental take permit (ITP) to Placer County, which would authorize take of Covered Species for Placer County's Covered Activities, and result in the implementation of the habitat conservation plan (HCP). Implementation of the HCP will minimize and mitigate for adverse effects from Covered Activities on Covered Species to the maximum extent possible. The Covered Species addressed in this opinion are the distinct population segment of California Central Valley (CCV) steelhead, Central Valley (CV) fall-run Chinook salmon evolutionarily significant unit (ESU), and CV late fall-run Chinook salmon ESU.

NMFS has concluded that the proposed issuance of an ITP to Placer County and implementation of the PCCP is not likely to jeopardize the continued existence of CCV steelhead, CV fall-run

Chinook salmon, or CV late fall-run Chinook salmon nor is it likely to result in the destruction or adverse modification of its designated critical habitat.

NMFS also concludes that the issuance of an ITP to Placer County and implementation of the HCP will result in adverse effects to Pacific salmon EFH. However, these adverse effects will be offset to a degree with the implementation of best management practices and conservation measures in the HCP, such that additional conservation recommendations are not needed or provided.

Please contact Neal McIntosh at the NMFS California Central Valley Office at (916) 930-5647 or via email at neal.mcintosh@noaa.gov, if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

A. Catherine Marcinkevage

Cathy Marcinkevage
Assistant Regional Administrator
California Central Valley Office

Enclosure

cc: File: 151422-WCR2021-SA00059

Ms. Stephanie Jentsch, USFWS Senior Wildlife Biologist, stephanie_jentsch@fws.gov
Mr. Eric Tattersall, USFWS Acting Deputy Field Supervisor, eric_tattersall@fws.gov
Ms. Leah Fisher, USACE Senior Regulatory Project Manager, leah.m.fisher@usace.army.mil
Mr. Gregg McKenzie, Placer County Conservation Plan Manager, gamckenz@placer.ca.gov

Attachment (1)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OREGON 97232

Endangered Species Act section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) Response

Placer County Conservation Program Habitat Conservation Plan

National Marine Fisheries Service (NMFS) Environmental Consultation Organizer Number: WCR-2020-03651

Action Agencies: NMFS, United States Fish and Wildlife Service, United States Army Corps of Engineers

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species?	Is Action Likely To Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
California Central Valley steelhead (*Oncorhynchus mykiss*) Distinct Population Segment	Threatened	Yes	No	Yes	No
Central Valley (CV) fall-run Chinook salmon (*O. tshawytscha*) evolutionarily significant unit (ESU)	Not listed	Yes	No*	Yes**	No**
CV late fall-run Chinook salmon (*O. tshawytscha*) ESU	Not listed	Yes	No*	Yes**	No**

* - If this species becomes listed during the permit term.
** - If critical habitat for this species is designated during the permit term.

Fishery Management Plan That Identifies EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	No

Consultation Conducted By: National Marine Fisheries Service, West Coast Region

Issued By:

A. Catherine Marcinkevage

Cathy Marcinkevage
Assistant Regional Administrator for California Central Valley Office

Date: March 15, 2021

TABLE OF CONTENTS

Table of Contents ..... **ii**
LIST OF ACRONYMS AND ABBREVIATIONS ..... **iv**
1. Introduction **1**
1.1. Background 1
1.2. Consultation History 2
1.3. Proposed Federal Action 3
1.3.1. Placer County Conservation Program 4
1.3.2. Permittees and Participating Special Entities 4
1.3.3. Covered Activities 5
1.3.4. PCCP Conservation Strategy 43
1.3.5. Program Participation and Conditions on Covered Activities 56
1.3.6. Activities Not Covered by the PCCP 76
1.3.7. USACE Proposed Action 79
1.3.8. Cost and Funding 81
2. Endangered Species Act: Biological Opinion And Incidental Take Statement **82**
2.1. Analytical Approach 82
2.2. Rangewide Status of the Species and Critical Habitat 83
2.2.1. Recovery Plan 85
2.2.2. Global Climate Change 86
2.3. Action Area ..... **Error! Bookmark not defined.**
2.4. Environmental Baseline 88
2.4.1. Status of the Covered Species and Critical Habitat in the Action Area 89
2.4.2. Factors Affecting Covered Species and Critical Habitat 99
2.4.3. Recovery Plan for CCV Steelhead DPS 111
2.5. Effects of the Action 111
2.5.1. Effects of the Action to Covered Fish Species 112
2.5.2. Effects of the Action to Critical Habitat and Covered Fish Habitat 124
2.6. Cumulative Effects 125
2.6.1. Increased Urbanization 125
2.6.2. Aquaculture and Fish Hatcheries 125
2.6.3. Recreational Fishing 126
2.6.4. Agricultural Practices 127

2.6.5. Mining Activities 128
2.6.6. Water Supply 128
2.7. Integration and Synthesis 128
2.7.1. Effects of the Proposed Action to Listed Species 129
2.7.2. Effects of the Proposed Action to Critical Habitat and Covered Fish Habitat 129
2.7.3. Survival and Recovery of the DPS/ESU 130
2.8. Conclusion 131
2.9. Incidental Take Statement 131
2.9.1. Amount or Extent of Take 132
2.9.2. Effect of the Take 134
2.9.3. Reasonable and Prudent Measures 134
2.9.4. Terms and Conditions 135
2.10. Conservation Recommendations 136
2.11. Reinitiation of Consultation 137
3. Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response 137
3.1. Essential Fish Habitat Affected by the Project 138
3.2. Adverse Effects on Essential Fish Habitat 138
3.2.1. Water Quality 139
3.2.2. Physical Disturbance Effects 139
3.2.3. Acoustic Effects from Impact Pile Driving 139
3.2.4. Dewatering 139
3.2.5. Land Conversion and Urbanization 140
3.2.6. Water Quantity 140
3.2.7. Disturbance to Riparian Habitat 140
3.2.8. Disturbance to Riverine Habitat 140
3.3. Essential Fish Habitat Conservation Recommendations 140
3.4. Supplemental Consultation 140
4. Data Quality Act Documentation and Pre-Dissemination Review 141
4.1. Utility 141
4.2. Integrity 141
4.3. Objectivity 141
5. References 142

LIST OF ACRONYMS AND ABBREVIATIONS

ARPS – American River Pump Station
BMPs – best management practices
°C – degrees Celsius
CARP – county aquatic resources program
CCV – California Central Valley
CDFG – California Department of Fish and Game
CDFW – California Department of Fish and Wildlife
CEQA – California Environmental Quality Act
CESA – California Endangered Species Act
CFR – Code of Federal Regulations
cfs – cubic feet per second
CRD – conservation and rural development
CRMP – coordinated resource management plan
CV – Central Valley
CWA – Clean Water Act
CWPP – community wildfire protection plan
dB – decibel
DO – dissolved oxygen
DPS – distinct population segment
DQA – Data Quality Act
DWR – California Department of Water Resources
EFH – essential fish habitat
EIR – environmental impact report
EIS – environmental impact statement
EPA – Environmental Protection Agency
ERP – ecosystem restoration plan
ESA – Endangered Species Act
ESU – evolutionarily significant unit
EXR – existing reserves and other protected areas
°F – degrees Fahrenheit
FEIS/R – final environmental impact statement/environmental impact report
FMP – Fishery Management Plan
FR – Federal Register
HAPC – habitat area of particular concern
HCP – habitat conservation plan
HGMP – hatchery and genetic management plans
HUC – hydrologic unit code
ILF – in-lieu fee
ITS – incidental take statement
IWM – instream woody material
LIDS – low impact development standards
LOPs – letters of permission
MSA – Magnuson-Stevens Fishery Conservation and Management Act
NCCP – natural community conservation plan
NEPA – National Environmental Policy Act

NID – Nevada Irrigation District
NMFS – National Marine Fisheries Service
NPDES – national pollutant discharge elimination system
NOAA – National Oceanic and Atmospheric Administration
NTU – nephelometric turbidity units
OHWM – ordinary high water mark
opinion – biological opinion
PAH – polycyclic aromatic hydrocarbon
PBF – physical or biological feature
PCA – Placer Conservation Authority
PCCP – Placer County Conservation Program
PCE – primary constituent element
PCFCWCD – Placer County Flood Control and Water Conservation District
PCWA – Placer County Water Agency
PFG – potential future growth
PG&E – Pacific Gas and Electric
PGP – programmatic general permit
RAA – reserve acquisition area
RGP – regional general permit
RMS – root mean square
RPMs – reasonable and prudent measures
SEL – sound exposure level
SR – state route
SSWD – South Sutter Water District
SWPPP – stormwater pollution prevention plan
USACE – United States Army Corps of Engineers
USC – United States Code
USGS – United States Geological Survey
USFWS – United States Fish and Wildlife Service
VSP – viable salmonid population
WOUS – waters of the United States
WPWMA – Western Placer Waste Management Authority
WRSL – Western Regional Sanitary Landfill
WWPI – Western Wood Preservers Institute
WWTP – wastewater treatment plant

1. INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into sections 2 and 3, below.

1.1. Background

The National Marine Fisheries Service (NMFS) prepared the biological opinion (opinion) and incidental take statement (ITS) portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 USC 1531 *et seq.*), and implementing regulations at 50 CFR 402, as amended.

Section 10(a) of the ESA provides exceptions to the section 9 prohibitions on take of Covered Species via two kinds of permits (16 U.S.C. § 1531 *et seq.*). Section 10(a)(1)(A) permits authorize the take of listed species for scientific purposes or to enhance the propagation or survival of listed species. Section 10(a)(1)(B) permits authorize the incidental take of listed species caused by otherwise lawful activities.

Section 10(a)(2)(A) of the ESA, allows an applicant to develop a habitat conservation plan (HCP) that meets specific requirements identified in section 10(a)(2)(A) of the ESA. Any habitat conservation plan must specify: (i) the impact which will likely result from such taking; (ii) what steps the applicant will take to minimize and mitigate such impacts, and the funding that will be available to implement such steps; (iii) what alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized; and (iv) such other measures that the Secretary may require as being necessary or appropriate for purposes of the plan.

If these statutory requirements are met, then the applicant can apply to NMFS for an Incidental Take Permit (ITP) pursuant to section 10(a)(1)(B) that would allow for the incidental take of ESA-listed species while carrying out an otherwise lawful activity. Under section 10(a)(1)(B), if the Secretary finds, after opportunity for public comment, with respect to a permit application and the related conservation plan that: (i) the taking will be incidental; (ii) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking; (iii) the applicant will ensure that adequate funding for the plan will be provided; (iv) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and (v) the measures, if any, required under subparagraph (A)(iv) will be met; and the Secretary has received such other assurances as s/he may require that the plan will be implemented, the Secretary shall issue the permit. As described in the permitting provisions of the ESA, the permit shall contain such terms and conditions as the Secretary deems necessary or appropriate to carry out the purposes of this paragraph, including, but not limited to, such reporting requirements as the Secretary deems necessary for determining whether such terms and conditions are being complied with.

In August 2019, Placer County submitted an incidental take permit (ITP) application with their Placer County Conservation Program Habitat Conservation Plan (PCCP) and Natural Community Conservation Plan (NCCP) for potential future growth and conservation measures to mitigate for that growth for a 50-year permit term. The U.S. Fish and Wildlife Service (USFWS)

is the lead Federal agency on the PCCP, NMFS is a cooperating agency along with the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency. On June 21, 2019, in accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) approved a draft HCP/NCCP and issued a draft joint environmental impact statement/environmental impact report (EIS/EIR) to evaluate the effects of the proposed action of issuing an ITP under section 10(a)(1)(B) of the ESA. USFWS solicited public comments on the draft EIS/EIR until August 20, 2019, and have addressed comments in the final EIS/EIR that was released on May 22, 2020, with a 30-day public comment period.

When considering issuance of an ITP, NMFS must consult internally under section 7 of the ESA to ensure that issuance of the permit, and subsequent implementation of the PCCP, does not appreciably reduce the likelihood of survival and recovery of ESA-listed species. In compliance with section 7(a)(2) of the ESA, in this opinion, NMFS analyzed the effects of the issuance of an ITP for the PCCP, exempting incidental take of ESA-listed California Central Valley (CCV) steelhead for the implementation of Covered Activities.

Central Valley (CV) fall-run and CV late fall-run Chinook salmon are not species listed under the ESA, and no Federal permit is needed to incidentally take them, but there may be a change in listing status during the permit period. If CV fall-run and CV late fall-run Chinook salmon, henceforth referred to as non ESA-listed salmonids, are listed as threatened or endangered in the future, then the ITP, which includes all Covered Species, would become effective immediately for these species.

NMFS also completed an essential fish habitat (EFH) consultation on the proposed action, in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 *et seq.*) and implementing regulations at 50 CFR 600.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. A complete record of this consultation is on file at the California Central Valley Office.

1.2. Consultation History

- The applicants began developing the PCCP with assistance from USFWS in 2000.
- NMFS became involved in the PCCP in 2005 as a cooperating agency, due to the inclusion of CCV steelhead, CCV steelhead critical habitat, CV fall-run Chinook salmon, CV late fall-run Chinook salmon, and EFH for Pacific salmon in the plan.
- Between 2008-2012, Placer County paused development of the HCP.

- On June 21, 2019, USFWS published a notice of availability of a draft joint HCP/NCCP and draft EIS/EIR for this project to the Federal Register for public comment and review with a 60-day public comment period.

- USFWS published a final EIS to the Federal Register on May 22, 2020, with a 30-day public comment period.

- On December 2, 2020, USFWS signed their biological opinion for the PCCP. NMFS determined this constituted a complete initiation package, and consultation was initiated for the issuance of an ITP for the PCCP.

1.3. Proposed Federal Action

Under the ESA, "action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02).

Under MSA, Federal action means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal Agency (50 CFR 600.910).

The proposed action is the issuance of an ESA ITP by NMFS. The ITP would require the implementation of the PCCP, which contains a series of conservation strategies to minimize and mitigate to the maximum extent practicable the effects of the Covered Activities on Covered Species during the duration of the ITP. The term of the proposed ITP is 50 years, unless the permit is terminated before its expiration and pursuant to applicable regulations.

The ITP would exempt incidental take of threatened CCV steelhead. If CV fall-run and late fall-run Chinook salmon are listed as threatened or endangered in the future, then the ITP would become effective immediately for these species. Within the PCCP and for the purposes of this BO, these three species are referred to collectively as the "Covered Species".

The ITP would allow incidental take of the Covered Species resulting from the following covered actions: (1) activities described in the PCCP during the ITP duration ("Covered Activities"); and (2) activities associated with conservation strategies identified in the PCCP (Placer County 2020b), in accordance with the statutory and regulatory requirements of the ESA.

As a cooperating agency for the PCCP, USACE proposes to issue Clean Water Act (CWA) 404 permits for activities included in the Covered Activities for this HCP.

We considered, under the ESA, whether or not the proposed action would cause any other activities that would have consequences on listed fish species and their designated critical habitat. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. We determined that the proposed action would cause public use of trails and other park facilities. Public uses of trails and parks include hiking, running, biking, horseback riding, fishing, picnicking, wildlife viewing, and photography. The proposed action may also result in off-trail public use of areas within salmonid habitat, such as walking, wading, swimming, and playing with dogs.

1.3.1. Placer County Conservation Program

The PCCP applies to western Placer County and specific areas where conservation activities will take place in neighboring Sutter County. The goal of the PCCP is 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 Covered Activities. Within this framework, the PCCP will achieve conservation goals, comply with State and Federal environmental regulations, accommodate anticipated urban and rural growth, and permit the construction and maintenance of infrastructure needed to serve the county's population.

The PCCP includes three separate, complementary components that support two sets of State and Federal permits:

- Western Placer County Habitat Conservation Plan and NCCP, referred to by Placer County as the HCP/NCCP or "plan" and referred to in this opinion as PCCP. Placer County's plan is a joint HCP and NCCP that will protect fish, wildlife, and their habitats and fulfill the requirements of the Federal ESA and the California Natural Community and Conservation Planning Act (NCCP Act).

- Western Placer County Aquatic Resources Program, referred to by Placer County as the CARP. The CARP will protect streams, wetlands, and other water resources and fulfill the requirements of the Federal Clean Water Act (CWA) and analogous State laws and regulations.

- An in-lieu fee (ILF) program, which will provide wetland mitigation credits that can fulfill compensatory mitigation requirements under section 404 of the CWA by payment of a fee. The ILF will provide compensatory mitigation for impacts to aquatic resources for all projects and activities that are covered under the HCP/NCCP and the CARP.

The PCCP includes a conservation strategy to mitigate effects on Covered Species. The conservation strategy provides for the conservation and management of Covered Species and their habitats. The PCCP will allow issuance of ITPs under the ESA and the NCCP Act by NMFS, USFWS, and CDFW to the local jurisdictions. The permittees will then be able to use those permits for their own operations, maintenance, and capital projects. The permittees will also be able to extend the incidental take exemptions to private entities conducting activities covered by the PCCP and under their jurisdiction.

1.3.2. Permittees and Participating Special Entities

Permittees for the PCCP are:

- Placer County
- City of Lincoln
- South Placer Regional Transportation Authority (SPRTA)
- Placer County Water Agency (PCWA)
- Placer Conservation Authority (PCA), which was created to implement the PCCP and the CARP on behalf of the other permittees

The PCCP allows entities that are not permittees to participate in the PCCP. This process, described in further detail in section 8.9.4 of the PCCP (USFWS and Placer County 2020), allows public agencies or private parties to receive exemptions for incidental take for defined activities by committing to comply with the PCCP and the permits under a binding agreement with the PCA. Public agencies and private entities may seek to become participating special entities over the life of the PCCP. The PCA will determine whether to extend exemptions for incidental take to potential participating special entities on a case-by-case basis, in accordance with the PCCP and its permits. Based on expressed interest the following three public agencies are likely to seek to become participating special entities for the PCCP:

- Western Placer Waste Management Authority (WPWMA), referred to as "Authority" within the PCCP (Placer County 2020b)
- Placer County Flood Control and Water Conservation District (PCFCWCD), referred to as "District" within the PCCP (Placer County 2020b)
- City of Roseville

1.3.3. Covered Activities

Covered Activities include programs or actions that occur repeatedly in one location or throughout the permit area as well as projects, which are well-defined actions that occur once in a discrete location. Covered Activities are based in part on geographical location. The plan area is split into two areas: Plan Area A and Plan Area B. Plan Area A, A1–A4, is the main focus of the PCCP and where all future growth and most of the Covered Activities will take place. Plan Area A will be covered by all of the PCCP permits and all Covered Activities may occur there. Plan Area B, B1–B5, includes several specific additional areas where only specific Covered Activities may occur. The entire plan area and its components are shown in Figure 1.

Covered Activities are split into seven categories by type and by geographical area. The PCCP includes the following categories:

- Valley Potential Future Growth (PFG)
- Valley Conservation and Rural Development (CRD)
- Foothills PFG
- Foothills CRD
- Regional Public Programs
- In-stream Programs
- Conservation Programs

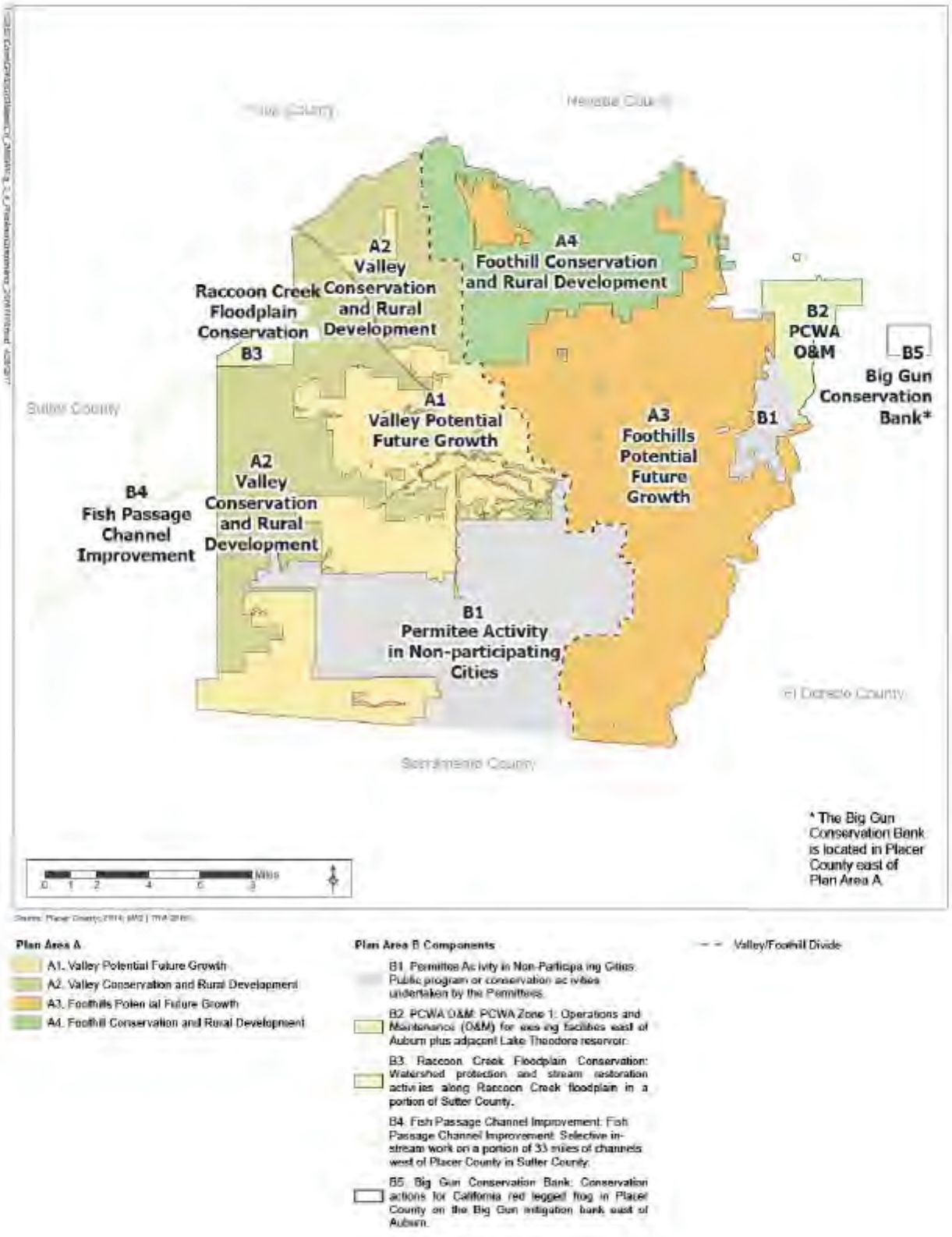


Figure 1. Western Placer County and the PCCP plan area, from figure 2-4 of the PCCP (Placer County 2020b).

1.3.3.1. Valley PFG (A1)

This category includes all ground- or habitat-disturbing projects and activities that occur in component A1, see Figure 1. This category includes public and private activities. 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, specific plans, and local, State, and Federal laws. Acquisition of reserve lands and conservation activities may occur in the Valley PFG, primarily in the PCCP-defined stream system.

Land uses consistent with urban and suburban general plan designations include the following:

- Urban development (*e.g.,* residential, commercial, office/professional, industrial, public/quasi-public);
- Transient lodging (*e.g.,* hotels/motels and recreational vehicle parks);
- Service uses (*e.g.,* banks and financial services, professional offices, medical services, daycare facilities, educational facilities, and business support services);
- Public facilities (*e.g.,* new fire stations, police/sheriff stations and substations, community policing centers, communications facilities (including antennae, towers, and equipment facilities), public administration centers, convention centers, theatres, community centers, concert venues, community gardens, and concession buildings);
- Recreational facilities (*e.g.,* regional parks, neighborhood parks, dog parks, soccer fields, golf courses, indoor and outdoor sports centers, recreational centers, trails, golf courses, racetracks, campgrounds, and associated infrastructure including roads, bridges, parking areas, and restrooms);
- Funeral/interment services (*e.g.,* mortuaries, crematorium, columbaria, mausoleums, and similar services when in conjunction with cemeteries);
- Other urban/suburban uses (*e.g.,* activities consistent with the local general plan and zoning ordinances of Placer County or the City of Lincoln, which are similar in nature to the uses listed above);
- Land use consistent with rural and agricultural general plan designations (*e.g.,* urban and suburban general plan designations also allow land uses listed in the valley CRD section below, also in table 2-7 of the PCCP (Placer County 2020b);
- Public facilities consistent with rural and agricultural general plan designations (*e.g.,* urban and suburban general plan designations also allow public facilities listed in the foothills PFG section below, also in table 2-8 of the PCCP (Placer County 2020b).

Public use of trails and other park facilities is not a Covered Activity of the PCCP, however it is considered in this opinion as an "other activity", see section 1.3 above, as it would not occur but for the proposed action, and is reasonably certain to occur.

The City of Lincoln and Placer County have developed several planning documents that outline strategies and projects in accordance with current general plans. To the extent that these plans are consistent with the goals of the PCCP, implementation of these planning documents will be covered by the PCCP. Examples of current planning documents in the valley PFG include the following, which can be found at http://www.ci.lincoln.ca.us/ or http://www.placer.ca.gov/planning:

- City of Lincoln General Plan
- Placer County General Plan
- Dry Creek/West Placer Community Plan
- Sunset Industrial Area Plan
- Sheridan Community Plan
- Placer Vineyards Specific Plan
- Regional University Specific Plan
- Riolo Vineyards Specific Plan
- City of Lincoln's Bikeways Master Plan
- 2001 Placer County Regional Bikeway Plan

Additional area plans, community plans, specific plans, and updates to comprehensive general plans will be developed over the course of the permit term. The general plans, specific plans, and implementing zoning may be changed within valley PFG (A1) over the course of the PCCP permit term to accommodate certain growth scenarios by allowing the following:

- Changes in allowed land use type;
- Increased land use intensity;
- Increased residential density.

1.3.3.2. Valley CRD (A2)

This category includes all ground- or habitat-disturbing projects and activities that occur in the valley in the Valley CRD, A2, component of the PCCP area, see Figure 1. This represents the valley reserve acquisition area (RAA) and existing reserves and other protected areas (EXR), but excludes the Valley PFG. Covered Activities here include rural-residential uses and a few types of agriculture-related activities, which are subject to approval by the City of Lincoln or Placer County. The Valley CRD area is where most of the PCCP conservation objectives for the valley will be implemented. PCA acquisition and management of reserve lands in the RAA is a Covered Activity described in section 1.3.3.6, in-stream activities.

As stated in the PCCP (Placer County 2020b), activities in the Valley CRD area must be consistent with designations in the general plans of the City of Lincoln and Placer County. Rural development activities covered by the plan include:

- Rural residential (*e.g.,* single-family homes at a density less than one dwelling per 2.3 acres. This includes privately owned roads, bridges, driveways, emergency access roads, clearing land for a range of rural residential land use activities, and other features commonly associated with rural dwelling units and us of land in rural settings.);

- Public/private recreational facilities (*e.g.,* neighborhood parks, dog parks, soccer fields, golf courses, indoor and outdoor sports centers, recreational centers, open space and passive recreation facilities, trails, golf courses, racetracks, campgrounds, and associated infrastructure including roads, bridges, parking areas, and restrooms as well as maintenance facilities);

- Private facilities of public assembly (*e.g.,* churches, convention centers, theaters, rural recreational uses (*e.g.,* equestrian facilities), community centers, concert venues, community gardens, and concession buildings;

- Transportation facilities (*e.g.,* new capital facility construction, roads, road widening, shoulder improvements, bike lane construction, bridge replacement/widening, culverts, transit facilities, and park and ride facilities);

- Agricultural facilities and uses (*e.g.,* plant nurseries, greenhouses, wine production, wineries, equestrian facilities, farm equipment sales, community centers, and outdoor retail sales. This may include nurseries, Christmas tree farms, ornamental plant nurseries, dairies, and feedlots, if a discretionary permit is required.);

- Food production facilities (*e.g.,* industrial/manufacturing uses associated with food/beverage production and agricultural support services);

- Agricultural uses requiring conditional/minor use permits (*e.g.,* new intensive agriculture that requires a conditional/minor use permit consistent with local general plans, such as commercial equestrian facilities, dairy and swine operations, equestrian event facilities, and wineries);

- Fuel load modifications and treatments (*e.g.,* fuel load modifications and treatments consistent with Placer County Community Wildfire Protection Plan, Placer County Local Hazard Mitigation Plan, Placer County Strategic Plan for Biomass Utilization Program, local ordinances, and Public Resources Code 4291);

- Vegetation management (*e.g.,* fuel reduction (including hand and mechanized removal and controlled burns), tree removal and pruning, grazing activities, invasive vegetation control/removal, hazardous tree work, weed abatement, and algae control in ponds. Permittees may use herbicides and pesticides in accordance with best management practices described in chapter 6 of the PCCP (Placer County 2020b), but shall be responsible for ensuring no take of Covered Species occurs as a result of herbicide and pesticide uses);

- Public facilities (*e.g.,* new fire stations, police/sheriff stations and substations, community policing centers, libraries, public maintenance facilities (park maintenance and transportation corporation yards), public administration centers, and solid waste facilities including transfer stations and recycling centers);

- Non-residential development in rural areas (*e.g.,* telecom facilities and small utility facilities. Solar energy projects in rural areas are covered by the PCCP as long as their effects on Covered Species and natural communities are consistent with the effects evaluation in PCCP Chapter 4, Effects of Covered Activities (Placer County 2020b). Requires approval from Placer County or the City of Lincoln);

- Other rural uses (*e.g.,* other rural uses consistent with the local general plan and zoning ordinances of Placer County or the City of Lincoln, that are similar in nature to the uses listed above. Such proposed uses must share characteristics in common with the uses listed above and are not of greater intensity or density or generate more environmental effects.);

- Conservation activities (*e.g.,* acquisition or operation of land for use as a biological reserve or mitigation bank).

General plans, specific plans, and implementing zoning may be changed over the course of the PCCP permit to allow changes in allowed land use type in A2, Valley CRD, so long as the following terms are met:

- The land use remains rural or agricultural or compatible with rural or agricultural general plan designations,

- Land use intensity is not increased,

- Residential density is not increased.

Activities that do not meet the criteria listed above are not prohibited by the PCCP, but they are not specifically covered by the PCCP. Project proponents who seek approvals or entitlements inconsistent with the above criteria cannot receive take coverage under the PCCP and must apply for take authorization directly from the relevant State or Federal agencies.

1.3.3.3 Foothills PFG (A3)

This category includes all ground- and habitat-disturbing projects and activities that occur in A3, Foothills PFG, see Figure 1. Future growth in the foothills is expected to be lower in magnitude and density than valley future growth. Portions of the Interstate 80 (I-80) corridor and outlying areas around Auburn and along state route (SR) 49 will develop at urban densities with urban land use. Most of the Foothills PFG 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. Acquisition of reserve lands and conservation activities may occur in the foothills PFG, primarily in the stream system to benefit covered fish.

Urban and suburban use activities that may occur in the Foothills PFG are the same as those listed for Valley PFG (section 1.3.3.1). Covered Activities for Foothills PFG also include ongoing rural and agricultural uses listed in Valley CRD (section 1.3.3.2). Public facilities consistent with rural and agricultural general plan designations include:

- Water supply facilities (*e.g.,* Placer County, PCWA, and city of Lincoln water supply and conveyance facilities and appurtenances to meet the needs of residential, commercial, office/professional, public/quasi-public, and industrial uses);

- Stormwater management facilities (*e.g.,* stormwater conveyance systems, low-impact development facilities, nonpoint source reduction, detention/retention facilities, outfall structures, and other drainage improvements);

- Wastewater management facilities (*e.g.,* sewage-treatment plants, sanitary sewer systems and rehabilitation, force main and effluent line construction and maintenance, effluent discharge and reclaimed water line installation and maintenance, and pump station construction);

- Solid waste management facilities (*e.g.,* landfills, transfer stations, material recovery facilities, small-scale energy production facilities (*i.e.*, landfill gas utilization), and recycling centers);

- Public and private utilities (*e.g.,* transmission lines, telecommunications lines, and gas lines subject to the authority of permittees);

- Other (*e.g.,* other public programs as described below in section 1.3.3.5).

Actions by Pacific Gas and Electric Company (PG&E), Sacramento Municipal Utilities District, and Northern California Power Agency that are not directly subject to the authority of permittees will not be covered under this opinion.

Current plans that apply to the foothills include the following:

- Granite Bay Community Plan
- Horseshoe Bar/Penryn Community Plan
- Ophir General Plan
- Auburn/Bowman Community Plan
- Bickford Ranch Specific Plan
- Placer County General Plan

Additional area plans, community plans, specific plans, and updates to comprehensive general plans will be developed over the course of the permit term of the PCCP. Activities in the Foothills PFG are based on designations in the Placer County General Plan and Community Plans. The general plan, specific plan, and implementing zoning may be changed over the course of the PCCP permit term to allow the following in foothills PFG (A3):

- Changes in allowed land use type,
- Increased land use intensity, and

- Increased residential density.

1.3.3.4 Foothills CRD (A4)

This category includes all ground- or habitat-disturbing projects and activities that occur in the foothills RAA and EXR, collectively termed Foothills CRD (A4), see Figure 1. Most of the area consists of large parcels in woodland and rangeland and is currently zoned for large-parcel minimums. The category includes rural-residential uses and those agricultural activities that are subject to approval by Placer County. The Foothills CRD area is where most of the PCCP conservation objectives for the foothills will be implemented. PCA acquisition and management of reserve lands in the RAA is a Covered Activity described in section 1.3.3.6, in-stream activities.

Covered rural development activities are the same as those listed for Valley CRD (section 1.3.3.2). Covered public agency programs are the same as those listed for the Foothills PFG (section 1.3.3.3).

Covered rural development activities are based on designations in the Placer County General Plan. The general plan and implementing zoning may be changed over the course of the PCCP permit to allow changes in land use type in Foothills CRD (A4), so long as the following terms are met:

- The land remains in rural or agricultural use or is compatible with rural or agricultural general plan designations;
- Land use intensity is not increased; and
- Residential density is not increased.

Activities that do not meet the criteria listed above are not prohibited by the PCCP, but they are not specifically covered by the PCCP. Project proponents who seek approvals or entitlements inconsistent with the above criteria cannot receive exemptions for take under the PCCP and may not begin implementation of a project without obtaining permits from the relevant State or Federal agencies.

1.3.3.5 Regional Public Programs

Regional public programs involve construction of new facilities and operation and maintenance (O&M) of new and existing facilities. These public projects will serve the existing and future Placer County and City of Lincoln residents during the permit term. The programs are typically funded through a variety of sources, and public projects are frequently listed as capital improvement programs in adopted plans or programs. Projects 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 Plan Area A are covered under the PCCP. Specific activities/projects in permittee activity in non-participating city jurisdiction (B1) and PCWA Zone 1 O&M (B2) are covered, as noted below. Regional public programs are divided into six categories by public facility provider, such that similar activities are grouped together:

- Transportation

- Wastewater
- Water supply (surface and groundwater)
- Solid waste management
- Public parks
- Utilities

All activities will follow the best management practices (BMPs) and avoidance/minimization measures described below.

1.3.3.5.1 Transportation

Transportation programs activities covered under the PCCP may occur anywhere within Plan Area A and as permittee activity in non-participating city jurisdiction (B1). Covered transportation activities include:

- Placer County and City of Lincoln road projects, including new lanes, new connections, extensions, widening, and realignment projects. Projects may include trails for pedestrian and bicycle use.

- Placer County and City of Lincoln 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.

- Placer County and City of Lincoln maintenance of new and existing transportation facilities, including appurtenant drainage and water quality infrastructure.

- New roads constructed in association with urban or rural development will usually be installed by the developer, and Placer County or the City of Lincoln 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.

Two major transportation projects summarized below are already planned to occur within the permit term.

Placer Parkway is a new project for an east-west roadway linking SR 70/SR 99 in Sutter County to SR 65 in Placer County. The Placer Parkway and its interchanges will be covered by the PCCP, both in Plan Area A and within permittee activity in non-participating city jurisdiction (B1). Further details on this project can be found in the PCCP (Placer County 2020b) or at http://pctpa.net/placerparkway/.

SPRTA plans improvements to the I-80/SR 65 interchange. The I-80/SR 65 interchange project will be covered under the PCCP in permittee activity in non-participating jurisdiction (B1). A portion of this project has already occurred, was subject to ESA section 7 consultation in 2015 (NMFS 2015), and will not be covered under the PCCP. Further details on this project can be found in the PCCP (Placer County 2020b) or at http://8065interchange.org/.

In addition to the two projects above, as part of the general plan, the City of Lincoln anticipates the construction of three interchanges along SR 65 in Plan Area A.

All routine road maintenance activities by permittees that occur within Plan Area A and permittee activity in non-participating city jurisdiction (B1) are covered by the PCCP. Routine road maintenance work means work performed regularly, such as every one to five years, in the plan area. PCWA will also perform routine maintenance on its facilities, including canal maintenance roads and roadway/parking lots associated with its facilities. Routine maintenance work covered under this plan includes, but is not limited to:

- Road signage maintenance or replacement;
- Traffic control device maintenance or replacement;
- Guardrail, fence, or crash cushion inspection, maintenance, or replacement. Median or shoulder barriers will be replaced with structures that are safe for vehicles and, where applicable, wildlife-friendly barriers will be used as specified in chapter 6 of the PCCP (Placer County 2020b);
- Pavement maintenance or resurfacing, including replacement of striping and markers;
- Tree trimming or removal within the road right-of-way for safety;
- Debris collection and removal on roads, trash racks, and shoulders;
- Storm and natural disaster damage repair;
- Vehicle accident repair and cleanup;
- Weed control (the use of herbicides is not covered by the Federal permits and therefore its use cannot result in take of Covered Species);
- Mowing of medians and shoulders for fire hazard reduction;
- Grading of shoulders (up to 20 feet from the edge of paved or unpaved roadways);
- Grading of existing public dirt roadways;
- Repair or replacement of retaining walls;
- Roadside drainage ditch clearing;

- Maintenance of water quality facilities (*e.g.,* oil/grit separators or low-impact development features);

- Curb, gutter, and sidewalk maintenance, repair, retrofit, or replacement.

1.3.3.5.2 Wastewater Programs

Placer County and the 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. Placer County is responsible for O&M of the sewer system in the community of Sheridan. Placer 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 of Lincoln'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 PCCP. The City of Lincoln 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 Mid-Western Placer Regional Sewer Project will result in the closure of Placer County's Sewer Maintenance District 1 Wastewater Treatment Plant and conveyance of untreated wastewater to the City of Lincoln's Wastewater Treatment and Reclamation Facility. The maintenance of this regional pipeline, pump stations, and related infrastructure is considered a Covered Activity.

The PCCP will provide coverage for permittee wastewater projects including:

- Treatment plant construction or expansion, including installation of pipelines;
- O&M;
- 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 (B1). Wastewater projects that are currently planned can be found in table 2-9A of the PCCP (Placer County 2020b) and are incorporated by reference.

Sewer pipeline O&M includes activities within the plan area to prevent deterioration of infrastructure necessary for wastewater conveyance. Routine maintenance work is defined in the PCCP as work performed regularly, every one to five 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. Maintenance activities that are proposed for coverage under the PCCP include:

- Mechanical root removal, including the use of a drain snaking rotor with an auger that cuts at the tree root incursion with a rotating blade;

- Rehabilitation, repair, and/or replacement of pipelines and components including, but not limited to, air release valves, piping connections, joints, and appurtenances. Activities may include excavation to access pipelines;

- Sewer pipe sliplining is a trenchless rehabilitation of existing pipelines. Sliplining is used to repair leaks or restore structural stability to an existing pipeline. Sliplining is completed by installing a smaller "carrier pipe" into a larger "host pipe," grouting the annular space between the two pipes, and sealing the ends;

- Replacement/repair of buried service valves, including valves within creek embankments that may require excavation and minor bank stabilization activities;

- Maintenance of pipeline turnouts, including access to pipelines;

- Replacement/repair of appurtenances, fittings, manholes, and meters;

- Wastewater vault maintenance, which includes minor repairs and debris removal;

- Wastewater meter inspections and repairs;

- Maintenance of pump stations, operation yards, utility yards, and corporation yards;

- Facility access road repairs and maintenance, which is limited to existing roads.

1.3.3.5.3. Water Supply Programs

Permittees PCWA, Placer County (for Sheridan community), and the City of Lincoln will supply present and future water users in the plan area and portions of the non-participating cities. The PCCP covers the collection and conveyance of raw water from surface and groundwater sources to treatment plants or directly to consumers. In most cases, the distribution of treated water does not require incidental take coverage. Two raw water suppliers in Placer County, Nevada Irrigation District (NID) and the South Sutter Irrigation District, are not permittees, but could participate with the PCA in a project and would be covered by the PCCP.

PCWA Covered Activities include O&M of its raw water distribution system, future capital improvement projects within the plan area, and future construction of PCWA water supply facilities to meet the needs of residential, commercial, public facility, and industrial construction within the plan area (*e.g.,* new water supply, treatment and delivery infrastructure, O&M of new water supply, treatment, and delivery infrastructure).

Covered PCWA water supply activities may occur anywhere within Plan Area A and permittee activity in non-participating city jurisdiction (B1). PCWA O&M of existing facilities is covered in PCWA Zone 1 O&M (B2). PCWA planned O&M and planned capital improvement projects are presented in Table 2-9B of the PCCP (Placer County 2020b) and are incorporated by reference.

PCWA uses a variety of canals, pipelines, and other infrastructure to distribute water to its customers throughout Placer County. Most of PCWA's raw water distribution is facilitated by gravity flow through the canal system. PCWA monitors regulating gates and staff gauges throughout the system. PCWA uses collected information to make water purchases and to adjust deliveries according to water demands and weather conditions.

Most of the water supplied by PCWA comes from surface water sources. The majority of water deliveries to PCWA's raw water distribution system depend wholly on PG&E's hydropower operations of the Drum-Spaulding hydroelectric system. PG&E's Drum-Spaulding water supply originates in the upper Yuba River basin, augmented by Bowman Lake and Lake Spaulding on the South Yuba River and Rollins Reservoir on the Bear River. Water is conveyed primarily via the Drum, Bear River, and Upper Boardman canals. PCWA has standing contracts for more than 125,000 acre-feet of water per year delivered at designated points for subsequent conveyance by PCWA to defined service areas.

The American River Pump Station (ARPS) provides an additional source of raw water. ARPS is used to pump water from the north fork of the American River into the Auburn Ravine Tunnel. The Auburn Ravine Tunnel discharges into Auburn Ravine, delivering water to downstream agricultural customers. Water can also be pumped out of the Auburn Ravine Tunnel to supply PCWA's water treatment plants.

The following O&M activities for raw water distribution are included under the PCCP:

- 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.

PCWA 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. The use of pesticides, including herbicides and rodenticides, is not covered by this opinion or by USFWS' opinion. Canal cleaning is performed during the winter months and is scheduled a month or more in advance. Canal lining is conducted throughout the year.

Other maintenance projects performed on an infrequent basis by PCWA include sediment removal from reservoirs and dams, as well as reservoir and canal berm maintenance related to damage by muskrats, beavers, and otters. The PCWA Natural Resource Management Plan, Appendix E of the PCCP (Placer County 2020c), does not consider these infrequent maintenance projects in its analyses so for this opinion, we assume that they will occur once every ten years. PCWA intends to have staff evaluate potential impacts to environmental resources from these maintenance projects and prepare environmental documents to satisfy CEQA requirements. If

these activities occur more often than once every ten years and impact covered fish species, additional ESA coverage may be required as well.

Occasionally, activities are necessary to ensure that water supplies are maintained and to prevent future problems from occurring. The maintenance activities described below are covered by the PCCP. Water supplies to the plan area come from the Yuba, Bear, and American Rivers. The Clover Valley, Ben Franklin, Caperton, Whitney, McCrary, and Mammoth Reservoirs lie within the plan area. These reservoirs contribute to the streamflows in Clover Valley Creek, Antelope Creek, Secret Ravine, and Miners Ravine. Activities that are covered under the PCCP include:

- Periodic outages for canal cleaning, repair, or sediment removal;
- Repair and replacement of treated and raw water distribution facilities, including pipeline flushing and meter replacement. These facilities include pipelines, flumes, culverts, siphons, outlet structures, flow control structures, customer delivery points, pressure-reducing stations, and appurtenances;
- Perform emergency repairs;
- Canal lining, usually with sprayed-on cementitious mortar, also known as shotcrete or gunite, and piping;
- O&M of water supply, treatment, and delivery infrastructure, including water storage tanks, pump stations, connecting transmission lines, and their appurtenances.

For PCWA emergency repairs, we assume that these will generally be of a similar scope to other repairs. If they exceed the scope of other Covered Activities and impact Covered Species in a manner not considered in this opinion, additional consultation may be required.

PCWA will undertake a number of capital projects for new surface and groundwater supply, treatment, storage, and delivery infrastructure over the term of the PCCP. These include water supply projects, groundwater wells, transmission and distribution pipelines, metering station installations, water treatment and storage facilities, corporation yards, pump stations, and facilities and administration buildings.

The largest of the capital improvement projects will be the West Placer water supply projects. This comprises 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 operations of the West Placer water supply projects are not a Covered Activity. However, development projects and associated public infrastructure within the plan area that will use this new water supply are covered. Therefore, the effects in the plan area associated with the West Placer water supply projects, such as effects of expansion of the water supply due to growth within the PCCP plan area, are covered by the PCCP.

O&M 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 under the PCCP. The Placer County Environmental Engineering and Utilities Division operates and maintains Sheridan's public water system and provides design support as needed. 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 and will be evaluated as the need arises.

The City of Lincoln has been partnering with NID to develop a water supply system for the provisioning of treated water to future customers within the City of Lincoln General Plan boundaries and the NID 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 NID service district. The Covered Activities from the proposed project would involve the construction of approximately 16.3 miles of pipeline, raw water storage, and a water treatment plan and ongoing O&M of those facilities in Plan Area A.

1.3.3.5.4 Solid Waste Management Facility Programs

Solid waste management facility programs include O&M, 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 Placer County are covered in permittee activity in non-participating city jurisdiction (B1).

The PCCP will also cover post-closure maintenance activities and the future property use as open space, which may include public recreation (*e.g.,* trails), agriculture, grazing, or other activities compatible with post-closure conditions that might be constructed in the future.

Solid waste management projects that are expected to occur within the PCCP permit term can be found in Table 2-9C of the PCCP (Placer County 2020b) and are incorporated by reference.

WPWMA, who may apply to be a participating special entity, operates the Western Regional Sanitary Landfill (WRSL). The WRSL is currently permitted for waste disposal through 2058. The landfill practices methane gas collection and WPWMA has contracted with Energy 2001 to use most of the gas to generate electricity. When the landfill reaches capacity, it will be capped to prevent liquids from coming into contact with the refuse. Landfill expansion that could take place on two adjacent properties is likely to occur during the PCCP permit term and is a Covered Activity. Solid waste activities that could take place on the existing facility property or either of the two adjacent properties as a result of the expansion include:

- Siting a new landfill;
- Producing energy through landfill gasification;
- Pyrolysis (*i.e.*, decomposition brought about by high temperatures);

- Anaerobic digestion (*i.e.*, breakdown of biodegradable material in the absence of oxygen);
- Other waste-conversion technology;
- Relocating the compost facility, 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.

The materials recovery facility (MRF) is a WPWMA program to help Placer County communities meet California's Assembly Bill 341 mandated recycling goals of diverting at least 75 percent of the waste stream from landfills by 2020. The MRF receives and sorts through municipal and commercial waste to recover recyclable materials including wood, green waste, metals, plastics, glass, paper, junk mail, phonebooks, magazines, scrap paper, paperboard, and cardboard. Yard waste is converted to soil through a composting process. Materials that cannot be composted or recycled and marketed are disposed of at the WRSL. Ongoing operations, relocation, or construction of a new MRF will be a Covered Activity.

The Placer County Department of Public Works owns and operates the Loomis Landfill, a closed unlined Class III landfill. The landfill was closed in 1986. A closure plan was adopted in 1996 and describes how corrective actions, final closure, and post-closure maintenance activities meet the requirements of the California Code of Regulations.

Corrective actions include:

- Installation of a low-permeability cover to reduce infiltration of rainwater;
- Installation of a vegetative layer to protect the low-permeability cover to reduce erosion and minimize cracking of the cover; and
- Installation of an in-fill landfill gas control system to eliminate or reduce migration of landfill gas.

Loomis Landfill was closed in 1998. Post-closure maintenance activities will be implemented for not less than 30 years after final closure (*i.e.*, until at least 2028). Post-closure maintenance activities include:

- Maintenance and monitoring activities for the final landfill cover;
- Drainage systems;

- Vegetative cover;
- Final grading;
- Landfill gas collection system;
- Leachate collection;
- Disposal.

The post-closure land use of Loomis Landfill will 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.

1.3.3.5.5. Public Recreation-serving Activities

Permittees' recreation-serving activities, including establishing and maintaining public recreation facilities, are Covered Activities, although public use of the facilities is not. Public parks and recreation activities include construction of new parks, adaptation of existing public lands for enhanced recreational access, and O&M of all facilities. Many Placer 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.

Crossing of streams by trails will be discussed in the in-stream activities section below (section 1.3.3.6). Passive forms of recreation may be allowed on some lands acquired for the reserve system. Construction and maintenance of trail and other recreation facilities on the reserve system will be discussed in the conservation programs section below (section 1.3.3.7).

The construction of new parks is a Covered Activity. Placer County and City of Lincoln parks will include trails, recreation facilities, and other park infrastructure including restrooms, parking areas, maintenance facilities, wildlife observation platform facilities, and education 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. A new fairground will include multiple venues for year-round use.

Placer County and City of Lincoln will maintain and manage park and open space areas as Covered Activities within the PCCP. This includes:

- Trail and road maintenance (*e.g.,* grading, clearing, brushing, erosion control, paving, re-paving and trail restoration);
- Installation of fencing;

- Facility maintenance;
- Prescribed burns;
- Pond maintenance (including draining and dredging); and
- Invasive vegetation management (including removal of invasive species, planting of native vegetation, and livestock grazing).

If a park is to be included as part of the reserve system, details for maintenance will be provided within the reserve management plan, as described in section 5.3.2.1 of the PCCP (Placer County 2020b).

Hidden Falls Regional Park 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 PCCP and will include additional roads, trails, staging and parking areas, 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 a Covered Activity. Public uses of the parks are not covered. Public uses of the park include hiking, running, biking, horseback riding, fishing, picnicking, wildlife viewing, and photography. Park amenities currently 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.

1.3.3.5.6. Utility Line Construction and Facility Maintenance

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. Covered utility line construction and facility maintenance activities may occur anywhere within Plan Area A (Plan Areas A and B are defined in section 2.3, Action Area).

Public and private utility actions that are directly subject to the authority of a permittee are Covered Activities. 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 PCCP. Some energy or water utilities may already have their own endangered species permits for their activities (*e.g.*, PG&E is developing its own HCP for O&M activities) and will therefore not require coverage under the PCCP. A utility may request coverage under the PCCP for routine maintenance and repair of existing utilities within the plan area as a participating special entity.

Maintenance or repair of linear facilities may involve vegetation clearing (*e.g.*, mowing, disking, herbicide spraying, tree trimming) or excavation of underground utility lines for inspection, maintenance, or replacement. The routine maintenance of utility lines in the plan area is a Covered Activity under the PCCP, except for the use of pesticides, which is not covered by the federal permits. Coverage for utility line or facility maintenance that takes place in the reserve

system will be decided on a case-by-case basis and the permittee may need to consult with the resource agencies as needed.

1.3.3.6 In-stream Activities

This category addresses projects that occur within streams and may result in effects on a stream, reservoir, or on-stream pond. This category includes O&M activities in the stream channel, along the streambank, and on adjacent lands at top-of-bank within the riparian corridor. Covered in-stream activities may occur anywhere within Plan Area A.

In-stream activities covered under the PCCP include:

- Urban and rural development and public program activities described above under sections 1.3.3.1 to 1.3.3.5, valley PFG through regional public programs, that overlap with the stream system and the adjacent riparian corridor, including transportation, water supply, waste management, and stormwater management;

- Bridge construction, replacement, and repair, including vehicular, train, and pedestrian bridges;

- 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, maintenance of access roads, beaver dam removal, stormwater conveyance facilities and outfall structures, erosion/sediment control, bank stabilization, and floodplain enhancement;

- 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.*, sandbagging and earth-fill levees);

- Vegetation management for invasive 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);

- O&M of water system facilities that are located in-stream;

- Implementation of resource management plans;
- Water utility/water supply O&M activities associated with habitat enhancement and restoration that will be conducted inside and outside the reserve system are identified in section 1.3.3.7 conservation programs;
- Implementation of the riverine and riparian conservation and management strategies of the PCCP, including cleaning/removing sediment from gravel beds and augmenting gravel to streambeds, among other in-stream conservation activities.

Some in-stream projects are intended to mitigate, enhance, or restore stream and riparian functions. Since 2013, a number of restoration activities have been undertaken in the plan area and more are expected in the future.

1.3.3.6.1. Bridge Construction and Replacement/Rehabilitation

Placer County and the City of Lincoln operate and maintain bridges within the plan area and have permit authority over privately constructed and maintained stream crossings. The existing distribution of stream crossings is shown in figure 2-10 of the PCCP (Placer County 2020b).

The lifespan of a typical bridge is approximately 50 years. Most of the bridges within the plan area will be replaced or rehabilitated during the PCCP's permit term. Additionally, as development within rural and urban areas progresses, new bridges will need to be constructed. It is estimated that there will be construction of up to 75 new bridges over the 50-year permit term. New and rehabilitated bridges will be designed and constructed consistent with Federal and State guidelines. Bridge construction and replacement/rehabilitation activities covered by the PCCP may occur anywhere within Plan Area A and permittee activity in non-participating city jurisdiction (B1).

New construction, repair, and replacement, including expansion, for all existing bridges conducted by permittees within Plan Area A and Plan Area B1 are Covered Activities. Figure 2-10 of the PCCP (Placer County 2020b) shows the location of several planned major bridge projects. Other yet-unplanned stream crossings will be associated with future growth, mainly in the PFG areas where the density of stream crossings will increase, similar to the density of crossings in the built-up portion of non-participating cities, as shown in figure 2-10 of the PCCP (Placer County 2020b).

In most cases, replacement bridges will be wider than the bridges they replace, in compliance with changing regulations. Some roads may be widened to accommodate growth in vehicular traffic, bicycles, and pedestrians. Road widening will require adding imported borrow and new asphalt, concrete, and aggregate base for pavement.

Where free-span bridges are not feasible, bridges will be built on pile foundation, cast-in-drilled-hole pile, or spread-footing foundations. Excavation for foundations may be required. Where multiple span bridges are necessary, consideration will be made to locate the piers and foundations outside of the low-flow stream channel or away from other resources when feasible. Bridge repair and rehabilitation may be similar to bridge replacement in scope, often requiring roadway widening, new deck support structures, and seismic retrofitting.

Additional detail on the estimated extent of bridge and culvert work is provided in chapter 4 of the PCCP (Placer County 2020b).

1.3.3.6.2. Flood Protection Projects

The PCFCWCD was established in 1984 by the state legislature as a special district, separate from County government, to address flood control issues arising with growth. The PCFCWCD boundaries are the same as Placer County boundaries. Covered flood protection activities may occur anywhere within Plan Area A and permittee activity in non-participating city jurisdiction (B1). It is expected that PCFCWCD will become a participating special entity and, thus, will have activities covered under the PCCP.

PCFCWCD has several projects planned to address flood protection. These projects have been identified through various programs that provide different funding mechanisms and guiding principles of how projects will be planned and designed. Table 1 provides a list of flood control projects, including flood protection capital projects, anticipated to occur within the PCCP permit term.

Table 1. Flood control projects anticipated to occur within the PCCP permit term.

Activity	Description
Scilacci Farms Regional Retention Project	Stormwater retention project with wetlands and agricultural conservation easements located north and south of Raccoon Creek immediately east of the Sutter County line. Refer to section 2.6.6.2.1 of the PCCP (Placer County 2020b) for more details, which are incorporated by reference.
Regional Retention Projects within Cross Canal Watershed	Stormwater retention projects with wetlands and agricultural conservation easements within floodplain areas of stream within the general Cross Canal watershed, including Pleasant Grove Creek, Curry Creek, Auburn Ravine, Markham Ravine, and Raccoon Creek.
Dry Creek Watershed Flood Control Plan – Regional Detention Projects	Both on- and off-channel stormwater detention projects located throughout the Dry Creek watershed. Refer to section 2.6.6.2.3 of the PCCP (Placer County 2020b) for more details, which are incorporated by reference.
Dry Creek Watershed Flood Control Plan – Regional Floodplain Restoration Projects	Floodplain restoration/reconnection projects located throughout the Dry Creek watershed. Refer to section 2.6.6.2.3 of the PCCP (Placer County 2020b) for more details, which are incorporated by reference.
Dry Creek Watershed Flood Control Plan – Bridge/Culvert Replacement Projects	Bridge and culvert improvement projects throughout the Dry Creek watershed.
ALERT Flood Warning System of Precipitation and Stream Level Gages	Installation, monitoring, and maintenance of remote stream data sensors throughout Dry Creek and Cross Canal watersheds.
Dry Creek Watershed Stream Channel Maintenance Program	Stream channel clearing and conveyance maintenance activities throughout flood-prone locations within Dry Creek watershed.
Operations, Monitoring, and Maintenance Activities at PCFCWCD's Miners Ravine Off-channel Detention Basin Facility	Routine annual maintenance and monitoring as well as non-routine maintenance and operation activities at PCFCWCD's facility located in Roseville, California.

Flood control O&M activities that may occur throughout the plan area streams include, but are not limited to, installation, monitoring, and maintenance of remote stream data sensors; stream channel clearing; vegetation and debris removal; and conveyance maintenance activities.

Many of the planned flood control capital improvements incorporate design elements that provide on-site avoidance, minimization, and mitigation for both in-stream and riparian habitat. Enhancement and creation of riparian habitat will be coupled with the removal of invasive species and planting of native species. In-stream design elements could include fish passage improvement through the removal of fish barriers, placement of fish ladders, and other in-stream habitat enhancements. Additional design elements may be incorporated to protect in-stream water quality by reducing erosion, sedimentation, and turbidity, as well as removing unauthorized storm drain outfalls. The plans summarized below have been prepared to prioritize projects within the watersheds.

Changes in agricultural practices on the Scilacci Farms property are proposed to relieve flood pressures along levees in the Cross Canal. The 456-acre Scilacci Farms property currently consists of about 330 acres in rice production, 55 acres in wheat production, a remnant 39-acre riparian valley-oak and cottonwood-willow riparian forest, a 22-acre fallow rice field restorable to riparian forest, seven acres of wetlands, and other miscellaneous agriculturally managed areas. The property provides habitat for a variety of wildlife species, including amphibians, reptiles, birds, and mammals. The proposed project will be to place the property under a conservation/flood control easement and manage the land for agricultural production, ecological function, and flood protection. In addition to these goals, the project will allow for the realization of important restoration goals on the property. Both oak woodland enhancement and riparian restoration will be part of this project. The easement and restoration work intends to provide ecological benefits including flood protection, erosion control, and water quality enhancements. The Scilacci Farms project will utilize several of the strategies recommended in the ecosystem restoration plan (ERP) for the Raccoon Creek watershed.

The Lakeview Farms volumetric mitigation facility is a capital flood control project within the unincorporated portion of Placer County that will be constructed by the City of Lincoln. This project will help ensure the protection of life and property from flooding as the City of Lincoln and Placer County grow. The City of Lincoln has purchased 456 acres north of Waltz Road in the unincorporated portion of Placer County to construct an off-channel (off Raccoon Creek) retention facility for flood control purposes. The project is being constructed in phases to passively capture flood water during a 100-year event. Phase one of the project will be developed on 160 acres retaining an additional 1,570 acre-feet of water. The site will function as a retention basin only in extreme (100-year or greater) storm events during the rainy season of October through April and will remain in rice production from approximately March through September. Raccoon Creek's peak flows can range from several hundred cubic feet per second (cfs) to more than 22,000 cfs in a 100-year event. Because the stream channel is generally shallowly incised and meandering, high-flow events are not contained within the channel and extensive overland flow occurs. It is common for flood waters of one to two feet to occur on the Lakeview Farm property. Raccoon Creek includes 33.3 river miles of channel between the Cross Canal and Dry Creek Dam. The flood reduction benefits of the planned improvements are difficult to quantify without hydrologic modeling. The Raccoon Creek ERP found that stormwater runoff from developed areas is a major source of water quality degradation in Raccoon Creek. By protecting this property from future development, stormwater runoff from the site will not be degraded due to urbanization.

The Dry Creek Watershed Flood Control Plan (Placer County 2011) is to provide PCFCWCD and other governmental agencies in both Placer and Sacramento Counties with the information and policies necessary to manage flood waters within the Dry Creek watershed, which includes Miners Ravine, Linda Creek, Secret Ravine, Antelope Creek, Cirby Creek, Clover Valley Creek, and mainstem Dry Creek. The plan evaluates existing flooding problems and identifies flood management options, as well as a funding mechanism to achieve plan recommendations. Capital project elements within this plan include on- and off-channel stormwater detention projects located throughout the watershed, floodplain restoration and reconnections, bridge and culvert improvement projects, and improvements to underground conduits and artificial and natural channels.

The Cross Canal Watershed Flood Control Plan (Auburn Ravine, Coon, and Pleasant Grove Creeks Flood Mitigation) (CH2M Hill 1993) provides PCFCWCD and other governmental agencies in Placer, Sutter, and Sacramento Counties with the information and policies necessary to manage floodwaters within the Cross Canal watershed, which includes Pleasant Grove, Curry Creek, Auburn Ravine, Markham Ravine, and Raccoon Creek. Activities associated with this plan will be covered under the PCCP, including the following:

- Flood management;
- Stormwater retention projects;
- Conservation easements over existing agricultural and wetland areas, compatible with periodic flooding, that fall in Placer County.

The plan evaluates existing flooding problems and identifies flood management options, as well as a funding mechanism to achieve plan recommendations. State and Federal grant funding, will support PCFCWCD and its co-sponsors' efforts to acquire flood and habitat conservation easements to manage and improve the floodplain and associated natural communities within this watershed. PCFCWCD's pursuit of flood and conservation easements on rice production lands will complement efforts on nearby agricultural lands, including a site protected by the California Department of Water Resources (DWR) that also provides improved floodplain and riparian protection. These nearby properties include the 138-acre Lakeview Farms Conservation project, as well as the Lakeview Farms Natural Resources Conservation Service conservation easements that are part of a larger restoration effort within the Raccoon Creek watershed. Wetlands will be reconstructed to benefit waterfowl and migratory birds that are found in the area. Acquisition of flood and conservation easements in these areas will conserve agricultural lands adjacent to Auburn Ravine and Raccoon Creek in an area of increasing development pressure. The goals of the Cross Canal Watershed Flood Control Plan are as follows:

- Quickly and efficiently provide increased volumetric storage (retention) within the existing floodplain during a 100-year flood event;
- Preserve and maintain wetlands;
- Preserve open space, providing linkages with surrounding preserve areas;
- Benefit migratory birds and wildlife;

- Maintain habitat and connectivity for State and Federal species of concern;
- Provide flood control benefits quickly and at relatively low cost per acre-foot of storage.

1.3.3.6.3. Streamside Trails and Crossings

Placer County and the City of Lincoln, as well as other non-profit entities (*e.g.*, Placer Land Trust), lead or participate in programs to construct passive recreational trails in parks, as identified above in section 1.3.3.5.5., public recreation-serving activities. New trails are sited outside of the in-stream area to the extent possible to avoid effects on riparian vegetation and streams. However, some trails will need to cross streams and will require installation of bridges or other types of crossings. Trails may also be implemented as a component of other types of projects, such as flood protection projects or levee reconstruction. In such cases, trails will generally be sited along maintenance roads or in other disturbed areas and will not result in additional effects beyond those attributed to the main project. Streamside trail projects will be a Covered Activity under the PCCP. For more details on trail projects as a Covered Activity, see section 1.3.3.5.5., public recreation-serving activities, or section 2.6.5.5 in the PCCP (Placer County 2020b).

1.3.3.7 Conservation Programs

1.3.3.7.1. PCCP Management Activities

In addition to the projects and activities described above, the PCCP provides coverage for activities associated with the implementation of the conservation strategy. The management activities that will be used on the reserve system are described in detail in chapter 5 of the PCCP (Placer County 2020b), conservation strategy. Implementation of the conservation strategy may occur anywhere in the plan area, but most of these activities will take place within the reserve system assembled in Plan Area A. Some conservation activities may also occur outside of the reserve system, specifically as associated with in-stream conservation measures discussed above in section 1.3.3.6, in-stream activities, and in Plan Area B, Big Gun Conservation Bank (B5), for California red-legged frog.

1.3.3.7.1.1. Habitat Enhancement, Restoration, Creation, Translocation, and Reserve Management

This category includes all management measures, including habitat restoration and creation, required by the PCCP or other measures that might be necessary to achieve PCCP biological goals and objectives, summarized below in section 1.3.4 and in PCCP chapter 5 (Placer County 2020b). The PCCP's conservation strategy sets forth requirements for habitat enhancement, restoration, and creation. Enhancement and management actions that will be used within the reserve system are described in detail in chapter 5 of the PCCP, conservation strategy (Placer County 2020b), which is incorporated by reference.

The PCCP includes a stay-ahead provision, detailed in PCCP section 8.4.3, which will minimize temporal loss of habitat. This will be demonstrated by showing that, at any given time, the cumulative conservation expressed as a percentage of the protection commitment is greater than the cumulative impact expressed as a percentage of the maximum extent of effects as proposed

in the PCCP. When PCCP implementation begins, the PCA will be establishing its structure, collecting implementation fees, and pursuing land acquisitions. To allow time for these start-up tasks to occur, the stay-ahead provision will not apply during the first 2 years of implementation (*i.e.*, during the first 2 years after implementation begins). After this time, the PCA will demonstrate compliance with the stay-ahead requirement. At the end of each calendar year, the PCA will show that the amount of each natural community and constituent habitat protected, restored, or created by the PCA is equal to or greater than the impacts on that community and constituent habitat for all Covered Activities (see section 8.4.3.2 of the PCCP, measure of compliance).

Restoration and creation are important components of the conservation strategy. Restoring and creating new wetlands will permanently affect existing, pre-restoration/creation habitat by converting that habitat, generally agricultural land, grasslands, or disturbed land cover, to wetlands and other natural communities (*e.g.*, valley oak woodland). Habitat restoration and creation activities will generally be disruptive only in the short term. These activities may include soil disturbance, removal of undesirable plants, and limited grading. All habitat restoration and creation is expected to result in a net long-term benefit for Covered Species and natural communities. These activities may have temporary or short-term adverse effects to Covered Species. All habitat enhancement, restoration, and creation activities may also be conducted outside the reserve system. If such activities occur and are consistent with the PCCP, they are covered by the ITP. Examples of such activities include restoration projects conducted as mitigation that require additional coverage beyond the self-mitigating aspects inherent to most restoration projects. Examples of habitat enhancement, restoration, creation, and reserve management activities include, but are not limited to:

- Management measures identified in PCCP chapter 5, conservation strategies (Placer County 2020b), intended to maintain, enhance, restore, and create habitat for Covered Species;

- Vegetation management, including management of invasive plants, using livestock grazing, mowing, manual labor, and/or prescribed burning. Pesticide use is permitted under the PCCP only to achieve biological goals and objectives (*e.g.*, invasive plant or invasive animal control), in accordance with label instructions, and in compliance with State and local laws. Pesticide use is only covered under the NCCP, not the ESA. Implementation of integrated pest management programs established by the local jurisdictions is only a Covered Activity if pesticides are used to achieve invasive plant or invasive animal control. Any pesticide use must comply with the U.S. Environmental Protection Agency's (EPA's) Endangered Species Protection Program;

- Relocation of Covered Species from affected sites and within the reserve system where effects are unavoidable and relocation has a high likelihood of success. This is expected to occur in very limited circumstances subject to NMFS review and approval;

- Demolition or removal of structures, roads, or man-made livestock ponds to increase public safety or to restore habitat;

- Control of introduced predators (*e.g.*, feral cats, feral dogs, pigs, non-native fish, bullfrogs);

- Surveys and monitoring for mitigation and restoration/habitat enhancement projects;

- Use of motorized vehicles for patrolling, maintenance, and resource management activities in the reserve system;

- Use of mechanized equipment for construction, maintenance, and resource management activities in the reserve system;

- Installation of wells, canals, irrigation lines, and other water conveyance facilities, the water from which will be used to fill stock ponds, troughs, and other storage facilities for cattle;

- Travel through the reserve system by habitat managers or wildlife agency personnel. Off-trail travel will be kept to the minimum amount necessary to perform maintenance, management, or patrol activities;

- Fire management including prescribed burning, mowing, and fuel-break establishment and maintenance;

- Repair of existing facilities damaged by floods, landslide, or fire;

- Restoration and enhancement projects in streams, riparian areas, wetlands, and uplands;

- Fish passage enhancements including removal of fish barriers, such as low-flow crossings, and development of fish screens, described further in section 1.3.3.7.2.1.

1.3.3.7.1.2. Monitoring and Research

Biologists will conduct surveys for all Covered Species, natural communities, and other resources within the reserve system on a regular basis throughout the permit term for monitoring, research, and adaptive management purposes (see section 1.3.3.7.1.3.). Surveys will help to track the conservation goals of the PCCP and will contribute to the adaptive management process. These surveys may require physical capture and inspection of specimens to determine, identify, and mark individuals, or measure physical features, all of which may adversely affect Covered Species. Surveys for Covered Species will also be conducted on private land being considered for acquisition for the PCCP. Surveys for all Covered Species will be conducted by qualified biologists. All such survey activity associated with the PCCP will be covered by the ITP.

Research conducted by biologists on PCCP reserves associated with the PCCP is covered by the ITP, as long as the research projects have been determined by the PCA and/or the interagency working group (described below) to have minimal effects on populations of Covered Species. Research on PCCP reserves unrelated to the PCCP is not covered by the ITP because the nature and effects of these future research projects cannot be predicted at this time. Such researchers will be granted access to reserve system properties on a case-by-case basis and such access will be conditioned on compliance with the terms of the PCCP.

Plan Area streams within the reserve system in the Bear River, Raccoon Creek, Auburn Ravine, and Dry Creek watersheds supporting covered fish species will be surveyed to document the status of CCV steelhead, CV fall-run Chinook salmon, and CV late fall-run Chinook salmon. Ongoing efforts and existing plans in plan area watersheds (*e.g.*, monitoring by Dry Creek Conservancy, Auburn Ravine/Raccoon Creek Ecosystem Restoration Plan) can provide a framework for elements of the PCCP's survey approach. Status will be documented by quantifying the number of spawners returning to streams. Some plan area streams are currently surveyed periodically for CCV steelhead, CV fall-run Chinook salmon, and CV late fall-run Chinook salmon by CDFW, Dry Creek Conservancy, and other partners. The PCA will report acquisition of spawning and migration habitat and riparian and oak woodland habitat (stream miles, acres, and location) for covered fish.

The PCA will collaborate with the wildlife agencies (NMFS, USFWS, and CDFW), the Dry Creek Conservancy, and other partners to continue monitoring and documenting covered fish in these stream systems and expand monitoring efforts to key stream reaches within acquired PCCP reserves. The PCA will coordinate its activities with existing salmonid monitoring programs to ensure that efforts are not duplicated and are complementary.

Visual surveys may be used along key or targeted stream reaches to count live adults, carcasses, and/or redds, if appropriate. Visual surveys can be difficult for CCV steelhead and other winter spawners, due to increased turbidity and high flows. Surveys will be conducted before, during, and after the spawning season for each species (generally fall and winter months). Monitoring protocols will be adopted as feasible to ensure consistency with these local and regional monitoring efforts.

Surveys in acquired parcels will assess habitat condition, if necessary, to better understand the status of species. This habitat assessment may consist of the following components:

- Assess the habitat quality of streams that support covered fish. Habitat features that may be used to characterize habitat quality include, but are not limited to:
    - Water conditions (*e.g.*, temperature, flow, depth)
    - Presence, quantity, and condition of gravel substrate suitable for spawning and egg/alevin incubation for each species
    - Percent of fine sediment in spawning gravel
    - Percent of stream length with riffles, runs, and pools
    - Quantity of instream cover (*e.g.*, large woody material and cut-banks)
    - Percent overhanging vegetation
    - Miles of available off-channel and floodplain habitat
    - Pool attributes, such as frequency (riffle:pool ratio), area, and depth

    - Channel width, configuration, and channelization features, including quantity of hardened (*e.g.*, rip-rapped) banks
    - Barriers to movement (*e.g.*, beaver dams, waterfalls, and manmade dams)
- Assess condition of riparian habitat. Habitat features that may be used to characterize riparian habitat related to fish include, but are not limited to:
    - Off-channel/side channel habitat availability
    - Connectivity of stream to floodplain (*e.g.*, degree to which stream channel is incised)
    - Condition of streambanks
    - Percent canopy cover
    - Structural diversity

A number of biological goals and objectives were developed for fish, see section 5.2.7.9 of the PCCP, including several at the landscape, section 5.2.5 of the PCCP, and community level, see PCCP sections 5.2.6.2 and 5.2.6.3 (Placer County 2020b). The PCA will track compliance with these biological goals and objectives, including restoration of riverine/riparian habitat (especially migration and spawning habitat), removal or modification of fish barriers, and screening of water diversions.

The PCA will monitor the response of covered fish species to riparian restoration actions in target areas, including specific fish barrier removal sites and other selected in-channel enhancements, some of which are landscape or natural community goals and objectives. To do so, relative abundance of each species can be monitored before and after the action in or near the target reach and, as appropriate, compared to a nearby reference (control) site. The results of fish surveys before and after restoration will be compared. Responses by spawners can be measured as the total number of individual live fish, carcasses, and/or redds using visual counts. Responses by juveniles can be measured as the total number of individuals or catch per unit effort using snorkel surveys, nets, or other standard juvenile fish sampling techniques, depending on site-specific conditions. Restoration efforts will be focused on Raccoon Creek, Doty Ravine, and Auburn Ravine.

Many of the stream conservation measures involve removing or modifying barriers to increase connectivity for fishes and other species within riverine corridors. While barriers often restrict native species from moving within a riverine corridor, they can also restrict non-native species from invading otherwise pristine reaches. When barriers are removed within stream corridors that support native fish populations, the non-native competitor and predator fish populations will be monitored to determine how the barrier removal affects community dynamics and ultimately the relative abundances of covered fish species.

The Friends of Auburn Ravine, Dry Creek Conservancy, and others already have ongoing research/monitoring studies. PCA anticipates that through this ongoing work and additional

relationships, that PCA will work collectively and with the fish and wildlife agencies to design and implement studies in and around the West Placer salmonid streams. In terms of existing and ongoing studies, Placer County developed the Raccoon Creek Watershed Assessment (CBEC Inc. 2017), which identified several data gaps and study needs. As a result, Placer County has helped to fund and is tracking the progress of an eDNA study on Raccoon Creek and Doty Ravine. The second phase of that project will potentially utilize rotary screw traps. Placer County will work with William Jessup University, ECORP Consulting (study sponsors), and the wildlife agencies to potentially cover the study with the PCCP ITP to the extent it meets a fundamental PCCP study need. Otherwise ESA section 7 consultation with NMFS and other environmental permits will be necessary. The PCA intends to work with the fish and wildlife agencies to identify and implement additional research, monitoring, and grant funding opportunities.

Monitoring requirements for covered fish species include:

- Document presence of covered fish in the reserve system and at restoration and enhancement sites outside the reserve system.
- Report (acres and location) acquisition of spawning and migration habitat for covered fish.
- Report (acres and location) acquisition of oak woodlands for covered fish as part of compliance under the PCCP.
- Report (acres and location) actions to enhance habitat for covered fish that occur within and outside the reserve system.
- Track compliance with fish-specific management actions.
- Evaluate salmonid response to riparian enhancement.
- Monitor threats to covered fish.

1.3.3.7.1.3. Adaptive Management

Adaptive management is a decision-making process that will be used during PCCP 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 PCCP figure 7-1). Integrating adaptive management and monitoring is critical to the successful implementation of the PCCP conservation strategy. Monitoring is the foundation of an adaptive approach, and adaptive management actions are developed, in part, from the results of monitoring. See PCCP section 7.1.2, Adaptive Management for more details about how adaptive management will be conducted. PCCP section 7.6, Adaptive Management Program Implementation describes the elements and structure of the adaptive management program and lists the PCA's responsibilities for executing the program.

Adaptive management by the PCA will be advised by four groups: the wildlife agencies, science advisors, land managers, and the public. Wildlife agencies will provide feedback to the PCA

regarding proposed changes to PCCP 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, which will include representatives from USFWS, NMFS, and CDFW, described in PCCP section 8.2.6.4, Interagency Working Group. The science advisors are an independent group of scientists retained by Placer County (see PCCP section 1.4.5, Science Advisors) that will be consulted by the PCA regularly regarding PCCP implementation. The PCA 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 PCA 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.

1.3.3.7.1.4. Fuel Management

Each reserve system unit will have a fire management component included within the PCCP reserve management plans. The fire management component will describe site-specific conditions and actions required to:

- Reduce existing fuel loads;
- If permissible, re-introduce fire as a natural process of the ecosystem;
- Minimize environmental effects and protect sensitive resources; and
- Enhance and/or restore natural community characteristics.

Preservation of reserve lands in perpetuity will require that they be managed to reduce their susceptibility to catastrophic wildfire as well as to meet the ecological objectives of the PCCP.

Reduction of fuels has three main purposes:

- Reduce fire severity within reserves;
- Reduce the ability for a fire to spread from a reserve to adjacent lands; and
- Reduce the ability for a fire to spread from adjacent lands to a reserve.

Wildfire presents a significant threat to the sustainability of current and future conservation reserves. Wildfires that may start on conservation reserves pose a threat to adjacent properties.

Fuel treatments will be aimed at preventing or at least impairing the spread of fire and reducing fire severity. Fuel treatment zones include property boundaries, public roads, and the interior of reserve parcels. In oak woodlands, shaded fuel breaks may be used along roads, at property boundaries, and within parcels to impair fire spread. Fuel breaks can be used at the periphery of vernal pool grasslands. Fuel treatments in riparian woodlands should focus on the interface between the upland and riparian vegetation.

Within the reserve system, oak woodlands have the highest inherent wildfire risk. Overly dense riparian woodlands are second in degree of risk. Vernal pool grasslands have a relatively lower wildfire risk.

Several approaches will be used to reduce fuels. The choice of approach is affected by environmental constraints, costs, and other social and ecological considerations. The highest priority in the reserve system is to protect natural and semi-natural communities and Covered Species and their habitats. Any fuel treatment must meet this requirement. BMPs will be included in fuel treatments to prevent or minimize impacts on streams, cultural resources, wetlands, soils, wildlife, and PCCP Covered Species or other special-status species, see chapter 6 of the PCCP for more details (Placer County 2020b). The strategy should emphasize avoidance of effects to Covered Species and habitat.

1.3.3.7.1.5. Recreation Facilities and Trails

The PCCP will develop limited recreation opportunities within the reserve system according to the requirements in the PCCP (Placer County 2020b), refer to 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, for further details. These activities are expected to be minimal, but may include trails and associated infrastructure. The PCCP limits future reserves, not including jump-start lands, to 70 miles of trails, with an average width of six feet, 50 acres total. All trails and recreation facilities will be constructed to minimize effects on Covered Species and vegetation communities and in compliance with the guidelines in the PCCP (Placer County 2020b), refer to section 5.3.2.1, Reserve Management Plans, for further details.

Recreational uses will only be allowed within the reserve system if the PCA determines that they are consistent with the biological goals and objectives of the PCCP and are consistent with a reserve unit management plan approved by the wildlife agencies. Allowed uses will be specified in the reserve unit management plan and may include hiking, non-motorized bicycle riding, walking, horseback riding, fishing, hunting, wildlife observation, photography, and environmental education and interpretation on designated trails at appropriate sites or other similar low-intensity activities.

1.3.3.7.1.6. Reserve System Infrastructure

This category also includes construction, maintenance, and use of facilities needed to manage the reserve system including, but not limited to, reserve field offices, maintenance yards, maintenance sheds, workshops, storage space (*e.g.*, for machinery or vehicles), carports, driveways, roads, bridges, fences, gates, wells, stock tanks, stock ponds, and a native plant nursery to support restoration and enhancement projects. All reserve system management structures will be constructed to minimize effects on Covered Species and vegetation communities and in compliance with the guidelines in the PCCP (Placer County 2020b). Refer to section 5.3.2.1, Reserve Management Plans, and conditions on Covered Activities described in chapter 6, Program Participation and Conditions on Covered Activities for further details.

1.3.3.7.1.7. Emergency Activities

An emergency is a situation involving disasters, casualties, national defense, or security emergencies and includes response activities that must be taken to prevent imminent loss of human life or property (USFWS and NMFS 1998). Responses to changed circumstances within PCCP reserves that may affect populations of Covered Species are covered under the PCCP. Foreseeable emergency activities include, but are not limited to:

- Firefighting of small wildfires or structure fires;
- Evacuation of injured persons or livestock;
- Minor hazardous materials remediation, including remediation and cleanup of illegal dumping prior to acquisition;
- Repair of existing facilities damaged by floods or fire;
- Use of motorized vehicles for conducting activities.

Emergency responses that exceed ecological surrogates, see section 2.9.1. below, or are outside the scope of other Covered Activities may require additional consultation with NMFS and/or other wildlife agencies.

1.3.3.7.2. PCCP In-stream Conservation Activities

The PCCP provides coverage for projects and activities associated with implementation of the conservation strategy. In-stream conservation activities are covered anywhere they may occur in Plan Area A or permittee activity in non-participating jurisdiction (B1), Raccoon Creek floodplain (B3), or fish passage channel improvement (B4). Components B3 and B4 are located in Sutter County, just west of Placer County (see Figure 1 above). According to the PCCP (Placer County 2020b), Raccoon Creek in Placer County and those Sutter County plan components are currently under study to identify the effect of hydrology, water quality, channel geomorphology, and riparian vegetation on salmonids.

PCCP in-stream conservation activities may occur on private and public lands outside the reserve system. These actions will require agreements to be reached with landowners to allow the installation and maintenance of conservation measures. Measures that are implemented outside the reserve system will occur primarily along stream and riparian areas.

In-stream conservation activities include:

- Stream barrier removal or modification;
- Vegetation management, including mechanical removal of invasive weeds in streams;
- Installation of woody debris or rocks to enhance aquatic habitat in streams;
- Gravel augmentation and gravel cleaning conducted to enhance or restore spawning sites for Covered Species;

- Actions to address invasive animal species or invasive plant species control beyond vegetation management;

- Restoration of in-stream and riparian habitats;

- Surveys and monitoring for mitigation and restoration/habitat enhancement projects;

- Monitoring of Covered Species (*i.e.*, salmonids, California red-legged frog, foothill yellow-legged frog, western pond turtle) and natural communities;

- Landowner outreach and education programs that target landowners along streams. Willing landowners may receive technical assistance from the PCA to reduce erosion and sedimentation into nearby streams.

Note that there is some overlap between in-stream conservation measures and those that will occur outside of the stream in the surrounding stream system.

1.3.3.7.2.1. Stream Barrier Modification Projects

The PCCP conservation strategy provides for the removal of fish passage barriers and other projects that improve fish passage. These projects are based on recommendations from the Anadromous Fish Screening and Passage Opportunities in Western Placer County and Southern Sutter County report (Bailey and Buell 2005) and will include removal or modification of the following passage impediments:

- Hemphill Dam, including the construction of a fish ladder and/or removal of the dam and restoration of the riparian zone, owned by NID;

- Cottonwood Dam, including riparian restoration, privately owned;

- Culvert at Doty Ravine on Garden Bar Road, county owned;

- Nelson Lane Dam;

- Raccoon Creek and Waltz Road dam near the Sutter County line.

The removal or modification of these passage impediments will require the cooperation of private entities or public agencies that are not currently permittees of the PCCP. In the event these facilities cannot be modified or removed because they are not under the control of the permittees, alternative fish passage improvements will be recommended to the wildlife agencies for Doty Ravine, Raccoon Creek, Auburn Ravine, or salmonid streams in the Dry Creek watershed.

Other dams and diversion structures that could be removed or modified include the Lincoln Ranch Duck Club Dam, Coppin Dam, Davis Dam, New Moore Dam, Tom Glenn Dam, and Aitken Ranch Dam. The PCA may work with NID to improve fish passage at its facilities, including the NID Doty Ravine south diversion structure, Camp Far West Canal, and Goldhill Dam.

1.3.3.7.2.2. In-channel Habitat Improvement

When opportunities exist, the PCA will remove or modify in-channel features within and outside of the reserve system to restore in-stream habitat. Potential restoration measures include removal of fish passage barriers; removal of features, such as riprap, dikes, and levees; setting back and/or stabilization of creek banks; and the re-establishment of historical stream morphology.

In-channel conservation measures may include the removal of anthropogenic features (*e.g.*, concrete, earthen, or otherwise engineered channels) as well as measures that modify specific elements of in-channel habitat. Methods to improve in-channel habitat include removing non-native vegetation and revegetating with native plants to influence physical processes; installing large woody debris and other in-stream structural elements, such as rocks and boulders, to improve channel complexity and to promote woody debris recruitment and enhance rearing habitat; and augmenting gravel within potential spawning grounds.

Channel restoration may entail reconstruction of a channel or incremental process restoration, installation of a natural structural feature to induce change in a channel. Channel restoration can also be used to restore bank stability and reduce bank erosion, thereby improving aquatic habitat and water quality.

Together, these enhancement and restoration techniques can serve to slow the movement of floodwaters, allow the deposition of sediment to improve channel and bank formation processes, reduce sediment loading in river and stream systems, and improve habitat for Covered Species, including the restoration of complex rearing habitat.

The reduction of fine sediment input to streams is a high priority in Auburn Ravine, Raccoon Creek, Doty Ravine, Miners Ravine, Secret Ravine, and the main stem of Dry Creek and a medium priority in Bear River, Pleasant Grove Creek, and Curry Creek (Placer County 2002, Placer and Sacramento Counties 2003, Foothill Associates 2006). The PCA will focus gravel cleaning and replenishment in high- and medium-priority streams. The PCA will identify specific stream reaches with degraded spawning habitat where cleaning or replenishment of gravels is the only feasible means to enhance habitat. These measures are not anticipated to occur regularly under the PCCP and would only be used as a temporary action to maintain habitat until the reach can be restored.

Gravel cleaning can be used to enhance and restore gravel beds that are already impaired due to excess fine sediment load. Gravel replenishment can be used in streams deficient in spawning gravel due to dams or other artificial structures that prevent gravel recruitment or transport. The use of gravel cleaning or replenishment measures will likely result in additional maintenance requirements because natural processes will not maintain post-cleaning conditions.

Gravel cleaning and replenishment can be effective where the cause and source of excessive fines, including upland sources, such as unpaved roads and land grading activities, have been controlled or remedied.

The PCA will employ invasive animal control measures for in-stream invasive species (*e.g.*, carp, bullhead, and bullfrog) on an as-needed basis. The need to control invasive species and methods to be used will be site-specific and evaluated within a monitoring and adaptive

management framework. The PCA will develop an invasive species control plan for the reserve system, and each reserve management plan will include a section on management of invasive plant and animal species.

Methods of invasive control will depend on site-specific conditions, including type of waterway and time of year, and will be done in close coordination with fish and wildlife agencies to avoid harm to non-target species.

1.3.3.7.2.3. Riparian Restoration

The PCA will restore 330 acres of riparian habitat and an estimated additional 876 acres of riparian habitat to reestablish, reconnect, and expand existing riparian woodland; slow the movement of floodwaters; allow the deposition of sediment to improve channel and bank formation processes; and reduce sediment loading in river and stream systems. Details of the site selection process and methods can be found in section 5.3.1.5.4 of the PCCP (Placer County 2020b).

1.3.3.7.3. Other Placer County Conservation Activities

Placer County administers ongoing conservation and resource management programs (*e.g.*, management of wildfire fuel) that are separate from but complementary to the PCCP. The actions conducted by Placer County to implement the Placer Legacy Program and the Auburn Ravine/Raccoon Creek ERP, Dry Creek coordinated resource management plan (CRMP), Pleasant Grove/Curry Creek ERP, and Dry Creek Greenway Vision Plan are similar to many of those that will be conducted by the PCA to implement the PCCP conservation strategy. These actions will occur primarily outside the reserve system.

1.3.3.7.3.1. Placer Legacy Program and Resource Management Plans

Placer County implements the Placer Legacy Program and CRMPs, which are complementary to the PCCP. The resource management plans focus on in-stream and riparian management and are discussed in section 1.3.3.6, In-stream Activities.

Placer County, in coordination with its public and private partners, will implement the goals and objectives of the Placer Legacy Program throughout the 50-year term of the PCCP's permits.

The Placer Legacy Program uses four main strategies to obtain its goals and objectives: land preservation, stewardship programs, public education, and restoration and enhancement. Conservation of agricultural lands is primarily accomplished through fee title acquisition, conservation easements, and Williamson Act agreements. Stewardship programs focus on agricultural product marketing, tax/estate planning assistance, sustainable practices education, and financial incentives. In addition, Placer County promotes stewardship by providing a long-term planning framework that is scientifically and geographically based, as well as by assisting public and private landowners with Federal and State agency permit application and consultations.

The act of acquiring land or promoting stewardship does not have direct, on-the-ground consequences that require coverage by the PCCP. Such actions have complemented and will

continue to complement the implementation of biological goals and objectives of the PCCP. However, the Placer Legacy Program's restoration and enhancement actions will have environmental effects that are covered by the PCCP.

Many Placer Legacy Program activities will be conducted in concert with PCA implementation of the PCCP. The Placer Legacy Program may, however, carry out activities independent of the PCCP that generally fall under the following categories:

- Introduction of recreation, such as hiking, bicycling, and horseback riding to previously inaccessible natural areas that support grassland, oak woodland, and riparian habitats;
- Creation of urban trails and trail connections as well as the building of interpretive nature and cultural appreciation centers;
- Restoration of riparian and in-stream habitats to benefit salmonid spawning, rearing, and migration life stages in the Raccoon Creek, Auburn Ravine, and Dry Creek watersheds;
- Protection and enhancement of floodplains to maximize water and sediment detention and restore natural stream morphology, including levee pull-backs, floodplain restoration, protection of floodplains from incompatible encroachment, bank stabilization, and other activities that protect existing natural floodplains or restore natural conditions to floodplains that have been modified (typically for agricultural production);
- Establishment of buffers and management of fuel loads to reduce wildfire potential;
- Restoration and enhancement of degraded forests in oak woodland and riparian habitats;
- Development of on-site water management storage features, such as ponds and swales to promote water conservation and improve water quality;
- Coordination of water delivery agencies to ensure the adequacy of future water deliveries for agriculture and native species habitat;
- Encouragement of the use of rice decomposition water to improve waterfowl habitat;
- Acquisition of property for scenic, historical, or agricultural conservation values.

1.3.3.7.3.2. Community Wildfire Protection Plan

The Placer County Community Wildfire Protection Plan (CWPP) (Placer County 2012) provides a comprehensive analysis of wildfire-related hazards and recommendations designed to reduce the threat of wildfire-related damages to values at risk. The CWPP (Placer County 2012) provides a comprehensive analysis of wildfire-related hazards and risks in the wildland-urban interface areas covered by the greater Auburn area, Foresthill/Iowa Hill, Lincoln, and Placer Sierra fire safe councils. The wildland-urban interface is the area where human development and activity meets and intermixes with undeveloped vegetation. The PCCP defines specific fire hazards in designated areas, assesses the values at risk, and identifies and prioritizes specific projects to protect local communities.

Any fuel management activities, which include the creation of fire breaks, and fuel treatment and restoration, conducted by Placer County on private or public lands would be considered a Covered Activity. This activity would be consistent with the CWPP (Placer County 2012).

Note that private landowners clearing fuel on their own property is not a Covered Activity.

1.3.3.7.4. Resource Management Plans

The PCCP integrates three watershed plans, including the Dry Creek CRMP (Placer and Sacramento Counties 2003), the Auburn Ravine/Markham Ravine/Raccoon Creek ERP (Placer County 2002), and the Pleasant Grove/Curry Creek ERP (Foothill Associates 2006), into the conservation strategy. These watershed management plans were designed to help control pollution, manage stormwater, and restore and enhance stream system habitats and uplands that surround them. The watershed plans are comprehensive, ecosystem-based plans for the restoration and enhancement of riparian and in-stream habitats in western Placer County watersheds. The watershed plans were created in coordination with public and private stakeholders, including Placer County, water districts, non-profit conservation interests, agencies, and landowners. The watershed plans provide guidance for riparian and stream restoration and enhancement actions outlined in the Placer Legacy Program.

The PCA will use these restoration and management plans to help guide stream and riparian acquisition, enhancement, and restoration actions. The Placer Legacy Program's restoration and enhancement activities implemented by Placer County will occur on lands within and outside of the reserve system. Although these plans pre-date the preparation of the PCCP conservation strategy, they provide a watershed-level focus that is valuable; they represent stakeholder interests that are consistent with the spirit of State and Federal guidance on the preparation of HCPs and NCCPs. These plans have informed the development of the PCCP conservation strategy and monitoring and adaptive management program and will be used by the PCA to help guide PCCP acquisition, enhancement, and restoration actions for riverine and riparian systems. In no case will these plans supersede the conservation strategy of the PCCP. Their implementation is intended to inform and be covered by the PCCP and will supplement the conservation actions carried out by the PCCP.

The primary goal of these resource management plans is to improve riparian and aquatic habitat quality and connectivity for native biota. The main objectives of these plans are to protect, restore, and enhance riparian habitat; improve salmonid spawning and rearing habitat; restore the natural hydrography and morphology when and where possible; remove and/or modify in-stream barriers to salmonid migration; and improve water quality.

Those projects that are implemented as a result of the watershed planning process will be covered by the PCCP. Construction or restoration activities associated with implementation of the watershed 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. The general types of projects that are expected to be implemented include the following:

- Control and/or removal of non-native, invasive riparian plant species;

- Creation, expansion, and enhancement of riparian forest and willow scrub natural communities to maximize ecosystem functions, such as shade and bank stabilization;

- Management of the riparian natural community adjacent to grazing areas to reduce sedimentation and fecal contamination;

- Enhancement of floodplain structure to reflect natural stream morphology and improve flood control;

- Control of invasive and/or nuisance animal species, such as bullfrogs, beavers, and bass, to minimize adverse effects on threatened and endangered species;

- Removal or modification of barriers to salmonid migration between spawning habitat and the American and Sacramento Rivers;

- Modification of water diversion structures to minimize juvenile salmonid entrapment;

- Improvement of salmonid spawning and rearing habitat by increasing or encouraging the formation of runs, riffles, and pools and reducing the concentration of finely sized sediment;

- Public education programs and partnerships with wastewater treatment plants to help reduce pollutant loads to streams and increase the use of biofiltering techniques, such as vegetated buffers and off-channel storage ponds in existing and future streamside development and agriculture;

- Management of upland activities to reduce peak runoff flows and sediment and contamination loads;

- Utilization and enforcement of BMPs and smart growth principles to improve water quality and minimize surface runoff discharge.

1.3.4. PCCP Conservation Strategy

Chapter 5 of the PCCP (Placer County 2020b) contains the conservation strategy for the PCCP. For this opinion, the parts of the conservation strategy that explicitly address stream habitat or salmonids are included in the following subsections. All other portions of the conservation strategy and the rest of chapter 5 of the PCCP (Placer County 2020b) are incorporated here by reference.

1.3.4.1. Conservation Strategy Components

The PCCP's conservation strategy will be implemented by the PCA in partnership with the permittees and the wildlife agencies. The strategy has four main components:

(1) Reserve system. The PCCP proposes to progressively establish a large system of interconnected blocks of land. Over the PCCP 50-year permit term, the PCA will acquire approximately 47,300 acres for natural and semi-natural community protection

and restoration irrespective of impacts to species and/or habitat from Covered Activities. Within that land, the PCA will restore at least 4,405 acres of natural communities independent of mitigation for effects from Covered Activities, and 6,220 acres of natural communities if all allowable impacts to species and/or habitat from Covered Activities proposed under the PCCP occurs. These protected and restored lands will augment the approximately 16,000 acres of EXR. Cumulatively, 38 percent of the present natural and semi-natural landscape in Plan Area A will ultimately be subject to conservation management.

The reserve system will provide a means for protecting, managing, enhancing, and restoring or creating the natural and semi-natural communities and habitats that support the Covered Species. The reserve system will mainly be located in the western and northern valley and in the northern foothills, regionally separated from future urban and suburban growth. The geographic aspect of the conservation strategy is shown in Figure 2 and in PCCP figure 5-1 (Placer County 2020b).

(2) Stream protection, enhancement, and avoidance. The conservation strategy protects the stream system everywhere in Plan Area A. Conservation measures in and avoidance of the stream system contribute both to Covered Species' habitats and connectivity in the reserve system. In-stream enhancement actions will occur inside and outside of the reserve system, in Plan Areas A and B. Such actions include, but are not limited to, removal and/or modification of barriers to fish passage, screening unscreened water diversions, improvement of in-channel features, and non-native animal species control.

(3) Wetland conservation and no overall net loss of wetland functions and services. The PCCP provides for protection, enhancement, restoration, and creation of wetlands through 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.

The PCCP anticipates loss of wetlands, including vernal pool wetlands. Restoration and creation of wetlands will specifically provide in-kind compensatory habitat in the RAA or stream system in order to achieve conservation of the Covered Species and no overall net loss of wetland habitat through the 50-year permit term.

(4) Avoidance and minimization. Covered Activities will avoid or minimize adverse effects by complying with specific conditions that apply to certain communities and species. See section 1.3.5 below and/or chapter 6 of the PCCP (Placer County 2020b) for more details. The PCCP proposes that: (1) conservation measures will take place on lands set aside for conservation purposes, (2) implementation of the conservation strategy will accomplish avoidance and minimization on a cumulative regional scale, and (3) avoidance and minimization in the PFG areas will be focused only on specific resources.

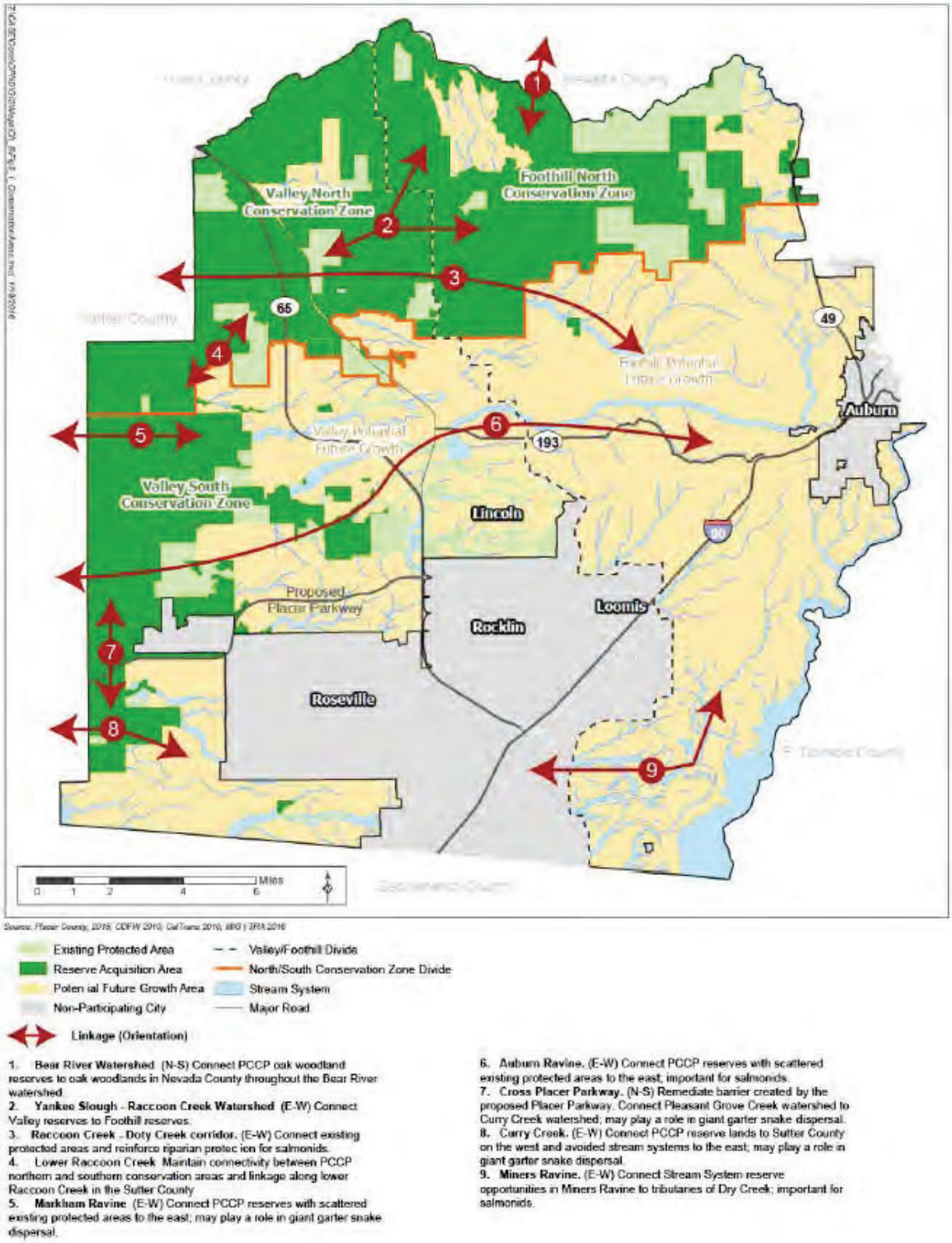


Figure 2. PCCP Conservation Zones and Key Linkages, from figure 5-1 of the PCCP (Placer County 2020b).

1.3.4.2. PCCP Conservation Goals, Objectives, and Measures that Address Stream Habitat or Salmonids

1.3.4.2.1. PCCP Landscape-level 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 (LIDS) for Covered Activities in the plan area.
    - Rapidly moving stormwater erodes stream banks and scours stream channels, degrading or removing habitat for fish and other aquatic life. Using LIDS reduces the amount of stormwater reaching a surface water system and helps to maintain natural stream channel functions and habitat. This objective will be met through implementation of measures outside the reserve system where Covered Activities take place. The goal of LIDS is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source (Placer County 2020b).
- Objective L-3.2. Reduce invasive non-native species and increase native species.
    - This is intended to increase native species diversity, which improves natural community resilience and resistance to disturbances, such as drought and flooding, by increasing the likelihood that species or strains with attributes to withstand these disturbances are present on the landscape. Additionally, vegetation biodiversity in riparian and other natural communities provides the structural diversity necessary to provide suitable habitat for many wildlife species. Increasing the relative cover of native plant species also potentially increases resistance to invasion by non-native plants and reduces the potential negative effects of non-native plants. This objective also intends to minimize the introduction and spread of invasive non-native species as described. The PCCP does not intend to control non-native species that are naturalized and are not adversely affecting native species in the plan area.

1.3.4.2.2. PCCP Goal Riverine and Riparian (RAR) 1

Functional riverine and riparian communities that benefit Covered Species and promote native biodiversity in the plan area.

Several landscape-level goals will contribute to this goal. See section 5.2.6.3 of the PCCP for more details (Placer County 2020b).

- Objective RAR-1.1. Protect riverine/riparian complex. Protect 2,200 acres of riverine/riparian complex natural community, which will include at least 1,410 acres of

riparian constituent habitat (960 acres in the valley and 451 in the foothills). This portion of the reserve system will include 88.6 linear miles of streams/riverine habitat.

- Objective RAR-1.2. Protect riverine constituent habitat. Protect at least 88.6 linear stream miles of riverine within the riverine/riparian complex natural community.

    - The assembly of the reserve system will substantially increase the amount of protected riverine and riparian constituent habitats in the plan area. The riverine and riparian protection commitments are large enough, with objective RAR 1.3, to protect corridors for movement from the valley floor to the foothills.

    - The protection commitments for the riverine and riparian constituent habitats are intended to be large enough to protect, along with enhancement and restoration from objectives RAR 1.3, 1.4, 1.5, 1.6, and 1.7, functioning hydrologic systems that provide habitat value for native biota while continuing to meet urban requirements for flood control, drinking water, agriculture, and recreation. For western Placer County streams, this generally means providing the channel width and depth to convey most flood flows while maintaining both aquatic and terrestrial habitat complexity necessary to ensure water quality and suitable streambed conditions for all life stages of aquatic Covered Species.

    - The riverine and riparian commitment is intended to be large enough to ensure that extensive amounts of high quality spawning, rearing, and migrating habitat are protected for the covered salmonids within the Raccoon Creek, Doty Ravine, Auburn Ravine, and Dry Creek watersheds, consistent with the Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead (hereafter, recovery plan) (NMFS 2014b).

    - After restoration is successfully completed, at least 2,232 acres, and up to 3,625 acres if the proposed maximum allowable loss of riverine/riparian complex community occurs from Covered Activities, of riverine/riparian communities will be protected and restored on the reserve system. These protection and restoration commitments provide for the conservation and recovery of Covered Species in the plan area, in addition to mitigating consequences of the actions to 490 acres of the riverine/riparian complex natural community.

    - The protection of 88.6 miles of streams in Plan Areas A and B and restoration of fish passage both upstream and downstream of existing barriers (objective RAR 1.5), will provide for the conservation and recovery of riverine Covered Species in the plan area, in addition to mitigating consequences of the actions on 551 miles of streams in the plan area. The protection of these streams will overlap the riverine/riparian complex community protected.

- Objective RAR-1.3. Restore riverine/riparian complex. A minimum of 32 acres of riparian constituent habitat will be restored, independent of effects. In addition, impacts

on riverine/riparian constituent habitat and the stream system will be mitigated by restoration of riverine and riparian constituent habitat at a ratio of 1.52:1. If the proposed maximum allowable effects on riverine/riparian complex and the stream system occur (490 acres and 426 acres, respectively, for a total of 916 acres), up to an additional 1,425 acres of riverine/riparian complex will be restored. Of the 1,425 acres of riverine and riparian constituent habitat restoration, 1,250 acres must be restored as riparian constituent habitat. Effects on salmonid habitat (*i.e.*, spawning or migrating) will be mitigated in kind. Other natural communities interspersed within riverine/riparian complex may be restored as part of riverine/riparian upland complex (*e.g.*, valley oak woodland, fresh emergent wetlands).

  - Riparian restoration will be focused on expanding and connecting existing fragments of riparian communities to restore corridors for movement in the plan area.

  - Achieving this objective will improve riparian-related ecosystem functions, such as providing shade that moderates water temperature in adjacent streams, slowing water velocities during flood events, reducing inputs of nutrients (*e.g.*, nitrogen) and pollutants into streams, providing habitat for terrestrial and aquatic invertebrates, prey species for covered salmonids and native biota, and stabilizing banks against erosion.

- Objective RAR-1.4. Enhance riparian vegetation. Enhance the cover, structural diversity, and native species diversity of the riparian constituent habitat in the reserve system.

- Objective RAR-1.5. Remove or modify fish barriers. Initiate partnerships with managing agencies and remove or modify two high-priority fish passage barriers, including the barrier at Doty Ravine at Garden Bar Road and one other barrier identified in PCCP table 3-5 (Placer County 2020b) and adapted below in Table 2. When partnerships allow, remove or modify up to three more of the fish passage barriers identified in Table 2.

Table 2. Summary of Fish Passage Barriers Considered in PCCP, adapted from PCCP Table 3-5.

Fish Passage Barrier	Watershed	Type/ Features	Assessment	Recommended Action	Location
Hemphill Dam	Auburn Ravine	Seasonal flashboard dam; elevated sill, sloped apron; unscreened diversion	Significant barrier/ impediment; diversion needs screen	Dam: replace apron with pool-and-chute fishway; diversions: screen with vertical or oblique screen on bank	On Auburn Ravine within the Turkey Creek Golf Course approximately 1.5 miles upstream of the SR 193 crossing

Fish Passage Barrier	Watershed	Type/ Features	Assessment	Recommended Action	Location
Cottonwood Dam	Dry Creek; Miners Ravine	Dam has a rectangular notched weir but remains a barrier to fish passage	Significant barrier/ impediment	Remove dam and restore riverine and riparian habitat	Hidden Valley subdivision, Granite Bay
Doty Ravine at Garden Bar Road	Doty Ravine; Raccoon Creek	Perched 12-foot culvert	Significant impediment	Replace with natural bottom culvert with grade control or open-span bridge with fish passage baffles	Garden Bar Road crossing of Doty Ravine in the Raccoon Creek watershed
Nelson Lane Dam	Auburn Ravine	Seasonal flashboard dam	Minor impediment	Dam: concentrate flow; diversions: screen if needed	On Auburn Ravine approximately ¼ mile downstream of the Nelson Lane crossing
Gaging Station at Raccoon Creek at Waltz Road near Sutter County	Raccoon Creek	Additional study needed	Likely a minor impediment during low flows – additional study needed	Additional study needed	Raccoon Creek near Waltz Road close to the Placer-Sutter County line
Lincoln Ranch Duck Club Dam	Auburn Ravine	Seasonal flashboard dam	Seasonal barrier/ impediment; unscreened diversion	Dam: excavate sump; extend pump; vortex weirs; diversions: screen if needed	On Auburn Ravine approximately 1 mile upstream of the Brewer Road crossing

Fish Passage Barrier	Watershed	Type/ Features	Assessment	Recommended Action	Location
Coppin Dam	Auburn Ravine; Raccoon Creek	Seasonal flashboard dam and unscreened diversion	Seasonal barrier/ impediment	Screen diversion; possibly remove or provide fish passage	On the Cross Canal near the downstream end of the engineered portions of Auburn Ravine in Sutter County
Davis Dam	Auburn Ravine	Seasonal flashboard dam	Minor barrier; seasonal operation	Possibly remove or provide fish passage	On Auburn Ravine between the Pleasant Grove Road crossing and the Union Pacific Railroad tracks in Sutter county
Tom Glenn Dam	Auburn Ravine	Seasonal flashboard dam	Minor barrier; seasonal operation	Possibly remove or provide fish passage	On Auburn Ravine just east of Pleasant Grove Road in Sutter County
Ophir Tunnel Cataract	Auburn Ravine	Natural cataract	Significant impediment	Backwater lower portion with concrete sill series	Upstream of Lozanos Road on Auburn Ravine. Above NID 1 Dam, an impassable impediment
NID Doty Ravine south diversion structure	Doty Ravine	Concrete dam	Seasonal barrier	Screen diversion and add fish passage ladder	On Doty Ravine approximately ¼ to ½ mile downstream of Crosby Herold Road

Fish Passage Barrier	Watershed	Type/ Features	Assessment	Recommended Action	Location
Camp Far West Canal Dam	Raccoon Creek	Concrete dam with headgate	Significant barrier/ impediment	Fish ladder construction; screen intake	Approximately 1 mile downstream of the confluence of Orr and Dry Creek, which combine to form Raccoon Creek. The waterfall on Raccoon Creek is an impassable barrier such that salmonids may never access this dam
NID 1 Dam	Auburn Ravine	12 foot	Additional study needed	Additional study needed	2 miles upstream from Gold Hill Road

- Objective RAR-1.6. Modify unscreened water diversions. Screen, consolidate, relocate, remove, or otherwise modify all unscreened water diversions on salmonid streams in the reserve system.

    - Screening water diversions will reduce entrainment in plan area streams and improve survival of juvenile salmonids. The PCA expects to take over an unknown number of unscreened diversions as lands are acquired in fee title or conservation easement for the reserve system. As these unscreened diversions are brought into the reserve system they will be screened, removed, or otherwise modified to meet this objective and provide for the conservation of covered salmonids. Some unscreened diversions outside of the reserve system (*i.e.*, not protected through fee title or conservation easement) may be screened or removed as part of the fish barrier removal or modification projects, see objective RAR-1.5.

- Objective RAR-1.7. Enhance streams. Enhance stream reaches within the plan area to promote habitat complexity and function (*e.g.*, diversity of in-stream habitat, shaded riverine habitat, floodplain inundation). The PCA will improve in-channel features of plan area streams sufficient to meet a 1.5:1 ratio of enhanced to affected. In-channel enhancement measures will be located in the same watershed and salmonid habitat type

(*e.g.*, spawning, migrating) in which the effects occur. The enhancement measures may be implemented in streams on the reserve system and elsewhere within Plan Area A, Plan Area B3, Raccoon Creek floodplain conservation, and Plan Area B4, fish passage channel improvement.

- This objective intends to improve habitat complexity and function for Covered Species and native biota in Plan Area A and B streams. Increasing channel complexity contributes to biological diversity, richness, and sustainability of the aquatic ecosystem, and benefits salmonid rearing habitat. Increasing channel complexity will provide in-stream refuge cover for covered salmonids, amphibians, and native species. This will provide for more suitable natural conditions for fish and other aquatic species while moderating water temperatures, providing in-stream cover for fish and other aquatic species, and helping to create food sources for covered fish species. This will also facilitate the movement of animals and plants (*e.g.*, dispersal of seeds of riparian species) along riverine and riparian corridors that traverse the plan area.

1.3.4.2.3. PCCP Goal FISH-1

Increased spawning, rearing, and migratory success of covered salmonids in the Auburn Ravine, Raccoon Creek, and Dry Creek watersheds.

Several landscape- and community-level biological objectives will contribute to this goal, see PCCP section 5.2.7.9 for details (Placer County 2020b).

- Objective FISH-1.1. Protect salmonid spawning and migrating habitat. Of the 88.6 stream miles protected in the reserve system, objective RAR-1.2, protect 25 stream miles of salmonid spawning habitat and 10 miles of salmonid migrating habitat primarily on stream reaches along Raccoon Creek, Doty Ravine (a major tributary to Raccoon Creek), and Auburn Ravine.

- Objective FISH-1.2. Protect riparian habitat for fish. Of the riparian natural community protected in the reserve system (objective RAR-1.1), protect 558 acres of riparian habitat along salmonid spawning stream reaches and 342 acres of riparian habitat along salmonid migrating reaches, primarily along Raccoon Creek, Doty Ravine, and Auburn Ravine.

- Objective FISH-1.3. Protect oak woodlands for fish. Of the 12,490 acres of oak woodland and grassland protected in the foothills, protect 9,869 acres in the Raccoon Creek watershed to protect and improve water quality and watershed integrity in the Raccoon Creek watershed, the primary salmonid stream system within the RAA.

    - The Raccoon Creek watershed is the most intact, least fragmented watershed among the salmonid bearing watersheds in the plan area, particularly in the foothills, where spawning habitat is located. This objective intends to enhance watershed resiliency in Raccoon Creek by protecting and restoring large blocks of intact, high-quality oak woodlands, and foothills grasslands. Protecting the integrity of the upper Raccoon Creek watershed will help to improve in-stream

conditions downstream in the valley RAA through enhanced water quality and maintenance of necessary flows for salmonids.

1.3.4.2.4. PCCP Conservation Measures that Address Stream Habitat or Salmonids

1.3.4.2.4.1. PCCP Stream Systems

Protection of the stream system, which includes riparian communities, aquatic habitat, and other aquatic resources, is vital for ensuring the long-term viability of Covered Species. Figure 3 and figure 3-10 in the PCCP (Placer County 2020b) depict the location of the stream system. Only those areas protected as described in the PCCP goals and objectives will contribute toward the protection commitments in the biological goals and objectives.

In addition to protecting the stream system within the reserve system, Covered Activities will avoid or minimize effects within the stream system. Covered Activities that affect natural communities within the stream system boundary must contribute to restoration of the stream system at a ratio of 1.52:1 by paying a stream system fee. Covered Activities throughout the plan area must also implement LIDS.

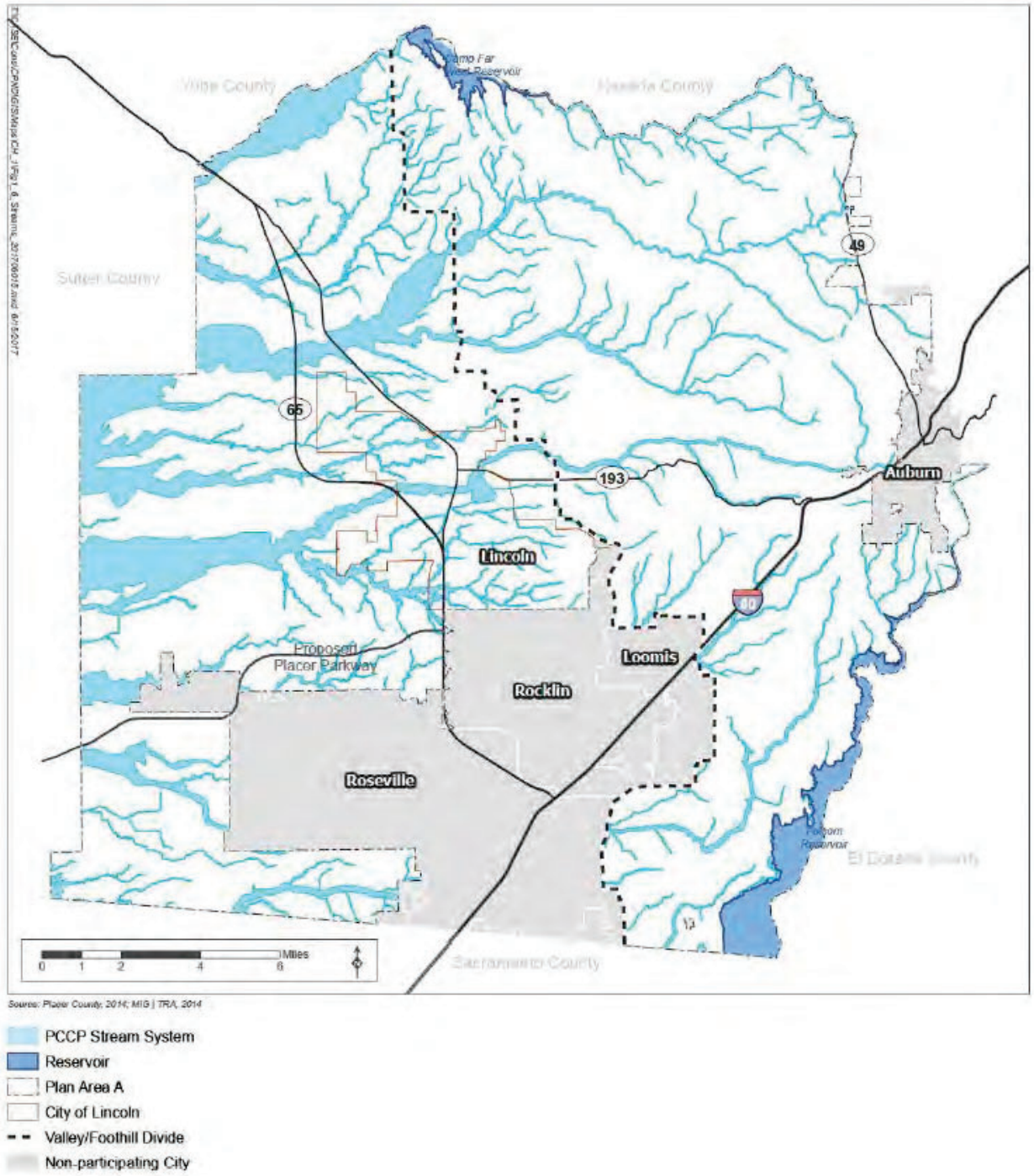


Figure 3. PCCP Stream System, from PCCP figure 3-10 (Placer County 2020b)

1.3.4.2.4.2. Aquatic and Wetland Buffers

Where aquatic and wetland constituent habitats are present in the reserve system, buffers are necessary to avoid the indirect effects from new development that may occur adjacent to the reserve system. The width of the buffers will be as specified in PCCP sections 6.3.2.1.2 and 6.3.2.2.1 (Placer County 2020b). Aquatic and wetland constituent habitats that do not have a sufficient buffer between the aquatic or wetland constituent habitat and new development will

not count toward meeting protection commitments because their proximity to development can greatly reduce their habitat value. Aquatic and wetland constituent habitats that do not have a sufficient buffer between the aquatic or wetland constituent habitat and existing development will count toward meeting the protection commitments. Except for areas subject to intensive fuel management, these aquatic and wetland buffer zones may count toward terrestrial (including riparian) community protection commitments.

1.3.4.2.4.3. Conservation in Plan Area B

It is intended that the majority of the reserve system will be established within Plan Area A. Conservation activities may occur in portions of Plan Area B to achieve biological goals and objectives. Cooperative conservation measures in these areas could also benefit the reserve system by expanding the resources available for a reserve, increasing contiguous reserve size, or improving connectivity. Conservation opportunities could occur in Plan Areas B3 and B4. Lands that may meet these needs for stream habitat or salmonids throughout Plan Area B are:

- Raccoon Creek floodplain conservation (B3). Conservation activities in this area may focus on watershed protection, including acquisition, and stream restoration along the Raccoon Creek floodplain within Sutter County.

- Fish passage channel improvement (B4). Conservation activities in this area may focus on activities to improve fish passage and habitat enhancement within channels west of Placer County in Sutter County. These activities will primarily be one-time actions (*e.g.*, vegetation management, plantings); they do not include land acquisition.

Conservation measures performed by the permittees, including land acquisition, land management, and monitoring activities, within Plan Area B will count toward applicable PCCP commitments. These actions will be covered by the State and Federal permits.

1.3.4.2.4.4. Conservation Zones that Address Stream Habitat or Salmonids

The PCCP consists of five conservation zones. More detail on these zones and their contribution to the overall PCCP conservation strategy can be found in section 5.3.1.3.2 of the PCCP, Conservation Zones (Placer County 2020b). The following includes how these zones address stream habitat or salmonids:

(1) Valley north conservation zone. Includes the Bear River and Raccoon Creek watersheds and will provide the majority of valley aquatic/wetland complex. Riverine/riparian protection benefits covered salmonids. Reserves here 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.

(2) Valley south conservation zone. Reserves in valley south will contribute to linkages along Auburn Ravine and Markham Ravine, which is important for salmonid habitat. Reserves in the southern portion of valley south will maintain or restore connectivity across the barrier, which will result from the Placer Parkway and will connect the Pleasant Grove Creek and Curry Creek watersheds.

(3) Valley PFG. Includes approximately 2,350 acres of natural communities mapped in the stream system. These lands along Auburn Ravine and Dry Creek have direct biological values for salmonids and add to connectivity.

(4) Foothills north conservation zone. This zone primarily protects oak woodland and the Bear River and Raccoon Creek stream systems.

(5) Foothills PFG. Includes 3,614 acres of communities mapped in the stream system. These lands along Auburn Ravine and in the upper Doty Creek and Dry Creek watersheds provide spawning habitat for salmonids and provide east-west connectivity from the valley to the foothills.

The PCA will prioritize acquisitions that contribute to protection of the following linkages:

- Bear River Watershed. Connect oak woodland reserves to oak woodlands in Nevada and Yuba Counties throughout the Bear River watershed.
- Yankee Slough – Raccoon Creek watershed. Connect valley reserves to foothill reserves.
- Raccoon Creek – Doty Creek Corridor. Connect existing protected areas and reinforce riparian protection for salmonids.
- Lower Raccoon Creek. Maintain connectivity between the valley north and valley south conservation zones and provide a linkage along lower Raccoon Creek in Sutter County.
- Markham Ravine. Connect reserves with EXR to the east.
- Auburn Ravine. Connect reserves with EXR to the east; important for salmonids.
- Cross Placer Parkway. Remediate barrier created by the proposed Placer Parkway. Connect Pleasant Grove Creek watershed to Curry Creek watershed.
- Curry Creek. Connect reserve lands to Sutter County on the west and avoided stream systems to the east.
- Miners Ravine. Connect stream system reserve opportunities in Miners Ravine to tributaries of Dry Creek; important for salmonids.

1.3.5. Program Participation and Conditions on Covered Activities

1.3.5.1. Categories of Conditions

The PCCP groups conditions according to their purpose as follows.

(1) General conditions. General conditions apply to all/most Covered Activities and include the assessment of fees for land conversion and other effects and application of BMPs to reduce potential effects on Covered Species and natural communities.

(2) Natural community conditions. Specific avoidance and minimization measures on Covered Activities in certain natural communities may apply.

(3) Stream system conditions. Conditions to avoid and minimize effects on the stream system.

(4) Rural public project conditions. Conditions that address public projects undertaken outside the Sacramento Valley portion of the plan area (valley PFG).

(5) Species conditions. Where activities may affect Covered Species or where the potential for take can be avoided or reduced through specific actions, such as appropriate species surveys, application of BMPs, seasonal restrictions, or protective buffers.

(6) Reserve management conditions. Conditions that apply to the management of reserve lands.

1.3.5.2. Regional Approach

The PCCP will follow a regional approach. The PCCP will systematically implement conditions to avoid and minimize effects and, where avoidance is not feasible, will require mitigation for the loss of Covered Species habitat, including aquatic resources, on a regional scale. The PCCP aims to ensure a comprehensive approach to conservation of Covered Species and natural communities by avoiding and minimizing impacts and concentrating protection where it has the greatest long-term value. By protecting and restoring wetland, vernal pools, oak woodlands, and riparian and other high-quality habitats, and restricting Covered Activities from areas of higher biological value, such as in stream systems, regional avoidance and minimization goals are supported.

Regional-scale avoidance and minimization reduces the need for individual projects to avoid and minimize effects at the project scale and allows streamlining of regulatory requirements. The PCCP assumes take will result from Covered Activities and mitigates the aggregate effects through the implementation of the conservation strategy described in chapter 5 of the PCCP (Placer County 2020b).

On-site avoidance and minimization are given a lower priority within the PFG, other than the stream system, where existing urban areas occur and where future development and infrastructure will be concentrated. However, natural community and species surveys may still be required in these areas to ensure that effects on sensitive resources, such as streams and wetlands, are avoided and minimized and to ensure compliance with other species regulations.

1.3.5.3. Conditions on Covered Activities

The PCCP contains many conditions on Covered Activities. For this opinion, those conditions that address stream habitat or salmonids are included in the following subsections. All other conditions in section 6.3 of the PCCP (Placer County 2020b) are incorporated by reference.

1.3.5.3.1. General Conditions that Address Stream Habitat and/or Salmonids

1.3.5.3.1.1. PCCP General Condition 1, Watershed Hydrology and Water Quality

All Covered Activities shall comply with the State of California General Construction Permit, including requirements to develop a project-based stormwater pollution prevention plan (SWPPP), and applicable national pollutant discharge elimination system (NPDES) program requirements as implemented by Placer County and the City of Lincoln.

The site design requirements, source control measures, and BMPs required by this condition will cumulatively benefit Covered Species by:

- Minimizing the potential impacts on Covered Species that are most likely to be affected by changes in hydrology and water quality,
- Reducing stream pollution by removing pollutants from surface runoff before it reaches local streams,
- Minimizing degradation of streams and maintaining or improving the hydrograph to maintain populations of Covered Species and enhance recovery,
- Reducing the potential for scour at stormwater outlets to streams by controlling the rate of flow into the streams.

The following BMPs are related to water quality objectives contained in the NPDES programs, but are more targeted to avoidance and minimization of effects on Covered Species and go beyond the typical requirements of an SWPPP. These BMPs apply to all Covered Activities:

- When possible, vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas. When temporary vehicle parking areas are to be established, the site will be recovered to pre-project or ecologically improved conditions within one year of the start of groundbreaking to ensure effects are temporary.
- Trash generated by Covered Activities will be promptly and properly removed from the site.
- Appropriate erosion control measures (*e.g.*, fiber rolls, filter fences, vegetative buffer strips) will be used on site to reduce siltation and runoff of contaminants into avoided wetlands, ponds, streams, or riparian vegetation.
    - Erosion control measures will be of material that will not entrap wildlife (*i.e.*, no plastic monofilament). Erosion control blankets will be used as a last resort because they tend to biodegrade slowly and trap reptiles and amphibians.
    - Erosion control measures will be placed between the area of disturbance and any avoided aquatic feature, within an area identified with highly visible markers (*e.g.*, construction and erosion-control fencing, flagging, silt barriers) prior to commencement of construction activities. Such identification will be properly maintained until construction is completed and the soils have been stabilized.

- Fiber rolls used for erosion control will be certified as weed free by the California Department of Food and Agriculture, or any agency that is a successor or receives delegated authority during the permit term.

- Seed mixtures applied for erosion control will not contain California Invasive Plant Council designated invasive species (California Invasive Plant Council 2021) but will be composed of native species appropriate for the site or sterile non-native species. If sterile non-native species are used for temporary erosion control, native seed mixtures must be used in subsequent treatments to provide long-term erosion control and slow colonization by invasive non-natives.

- If the runoff from the development will flow within 100 feet of a wetland or pond, vegetated stormwater filtration features, such as rain gardens, grass swales, tree box filters, infiltration basins, or similar LID features to capture and treat flows, shall be installed consistent with local programs and ordinances.

For more details on this condition, see section 6.3.1.1. of the PCCP (Placer County 2020b).

1.3.5.3.1.2. PCCP General Condition 5, Conduct Worker Training

If project-specific conditions for avoidance or minimization apply during construction, all project construction personnel will participate in a worker environmental training program that will educate workers regarding the Covered Species and their habitats, the need to avoid impacts, State and Federal protection, and the legal implications of violating environmental laws and regulations.

This condition applies to projects where compliance with the conditions described in chapter 6 of the PCCP (Placer County 2020b) would result in one or more avoidance or minimization requirements applied during construction (*e.g.*, maintenance of an avoidance buffer, placement of exclusion fencing). At a minimum, this training may be accomplished through "tailgate" presentations at the project site and the distribution of information brochures, with descriptions of sensitive biological resources and regulatory protections, to construction personnel prior to initiation of construction work.

1.3.5.3.2. Community Conditions that Address Stream Habitat and/or Salmonids

1.3.5.3.2.1 PCCP Community Condition 2.1, Riverine and Riparian Avoidance

Covered Activities that avoid effects on the riparian constituent habitat by excluding construction or other ground disturbance from existing riparian vegetation are not subject to special habitat fees.

Effects to riparian habitat can be credited as avoided if the project does not modify any area within a buffer that extends 50 feet outward from the outermost bounds of the riparian vegetation. The riparian buffer does not include patches of invasive, non-native vegetation that extends beyond the riparian vegetation.

If a project cannot avoid effects on riparian vegetation and surrounding buffer, PCCP community condition 2.2 will apply. An avoidance buffer is not required for streams not otherwise addressed through the stream system conditions, PCCP section 6.3.3 (Placer County 2020b), however, all other community condition 2 requirements apply.

1.3.5.3.2.2 PCCP Community Condition 2.2, Minimize Riparian and Riverine Effects

Project applicants are incentivized to avoid riverine and riparian constituent habitat, see PCCP sections 2.1 and 2.3 for more details (Placer County 2020b). Some Covered Activities will still occur within riverine and riparian constituent habitat. Therefore, projects will adhere to avoidance and minimization measures, as applicable.

The design requirements, avoidance and minimization measures (AMMs), and construction BMPs identified below reflect current and forthcoming regulations and guidance for in-stream project design. These BMPs will be updated as new information is available. Updated BMPs shall be at least as restrictive for protection of the species as those described here, and wildlife agencies will approve proposed changes to BMPs before they are applied to Covered Activities.

BMPs will apply to all Covered Activities in the stream system in the plan area, as well as to open canals, except for PCWA canals, which are addressed in PCCP section 2.4 (Placer County 2020b).

In-stream and stream system BMPs, as provided in the PCCP (Placer County 2020b) are as follows.

Project planning and design AMMs and BMPs:

- All Covered Activities shall minimize the area of disturbance in the stream system to the maximum extent practicable;
- Prior to final project design, site characteristics will be evaluated to determine if non-traditional designs, such as bioengineered bank treatments that incorporate live vegetation or other engineered habitat improvements, can be successfully utilized while meeting the requirements of the project;
- If structural changes to the channel bed are necessary as part of the project design, provisions for fish passage will be incorporated into the project design;
- To minimize the impact of new construction, existing access routes and levee roads shall be used;
- Removal of riparian vegetation shall be minimized, so the amount cleared will only be the amount necessary to accomplish the required activity and comply with public health and safety directives. Where riparian vegetation requires removal, removal will first be targeted in areas dominated by invasive vegetation;

- Maintenance of natural stream characteristics, such as riffle-pool sequences, riparian canopy, sinuosity, floodplain, woody debris, and a natural channel bed, will be incorporated into the project design;

- Stream bank repair design will first consider only use of compacted soil and will be re-seeded with native grasses or sterile non-native hybrids and stabilized with natural erosion control fabric. If compacted soil is not sufficient to stabilize the slope, bioengineering techniques must be used. No hardscape (*e.g.*, concrete or any sort of bare riprap) or rock gabions may be utilized in streams not managed for flood control (*i.e.*, streams where channel clearing, vegetation removal, debris removal, and conveyance maintenance activities are conducted), except in cases where infrastructure or human safety is threatened (*e.g.*, undercutting of existing roads);

- Rock riprap may only be used to stabilize channels experiencing extreme erosion or posing a threat to public safety. When used, rock riprap must be large enough, installed to withstand a 100-year flow event, and planted with native riparian species suitable for planting in such a manner;

- Limit removal of instream woody material (IWM) and vegetation in channels, on stream banks, and along levees and maintenance roads to only that necessary to meet the objective of the Covered Activity, or to meet regulatory requirements or guidelines;

- In streams not managed for flood control purposes (*i.e.*, streams where channel clearing, vegetation and debris removal, and conveyance maintenance activities are conducted), woody material (including live leaning trees, dead trees, tree trunks, large limbs, and stumps) will be retained unless it is threatening a structure, impeded reasonable access, or is causing bank failure and sediment loading to the stream;

- If debris blockages threaten bank stability and may increase sedimentation of downstream reaches, debris will be removed. When clearing natural debris blockages (*e.g.*, branches, fallen trees, soil from landslides) from the channel, only remove the minimum amount of debris necessary to maintain flow conveyance (*i.e.*, prevent significant backwatering or pooling). Non-natural debris (*e.g.*, trash, shopping carts) will be fully removed from the channel.

- To minimize the effect of increased local erosion due to in-channel vegetation removal, the top of the bank shall be protected by leaving vegetation in place to the maximum extent possible;

- Avoid access routes on slopes of greater than 20 percent used to access upland areas adjacent to streams and riparian areas. Any upland access across sloped areas shall be examined for evidence of instability and either revegetated or filled to prevent future landslide or erosion;

- Avoid activities in the active (*i.e.*, flowing) channel to the maximum extent practicable, especially during the migration, spawning, and egg incubation season for covered fish species, or before amphibians have undergone metamorphosis. If activities must be

conducted in the active channel, limit the use of equipment for in-water work to hand tools to the extent practicable;

- Bank stabilization site design shall evaluate hydrological effects immediately upstream and downstream of the work area to minimize downstream erosion caused by changes in water velocity. Design of bank stabilization projects shall incorporate similar roughness and characteristics of the bank surrounding the project area;

- Trails will be sited and designed with the smallest footprint necessary to cross through the stream system. Trail crossings of streams will be aligned perpendicular to the channel and be designed to avoid any potential for future erosion;

- Trail crossings of freshwater systems and drainages will adhere to the BMP above regarding the preference of bridges, or other over-water structures, to minimize disturbance. Culverts may also be used if that is the least environmentally damaging design;

- Trail design shall minimize the need for drainage structures, At the outfalls of drainage structures, erosion control measures shall be taken to prevent erosion;

- Whenever possible, the span of bridges will also allow for upland habitat beneath the bridge to provide undercrossing areas for wildlife species that will not enter the creek. Native plantings, natural debris, or scattered rocks will be installed under bridges to provide wildlife cover and encourage the use of crossings.

Dewatering AMMs and BMPs:

- While in-stream work is performed, the entire streamflow shall be diverted around the work area by a barrier, except where it has been determined by a qualified biologist that the least environmentally disruptive approach is to work in a flowing stream and fish and amphibian passage is not a concern at that time. Where feasible, water diversion techniques shall allow stream flows to gravity flow around or through the work site;

- Cofferdams for isolating in-channel activities shall be installed both upstream and downstream not more than 100 feet from the extent of the work areas to prevent seepage into or from the work area when dewatering of the entire channel is necessary. Otherwise, cofferdams shall affect no more of the stream channel than is necessary to support completion of the work. All water shall be discharged in a non-erosive manner (*e.g.*, through gravel or vegetated bars, or hay bales, on plastic, on concrete, or in storm drains when equipped with filtering devices) provided that it first has been properly treated to eliminate contaminants, including raw concrete. Treated water discharged to the channel shall be consistent with ambient conditions, including temperature and pH. Turbid water or water contaminated with other pollutants pumped out of cofferdams shall be discharged to upland areas (*e.g.*, grassy field) providing overland flow and infiltration and not allowed to re-enter the channel, or pumped to containers (*e.g.*, baker tanks) for disposal;

- In channels with low flows, small in-channel berms constructed of imported, non-erosive materials (*e.g.*, washed, rounded, spawning-sized gravel between 0.4 and 4.0 inches [10 to 100 millimeters] in diameter) or other temporary structures (gravel-filled sandbags, inflatable rubber cofferdams) that deflect water to one side of the channel during project implementation may be built. Following berm removal, the channel shall be restored to its original condition; gravel in contact with flowing water shall be left in place and allowed to disperse naturally by high winter flows;

- Sumps or basins may be used to collect water, where appropriate (*e.g.*, in channels with low flows). If pumps are used, a fish screen must be installed to prevent entrapment of small fish;

- To prevent increases in temperature and decreases in dissolved oxygen (DO), properly sized bypass pipes shall be used (*i.e.*, larger diameter pipes to better pass the flows). Creation of a low-flow channel or other methods to isolate the work area may be used to avoid the use of bypass pipes;

- Diversions shall not diminish the quantity or degrade the quality of discharged water, and shall maintain ambient stream flows below the diversion. When the work is completed, all de-watering materials placed in the channel shall be removed and normal flows shall be restored to the affected stream as soon as it is feasible and safe. To the extent, feasible, all temporary diversion structures and the supportive material shall be removed no more than 48 hours after work is completed; clean gravel in contact with flowing water shall be left in place and allowed to disperse naturally by high winter flows.

Construction AMMs and BMPs:

- The applicant shall maintain a copy of project conditions, as determined by the local jurisdiction and/or PCA, at the site. Site supervisors shall be familiar with all project conditions;

- A qualified biologist will train all personnel working within or adjacent to the stream system (*i.e.*, those people operating ground-disturbing equipment) regarding these avoidance and minimization measures and the permit obligations of project applicants working under the PCCP;

- Personnel shall utilize equipment that minimizes the area and degree of disturbance, such as appropriately-tired vehicles (either tracked or wheeled, depending on the situation), or avoidance of vehicles if possible;

- No vehicles other than necessary construction equipment shall be allowed within the stream system;

- All wetlands, other waters, and stream systems that are adjacent to a Covered Activity project site and that will be avoided shall be marked with bright construction fencing. Temporary fencing shall be removed upon completion of the project;

- Deep pools located outside and adjacent to the construction footprint shall be fenced or blocked with barriers to prevent encroachment of equipment and personnel from affecting deep-pool habitats, which are used as refuges for fish and wildlife;

- When practicable, avoid maintenance and construction activities at night. When night work cannot be avoided:

    - Minimize the use of temporary lighting,

    - Shield and focus lights on work areas,

    - Use the lowest intensity lighting necessary to complete the work;

- Wildlife entering the construction site shall be allowed to leave the area unharmed, or shall be flushed or herded humanely in a safe direction from the site;

- All utility pipe sections shall be capped or inspected for wildlife before being placed in a trench. Pipes within a trench shall be capped at the end of each day to prevent entry by wildlife;

- At the end of each workday all open trenches will be provided with a ramp of dirt or wood to allow trapped animals to escape;

- Staging and storage areas for equipment, stockpiled materials, fuels, lubricants, and solvents shall be located outside of the stream system. If site conditions prevent locating staging areas outside the stream system, at a minimum they shall be located outside the top of the bank, ideally on an existing disturbed area (*e.g.*, access road) or other area that can be readily returned to pre-project conditions at the conclusion of the activity;

- Handle and disposal of invasive plant species removed during Covered Activity implementation will be conducted in such a manner as to prevent further spread of the invasive species;

- To minimize the spread of pathogens, all staff working in aquatic systems (*i.e.*, streams, ponds, and wetlands), including site monitors, construction crews, and surveyors, will adhere to the most current guidance for equipment decontamination provided by the wildlife agencies at the time of activity implementation;

- Only herbicides registered with the California Department of Pesticide Regulation shall be used in streams, ponds, and lakes, and shall be applied in accordance with label instructions. A list of all pesticides that may be used in the project area shall be submitted to the PCA before use. The USFWS and NMFS do not issue incidental take permits for herbicide, pesticide, and rodenticide use; pesticide and rodenticide use, and resultant take of Covered Species, are not covered under the PCCP for the Federal permits:

- Avoid or minimize the amount of fertilizer used during hydroseeding to minimize introducing these materials into waterways.

Post-construction AMMs and BMPs:

- Temporary fills, such as for access ramps, diversion structures, or cofferdams, shall be completely removed upon finishing the work;

- The stream bed will be returned to as close to pre-project condition; considering such characteristics as elevations, profile, and gradient; as appropriate. Ecologically improved conditions shall be incorporated into project design when appropriate;

- Any disturbed soils will be revegetated with native plants; non-invasive species; or non-reproductive plants (*i.e.*, sterile hybrids) suitable for the altered soil conditions;

- Projects that cross beneath streams must provide a post-construction summary of any unanticipated effects (*e.g.*, stream channel disturbance due to a frac-out, where drilling mud is released through fractured bedrock) resulting from implementation of the project. Additional fees may be owed, based on the actual effects of the project;

Operations and maintenance AMMs and BMPs:

- For stream maintenance activities, only in-stream work that is necessary to maintain the channel consistent with designated management purposes (*e.g.*, flood control, groundwater recharge) will be conducted;

- When conducting vegetation management, retain as much understory brush and as many trees as feasible, emphasizing shade producing and bank stabilizing vegetation;

- Vegetation thinning and removal in streams managed for flood control will be phased to ensure that some riparian habitat remains at all times. Projects will be planned so that the least amount of riparian vegetation will be removed while still meeting the desired flood control needs;

- If a project alters the stream bed during stream maintenance, the stream low-flow channel shall be returned to its approximate prior location with appropriate depth for fish passage without creating a potential future bank erosion problem;

- Sediment removal in the stream channel shall use the approach with the least impact, such as phasing of removal activities or only removing sediment along one half of the channel bed, allowing the other half to remain relatively undisturbed;

- Maintenance and operation of pumps and generators placed in-stream will minimize impacts to water quality and aquatic species;

- Temporary crossings shall be installed no earlier than April 15 and shall be removed no later than October 15. This work window could be modified at the discretion of Placer County, the City of Lincoln, and/or the wildlife agencies;

- The following will be implemented to minimize noise effects on fish and wildlife during pile driving:

- Vibratory pile drivers, or other wildlife agency-approved methods, shall be used to drive piles, to the maximum extent practicable;

- Where feasible, the use of impact hammers to drive piles will be limited to areas outside of the stream channel or in dry cofferdams;

- Bubble curtains will be used to attenuate sound when it is necessary to drive piles with an impact hammer in water;

- The smallest pile driver and the minimum force necessary to complete the work will be used;

- All types of pile driving will be limited to daylight hours only to provide fish and wildlife with extended quiet periods;

- Prior to initiating pile driving with an impact hammer, an acoustic analysis using the most recent interagency standards and guidelines will be conducted to predict impacts of pile-driving noise on covered fish species;

- A hydroacoustic monitoring plan will be developed and implemented and underwater noise levels will be monitored during all impact pile driving on land, in dry cofferdams, and in water (using bubble curtains) to ensure that the peak and cumulative sound exposure levels do not exceed predicted values;

- Wood treated with oil-type preservatives (*e.g.*, creosote, pentachlorophenol) shall not be used in waterways. Wood treated with waterborne preservative chemicals shall be used instead, provided that the preservative being used has been approved by the Western Wood Preservers Institute (WWPI), and WWPI guidelines and BMPs to minimize effects on aquatic environments during implementation are followed (WWPI 2021);

Utility line installation AMMs and BMPs:

- Utility lines that cross waterways shall be attached to bridges when feasible;

- When it is necessary to bury utility lines beneath stream channels, a frac-out plan will be prepared and will include a plan for response and containment. In addition, the following factors shall be considered as part of project design:

    - Utility lines shall be buried below the maximum extent of channel bed scour and aligned as perpendicular as possible to the stream channel;

    - Avoid siting crossings at meander bends, braided stream segments, alluvial fans, active floodplains, other inherently unstable reaches, areas of groundwater upwelling, or locations with documented spawning habitat;

    - Trenching through stream banks and channels shall be avoided in favor of trenchless construction methods (*e.g.*, jack and bore, directional drilling), to the maximum extent practicable;

- If trenching is required:
    - Trench widths should be as narrow as feasible to accommodate the pipeline/utility line;
    - Trench excavation shall be conducted in the dry or in areas isolated from flowing water (*e.g.*, cofferdams, stream diversions) and other AMMs associated with cofferdams and water diversions described in this list shall be implemented;
- The amount of disturbance shall be kept to the minimum necessary to complete the work;
- Disturbed areas shall be returned to pre-project conditions prior to returning flow to the stream;
- If directional drilling is required:
    - Drill paths shall be designed at an appropriate depth below the stream channel to minimize the risk of frac-out where drilling mud is released through fractured bedrock;
    - Drill entry and exit points shall be located away from channel banks to minimize impact on the stream system and channel;

- Overland trenches shall be required to be backfilled with the native soils originally excavated from that area, as opposed to imported engineered fills, to the maximum extent feasible. Additionally, where technically feasible, topsoil shall be required to be stripped, stockpiled, and reapplied to original depth in all areas disturbed by construction over and adjacent to overland trenches.

1.3.5.3.2.3. PCCP Community Condition 2.3, Riverine and Riparian Restoration

Covered Activities that affect riverine or riparian constituent habitat must contribute to restoration to compensate for loss of riverine or riparian constituent habitat.

Riverine restoration measures will be located in the same watershed and salmonid habitat type (*e.g.*, spawning or migrating) in which the effects occur.

Generally, restoration and replacement actions will be undertaken by the PCA and funded by additional fees imposed on projects. Riverine and riparian restoration to offset project effects may be implemented on-site to replace the functions of the riparian woodland degraded or lost to the Covered Activity. Riparian restoration implemented on-site will be credited to PCCP restoration targets, if the restoration helps to meet the biological goals and objectives of the PCCP. When it is deemed infeasible to implement restoration at the project site, in-kind restoration will be required at an off-site location or through the payment of fees to the PCA. Stream enhancement will be implemented in concert with PCCP community condition 2.2 (Placer County 2020b).

1.3.5.3.2.4. PCCP Community Condition 2.4, PCWA Operations and Maintenance BMPs

PCWA will apply operations and maintenance BMPs in addition to any other applicable community and species conditions.

PCWA operates an extensive raw water distribution system that includes canals, ditches, flumes, and several small reservoirs.

When PCWA needs to conduct maintenance activities, it will follow pre-implementation BMPs to reduce potential adverse effects of PCWA O&M activities on natural resources in the plan area. These BMPs will be applied at facilities as maintenance needs arise, and will not be applied unless otherwise conducting ground-disturbing activities.

Pre-implementation BMPs:

- Improve canal bank stability and install sediment traps at canal outlets by:
    - Installing velocity dissipation devices at canal outlets;
    - Lining banks at canal outlets;
    - Installing erosion control blankets in areas of soil disturbance;
    - Installing temporary fiber rolls in areas of soil disturbance; and/or
    - Applying spray-on soil binders in areas of soil disturbance.
- Avoid potential wet-weather effects to natural resources in the plan area, such as erosion, by:
    - Patrolling canals and removing potential obstructions to prevent erosion;
    - Minimizing the amount of water purchased from water purveyors during periods of high precipitation;
    - Distributing flood releases from the canal system by releasing flows at numerous intermediate outlets;
    - Planning and designing projects to minimize land disturbance;
    - Installing erosion and sedimentation control measures prior to land-disturbing activities;
    - Identifying areas that are susceptible to erosion for future canal lining activities; and/or
    - Choosing canal crossing sites where erosion potential is low.

In order to prevent degraded water from entering streams after PCWA O&M activities are performed, the following ongoing or post-implementation BMPs will be applied, if applicable:

- Modifying canal operations to gradually restore reservoir releases to canals at a slower rate;
- Applying sediment traps at storm drains for dewatering before canal lining;
- Treating first-flush flows and other flushing to reduce downstream water quality effects, including minimizing sediment releases during the breeding seasons for covered amphibians and fish.

1.3.5.3.3. Conditions to Avoid, Minimize, and Mitigate Effects on the Stream System

The primary objective of stream system conditions is protection of watershed integrity, health and hydrology, by defining the stream system and providing incentive, via fee, for the project applicant 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 minimization.

A definition for the stream system boundary is provided in section 3.2.7 of the PCCP (Placer County 2020b). The stream system boundary is different from the watercourse structural setback requirements of local zoning codes.

The stream system boundary will be determined by a qualified biologist and approved by the permittee with jurisdiction over the Covered Activity.

1.3.5.3.3.1. Stream System Condition 1, Stream System Avoidance and Minimization

Design and implement Covered Activities in such a way as to avoid and minimize adverse effects on the stream system.

This condition allows applicants to avoid portions of the stream system and therefore avoid paying fees, as described in stream system condition 2, stream system mitigation: restoration.

1.3.5.3.3.2. Stream System Condition 2, Stream System Mitigation: Restoration

Where Covered Activities result in the permanent or temporary impacts on the stream system, regardless of the community or constituent habitat type affected, effects shall be mitigated by appropriate restoration or enhancement.

This measure works in concert with community condition 2.3, riverine and riparian restoration.

Projects that occur in the stream system, but do not avoid permanent effects, will pay the stream system fee. Projects in the stream system with only temporary effects do not pay the stream system fee. This will apply to all areas of the project that occur in the stream system boundary that is not otherwise assessed a special habitat fee, including affected upland communities within the stream system. See section 9.4.1.4 of the PCCP (Placer County 2020b) for more details.

Some Covered Activities are required to occur in the stream system and, as such, cannot meet the avoidance criteria described in stream system condition 1, stream system avoidance and minimization. Existing structures, uses, and activities; including legal non-conforming structures, uses, and activities; are exempt from the stream system fee unless subject to future modification that would require approval by a permittee. Maintenance activities may also be exempt pending approval of the permittee.

1.3.5.3.4. Regional Public Programs Conditions that Address Stream Habitat or Salmonids

The PCCP contains many conditions on regional public programs all of which are incorporated here by reference. The following subsections highlight some that will serve as AMMs or BMPs for covered fish species or covered fish habitat. Please refer to section 6.3.4 of the PCCP (Placer County 2020b) for more details and design guidance measures.

1.3.5.3.4.1. Transportation and Other Infrastructure Projects

Design requirements:

- Enhance existing undercrossings;
- Implement minimum sizing of culverts;
- Install grating over tunnels/culverts for penetration of light;

Construction BMPs:

- For construction of new gravel roads, disconnect and disperse runoff flow paths, including roadside ditches, which might otherwise deliver fine sediment to stream channels;
- For construction of new gravel roads, prevent gullies by dispersing runoff from road surfaces, ditches, and construction sites by correctly designing, installing, and maintaining drainage structures (*e.g.*, road shape, rolling dips, out-sloped roads, culverts) and keeping streams in their natural channels. No single point of discharge from a road or other disturbed area should carry a flow that would be capable of creating gullies. If gullies continue to develop, additional drainage structures will be needed to disperse the runoff.
- When constructing or reconstructing a ditch, utilize designs for the outlet such that runoff is first filtered and/or spread to improve water quality and reduce flow velocity prior to the runoff entering surface waters, when practical. If not practical, implement sediment management BMPs to trap sediment before it reaches a stream. BMPs described in general condition 1, watershed hydrology and water quality, and community condition 2.2, minimize riverine and riparian effects, will be applied as appropriate;
- When designing or redesigning roads, evaluate, and where appropriate, implement, opportunities to restore natural drainage patterns. Install culverts or rolling dips to retain water in its drainage of origin, which will decrease the potential for erosion downstream.

On problem roads, evaluate, and where appropriate, implement, opportunities to reconstruct the road segment in order to improve and maintain natural drainage patterns; for example, add rolling dips, emergency water bars, and additional cross drains;

- Equipment storage, fueling, and staging areas will be sited on disturbed areas or on non-sensitive, non-native grassland land-cover types, when these sites are available, to minimize the risk of direct discharge into riparian areas or other sensitive land-cover types. When such sites are not available, staging will occur on the road used to access the site. BMPs must be utilized;

- No erodible materials will be deposited into watercourses. Brush, loose soils, or other debris material will not be stockpiled within stream channels, on adjacent banks, or where it may enter into any river, stream, or lake;

- Silt fencing or other sediment trapping methods will be installed below the grade of new road construction or road widening activities to minimize the transport of sediment off the site;

- Temporary barriers will be constructed to keep wildlife out of construction sites, as appropriate;

- On-site monitoring will be conducted by a qualified biologist throughout the construction period to ensure that disturbance limits, BMPs, and PCCP conditions/restrictions are being implemented properly;

- Active construction areas will apply standard dust control measures to minimize the effects of dust on adjacent vegetation and wildlife habitats, if warranted;

- Portions of the project that occur in streams (*e.g.*, bridge or culvert construction) will comply with community condition 2.2, minimize riverine and riparian effects;

- Following construction, the areas beyond road shoulders and inside the right-of-way will be returned to a natural state or pre-project conditions when a natural state is not achievable within one year of project groundbreaking. These actions will most likely be applied differently to each road project and will decrease the potential for the spread of invasive species;

- Invasive plants within the project area and any construction staging areas will be removed to prevent the spread of these species into nearby or adjacent reserves;

- Cut-and-fill slopes will be revegetated with native plants, if possible, or with non-invasive plants suitable for the altered soil conditions.

    - All temporarily disturbed areas, such as staging areas, will be returned to pre-project conditions or improved with native plants within one year of project groundbreaking;

    - Vegetation and debris will be managed in and near culverts and under and near bridges to ensure that entryways remain open and visible to wildlife and that the passage through the culvert or under the bridge remains clear;

- Permittee shall conduct project activities in a manner that prevents the introduction, transfer, and spread of invasive species including plants, animals, and microbes (*e.g.*, algae, fungi, parasites, bacteria), from one project site and/or waterbody to another. Prevention BMPs and guidelines for invasive plants can be found on the California Invasive Plant Council's website at http://www.cal-ipc.org/ip/prevention/index.php (California Invasive Plant Council 2020) and for invasive mussels and aquatic species can be found at the Stop Aquatic Hitchhikers website at http://www.protectyourwaters.net/ (Aquatic Nuisance Species Task Force 2017);

- Permittee shall inspect all vehicles, watercraft, tools, waders, boots, and other project-related equipment and remove all visible soil, mud, plant materials, and animal remnants prior to entering and exiting the project site and/or between each us in different waterbodies;

- Decontamination of project equipment;

- Decontamination of vehicles and watercraft;

Operation and maintenance BMPs:

- Projects occurring in streams or the stream system will also comply with stream system condition 1, stream system avoidance and minimization, and stream system condition 2, stream system mitigation: restoration, as appropriate;

- Silt fencing or other sediment control devices will be installed down-slope from maintenance activities that disturb soil to minimize the transport of sediment off site;

- In the course of rural road maintenance, no erodible materials will be deposited into watercourses. Brush, loose soils, or other debris material will not be stockpiled within stream channels, including roadside drainage ditches, or on adjacent banks where it could be washed into the channel or drainage ditch;

- Alternatives, such as mechanical control, shall be considered to substantially lessen any significant effect on the environment before using pesticides. Integrated pest management BMPs shall be used for all vegetation control;

- Regularly scheduled visual inspection of all roads shall be conducted to identify sites where erosion is contributing sediment to local streams and stabilize eroding areas;

- Annual clearing of flow lines (*e.g.*, culverts and ditches) shall be conducted such that flow lines are maintained free of debris;

- Existing roads shall be used for access and disturbed areas for staging as site constraints allow. Off-road travel will avoid sensitive communities.

1.3.5.3.5. Conditions to Minimize Effects on Covered Species that Address Salmonids

Species condition 7 addresses CCV steelhead, CV fall-run Chinook salmon, and CV late fall-run Chinook salmon. This condition applies stream avoidance and minimization BMPs specific for salmonid habitat in the plan area.

Habitat for CCV steelhead, CV fall-run Chinook salmon, and CV late fall-run Chinook salmon will be protected, managed, and restored in the reserve system. See chapter 5 of the PCCP for more details (Placer County 2020b).

1.3.5.3.5.1. Guidelines for Salmonid Passage at Stream Crossings

All Covered Activities within salmonid habitat will adhere to the NMFS Guidelines for Passage at Stream Crossings (NMFS 2001) or most current NMFS guidance, where feasible, unless noted in this section. In addition, the California Salmonid Stream Habitat Restoration Manual (California Department of Fish and Game 2011) will be consulted for specific in-stream design features and protocols to enhance habitat for salmonids.

- For stream crossings, the following structure types will be considered, listed in descending order of preference:
    - Free-span bridges that fully span, from top-of-bank to top-of-bank, the stream and allow for long-term dynamic channel stability;
    - Streambed simulation approaches, including a bottomless arch, embedded culvert design, or ford that maintains that natural streambed. The structure shall be sufficiently large and embedded deep enough into the channel to allow the natural movement of bedload and formation of a stable bed inside the culvert or structure. There should not be an excessive drop at the outlet or too high water velocity through the passage structure;
    - Non-embedded culvert, often referred to as a hydrological design, for use in low-gradient areas, that allows fish passage;
    - Baffled culvert, creases in the culvert create a series of short high-velocity runs and low-velocity backwater areas that allow the fish to swim in short bursts and then rest, for use in high-gradient areas, that allows fish passage.
- If the project's site is in an active salmonid spawning area, only free-span bridges or streambed simulations, culverts with a bed that simulates the natural streambed, are acceptable.
- Most stream crossings, regardless of the design (*i.e.*, bridge or culvert) or material used, will be designed to accommodate the 100-year peak floodflow with appropriate clearance to prevent structural damage to the crossing, where feasible. In the valley, the 100-year floodplain can be thousands of feet wide on some stream systems, so it may not be feasible to build stream crossings to accommodate the 100-year peak floodflow. Unless culverts are intentionally designed to be undersized for stormwater detention or retention,

culverts must, at a minimum, accommodate the 100-year flood without causing any adjacent flooding around the crossing that could result in mass erosion of the bank or the structural support of the crossing. This requirement will reduce the risk of channel degradation, stream diversion, and failure that may lead to adverse effects on salmonids over the lifespan of the crossing (NMFS 2001). Some State or local requirements may deem that the 200-year floodplain be considered for stream crossings, the conditions in this section do not supersede those requirements.

- For in-stream culvert installation or replacement projects that may affect stream hydrology, the project must be designed so that the elevations of surface waters in the stream reach exhibit gradual flow transitions, both upstream and downstream. Abrupt changes in water surface and velocities must be avoided, with no hydrologic jumps, turbulence, or drawdown at the entrance. Hydrologic controls may be necessary to provide resting pools, concentrate low flows, prevent erosion of streambed or banks, and allow passage of bedload material (NMFS 2001).

- If a free-span bridge is not feasible, bridge piers and footings will be designed to have minimum impact on the stream. This applies in all stream systems, not just active salmonid spawning areas. A hydrological analysis must be prepared that shows piers or footings will not cause significant scour or channel erosion. Whenever possible, the span of bridges will also allow for upland habitat beneath the bridge to provide undercrossing areas for wildlife species that will not enter the creek. Native plantings, natural debris, or large rocks (not riprap) will be installed under bridges to provide wildlife cover and encourage the use of crossings.

- All in-stream structures will be aligned with the stream, with no abrupt changes in flow direction upstream or downstream of the crossing. This requirement can often be accommodated by changes in road alignment or slight elongation of the culvert. Where elongation would be excessive, such a solution must be weighed against a better crossing alignment and/or modified transition sections upstream and downstream of the crossing. Project components that may result in disruption of stream hydrology and alterations to the natural streambed will be anticipated and mitigated in the project design (NMFS 2001).

- If structural changes to the channel bed are necessary as part of project design, provisions for fish passage will be incorporated into the project design. If the project applicant has the opportunity to incorporate new fish passage into the project design in an area where fish passage is currently lacking, the project applicant will work with the PCA to determine if new fish passage would support recovery of Covered Species.

1.3.5.3.5.2. Applicable Measures

Salmonid 1. Fish passage design. Streamflow through new and replacement culverts, bridges, and over stream gradient control structures must meet the velocity, depth, and other passage criteria for salmonid streams as described by NMFS and CDFW guidelines or as developed in cooperation with NMFS and CDFW to accommodate site-specific conditions (NMFS 2001).

Salmonid 2. Fish passage during construction. Fish passage through dewatered channel sections shall be maintained at all times during the adult and juvenile migration season on streams with Covered Species to allow for unimpeded passage of migrating adults and juveniles. In addition, fish passage shall be maintained during summer on streams supporting summer rearing of Covered Species to allow for seasonal movement of resident fish when the natural channel segment within the vicinity of work areas also supports the movement of resident fish.

- To allow for fish passage, diversions shall:
    - Maintain continuous flows through a low-flow channel in the channel bed or an adjacent artificial open channel;
    - Present no vertical drops exceeding six inches and follow the natural grade of the site;
    - Maintain water velocities that shall not exceed 1.5 feet per second and provide velocity refugia, as necessary;
    - Maintain adequate water depths consistent with normal conditions in the project reach;
    - Be lined with cobble/gravel to simulate stream bottom conditions;
    - Be checked daily to prevent accumulation of debris at diversion inlet and outlet;
- A closed conduit pipe shall not be used for fish passage. Pipes may be used to divert flow through dewatered channel segments on streams that do not support migratory species, or during low-flow conditions when the channel segment within the vicinity of the work areas at the time of construction does not support the movement of fish.

Salmonid 3. Pre-construction relocation. Prior to the start of work or during the installation of water diversion structures, if covered fish species are present and it is determined that they could be injured or killed by construction activities, a qualified biologist will first attempt to gently herd covered fish species away from work areas and exclude them from work areas with nets, if practicable. If herding is not practicable or effective, a qualified biologist shall capture covered fish species and transfer them to another appropriate reach. In considering the relocation, the qualified biologist will determine whether relocation is ecologically appropriate using a number of factors including site conditions, system carrying capacity for potential relocated fish, and flow regimes if flows are managed. If covered fish species are will be relocated, the following factors will be considered when selecting release sites:

- Similar water temperature, within 3.6°F or 2°C, as capture location. In addition, fish must be held in water that is at the same temperature as release sites at time of release. If raising or lowering of water temperature in holding apparatus is required, water temperatures in holding apparatus with fish should not be changed at a rate that exceeds 1.8°F (1°C) every two minutes, and should not exceed 9°F (5°C) per hour;
- Ample habitat availability prior to release of captured individuals;

- Presence of others of the same species so that relocation of new individuals will not upset the existing prey/predation function;
- Carrying capacity of the relocation location;
- Potential for relocated individuals to transport disease;
- Low likelihood of fish reentering work site or becoming impinged on exclusion net or screen.

Capture and relocation of covered fish species is not required by the PCCP at individual project sites, as determined by the PCA and/or the interagency working group, when site conditions preclude reasonably effective operation of capture gear and equipment, or when the safety of the biologist conducting the capture may be compromised.

Salmonid 4. Spawning gravel cleaning. Spawning gravel cleaning and replacement activities should be timed to occur during the dry season and after fry have emerged from the gravel (generally July 1 through October 1). Applicants may submit requests for extension of this work window to the PCA for review by CDFW and NMFS. In streams that receive summer irrigation flows, spawning gravel cleaning and replacement activities should be timed to occur after the irrigation season has ended and stream flows are at a minimum to minimize the need for site dewatering and to minimize the potential for downstream turbidity and sedimentation effects. If dewatering is needed, other applicable AMMs shall be implemented prior to commencing spawning gravel cleaning and replacement activities. Gravel to be placed in streams shall be washed to remove fines, rounded (*i.e.*, non-angular), and spawning-sized, between 0.4 and 4.0 inches (10 to 100 millimeters) in diameter. For gravel augmentation projects, gravels should be placed such that high flows naturally sort and distribute the material.

Salmonid 5. Use of riprap when necessary. When riprap is required to be placed below the OHWM, it shall have a cleanliness value of no less than 85 percent and shall be covered with clean, uncrushed rock consistent with NMFS spawning gravel size requirements. Current standards are 98 to 100 percent of the clean, uncrushed rock must pass through a 4-inch sieve, and 60 to 80 percent must pass through a 2-inch sieve. Of the total volume of rock placed, 50 percent shall consist of clean, uncrushed rock. This measure may be updated with more current standards.

1.3.5.3.5.3. Salmonid Stream Fees

Projects affecting riverine constituent habitat in a salmonid stream will be assessed a special habitat fee based on linear feet of impact. This will apply to both permanent and temporary impacts.

1.3.6. Activities Not Covered by the PCCP

The PCCP strives to cover a broad range of present and future activities over the permit term. Certain other activities are not appropriate for coverage under the PCCP, because of a lack of information, the speculative nature of the project, existing permits, acquisition of permits under a

separate program, or the risk that the project or activity is incompatible with the PCCP's conservation strategy. Categories of activities not covered by the PCCP are listed below.

(1) Non-participating cities. Any ground-disturbing activities within the jurisdictions of Auburn, Loomis, Rocklin, and Roseville that are not specifically undertaken by a plan permittee are not covered.

(2) Pesticide/herbicide/rodenticide application for the Federal permits. Pesticide, herbicide, and rodenticide uses are not activities permitted by USFWS or NMFS and will not be covered under the PCCP for Federal permits. All applicable injunctions stipulated during PCCP implementation will be adhered to until formal consultation between EPA, USFWS, and NMFS regarding the effects of pesticides on Covered Species is concluded. This activity is covered under the State permit.

(3) Routine and ongoing agricultural activities. Routine agricultural activities are defined broadly as activities that occur in the normal course of existing farming or ranching operations, including crop planting, crop harvesting, livestock management, and pesticide application. These activities are not covered by the PCCP. Routine and ongoing agricultural activities that do not go through a county or city permitting process (*e.g.*, grading and/or building permit) would not be subject to local approval and therefore cannot be covered by the PCCP. New intensive agricultural activities, such as cut-flower nurseries, Christmas tree farms, ornamental plant nurseries, dairies, and feedlots, are not covered by the PCCP unless these activities receive permits from Placer County and the City of Lincoln.

(4) Expansion of cultivated agriculture into natural lands. The expansion of cultivated agriculture into natural lands is not covered by the PCCP unless it is associated with an approved rural development project that is covered by the PCCP (*e.g.*, the expansion requires a grading permit). This category typically applies to new large-scale agricultural operations, such as row crops, vineyards, orchards, disking for winter grains, or pastures. If such agricultural projects do not require grading permits, they would typically not require local approvals by the permittees and, therefore, cannot be covered by the PCCP.

(5) Timber harvest operations. Most timber harvesting occurs within the Sierra east of the plan area and is rare in western Placer County. Timber harvest plans are regulated through State and Federal agencies and are not included as a Covered Activity.

(6) Quarries and other mining. Quarries and other mining were considered for inclusion in the PCCP. At the time of PCCP development, no specific projects were proposed for inclusion. Because of the potentially extensive effects associated with quarries and mining and the lack of understanding about what future projects might be proposed, the mining of sand or other aggregate material, or the mining of precious metals or other minerals is not covered by the PCCP.

(7) Municipal power generation. PG&E, PCWA power generation on behalf of the Middle Fork Project Finance Authority, Roseville Electric, Northern California Power Agency

(generating power for multiple agencies), and Sacramento Municipal Utility District activities for power generation and transmission, including municipal wind and large-scale solar.

(8) Present projects with their own ESA and CESA permits. Several development or infrastructure projects in the plan area in development during the preparation of the PCCP have obtained their own permits under the ESA and/or CESA. These projects will be bound by the terms of their separate permits, not by the PCCP, and will obtain incidental take coverage from those projects and not from the PCCP.

(9) Land use intensification in the valley or foothills conservation and rural development components of Plan Area A. Placer County and City of Lincoln general plans, specific plans, and implementing zoning may be changed over the course of the PCCP's permit term to allow changes in allowed land use type so long as the land use remains rural or agricultural or is compatible with rural or agricultural general plan designations, land use intensity is not increased, and residential density is not increased. Activities that do not meet these criteria are not prohibited by the PCCP, but are not specifically covered by the PCCP. Applicants who seek entitlements in valley CRD (A2) or foothills CRD (A4) that are inconsistent with these criteria must apply for take authorization outside of the coverage provided by the PCCP.

(10) Any private development that otherwise complies with CESA or ESA. The PCA, as the implementing entity, can determine that a proponent of a project under the jurisdiction of a permittee will not be required to comply with the conditions in chapter 6 of the PCCP, Program Participation and Conditions on Covered Activities (Placer County 2020b), or pay any fees if the proponent of the activity provides written confirmation to the PCA that CDFW and USFWS and/or NMFS have determined that the activity is not subject to the CESA and ESA, has already achieved the necessary take authorizations under the CESA and ESA, or has otherwise complied with the CESA and ESA. Under these circumstances, an activity will be deemed to be in compliance with the CESA and ESA by the PCA and thus be exempt from conditions in chapter 6 of the PCCP (Placer County 2020b) and fees if the proponent provides the following:

a. Letters from USFWS, NMFS, and/or CDFW that specifically refer to the activity and state that the activity is not likely to result in take of any federally or state-listed species individually or cumulatively, will not preclude successful implementation of the conservation strategy for all Covered Species, and the results for full protocol surveys, approved by CDFW, for state-listed species with the potential to occur on the site showing that no such species or habitat occurs on the site; or

b. A copy of an incidental take permit issued by CDFW for the activity and copies of incidental take statements or incidental take permits issued by USFWS and/or NMFS that authorize the proposed Covered Activity; or

c. A combination of the letters as described above and/or incidental take authorizations from all wildlife agencies with jurisdiction.

(11) Minor activities. Certain minor projects and activities are not subject to PCCP requirements and are not covered by the PCCP or the permits, because they are not expected to have adverse effects on Covered Species.

a. Activities that do not require a construction permit. Private development that does not require a development permit, grading permit, building permit, or other construction permit. For purposes of this section, construction permits do not include: ministerial permits for activities that will cause less than 500 square feet of ground disturbance, setback verification permits, sign permits, plumbing/mechanical/electrical building permits, private/public well permits, septic system permits, underground storage tank permits, tree permits, administrative approvals of antennas, temporary outdoor event permits where no ground disturbance occurs, permits for building remodel additions under 500 square feet, or permits for design review remodels under 500 square feet.

b. Activities on existing non-natural lands. Activities entirely within managed water or urban land cover types (see sections 3.4.1.1, 3.4.1.3, and 6.2.4.3 of the PCCP for more information (Placer County 2020b)).

c. Activities on existing small parcels. Private activities on existing small parcels equal to or less than 20,000 square feet existing at the time of PCCP adoption.

d. Small additions to improved properties. Private development improvements of less than 5,000 square feet of new impervious surface to existing improved sites, regardless of parcel size. Includes new structural improvements and installation of roads, sidewalks, hardscape, and other impervious surfaces.

1.3.7. USACE Proposed Action

The Sacramento District of the USACE is proposing to approve and implement the PCCP CWA 404 permit strategy, summarized below. For a comprehensive description of the proposed PCCP CWA 404 permit strategy, see Appendix C of the Placer County Conservation Program Final Environmental Impact Statement/Environmental Impact Report (PCCP FEIS/R) circulated for public review on May 22, 2020 (USFWS and Placer County 2020). The PCCP CWA 404 permit strategy includes USACE's proposed issuance of a programmatic general permit (PGP), two regional general permits (RGPs), and the establishment of abbreviated processes for issuing letters of permission (LOPs) and standard permits (these permits are described in more detail below).

The PCCP CWA 404 permit strategy provides an approach to authorizing the placement of dredged or fill material into waters of the United States (WOUS). within the plan area (see section 2.3 below for a description of the plan area), pursuant to section 404 of the CWA for Covered Activities as defined in the PCCP (see section 1.3.3 above below for a description of Covered Activities) that involve a discharge of dredged or fill material into WOUS. The PCCP CWA 404 permit strategy relies on the conservation strategy in the HCP/NCCP. For a

description of the conservation strategy, see section 1.3.4 above or chapter 5 of the PCCP (Placer County 2020b). This is mirrored in the CARP (Placer County 2020a) developed by the county as a basis for CWA 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 HCP/NCCP.

The procedures and associated requirements for the CWA 404 permits will integrate with those contained in the Western Placer County HCP/NCCP, resulting in consistent implementation of the HCP/NCCP and CWA 404 permitting under the PCCP CWA 404 permit strategy. Implementation of compensatory mitigation projects will be located on HCP/NCCP 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 ILF program will provide compensatory mitigation for impacts from Covered Activities. Payment of Western Placer HCP/NCCP fees into the ILF program to purchase credits will fulfill compensatory mitigation required for Covered Activities under the PCCP CWA 404 permit strategy.

The proposed RGPs and PGP are valid for 5 years from the date of issuance (or reissuance). The LOP procedure and the abbreviated standard permit process will be applied to specific activities that do not qualify for inclusion in the RGPs or PGP, and may be used throughout the HCP/NCCP permit term of 50 years. Because activities authorized through the CWA 404 permit strategy are a subset of Covered Activities of the Western Placer HCP/NCCP that are analyzed in this opinion, NMFS will consider this opinion valid for fifty years, unless new information reveals effects of USACE's proposed action may result in adverse effects to Covered Species or adverse modification of designated critical habitat in a manner not identified to date, or if a new species is listed that may be affected by the USACE's proposed action.

The PCCP CWA 404 permit strategy includes the following, see appendix C of the PCCP FEIS/R for complete drafts of the proposed permits (USFWS and Placer County 2020):

- A PGP 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;

- An RGP for minimal impact activities conducted by PCWA under the Western Placer County HCP/NCCP;

- A procedure for issuing LOPs 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 PCCP that may have a significant impact on the human environment, and require the preparation of an EIS under NEPA; and

- An RGP for minimal impact activities conducted under the PCCP ILF program.

1.3.8. Cost and Funding

Chapter 9 of the PCCP describes how costs were estimated, 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 PCCP section 9.2, Cost to Implement the Habitat Conservation Plan/Natural Community Conservation Plan, PCCP section 9.3, Cost Estimate Methodology and Assumptions, and PCCP section 9.4, Funding Sources and Assurances). Methods for calculating fees based on project impacts are described in PCCP section 9.4.1, Habitat Conservation Plan/Natural Community Conservation Plan Development Fees.

PCCP 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; PCCP appendix L, Cost Model and Assumptions provides additional detail. PCCP 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 PCCP. PCCP 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. PCCP 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 PCCP funding: annual automatic adjustments based on indices (see PCCP table 9-8, Development Fee Adjustment indices), and periodic assessments conducted every five years. PCCP section 9.4.0.7, Adjustment of Development Fees provides the methods and specific timing for conducting these adjustments.

PCCP funding will come from sources in the following three categories: plan development fees, local funding, and State and Federal funding.

PCCP 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 PCCP section 9.4.1, Habitat Conservation Plan/Natural Community Conservation Plan Development Fees.

PCCP section 9.4.1.9, Private Applicant Options to Pay Fees with Special Tax or Assessment District and PCCP 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 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 PCCP 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 PCCP 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 PCCP 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. PCCP section 9.4.3.3, Mitigation and Conservation Components provide guidance for delineating conservation versus mitigation under the PCCP.

2. ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of the ESA, each Federal agency must ensure that its actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, Federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provide an opinion stating how the agency's actions would affect listed species and their critical habitats. If incidental take is reasonably certain to occur, section 7(b)(4) requires NMFS to provide an incidental take statement (ITS) that specifies the impact of any incidental taking and includes non-discretionary reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

2.1. Analytical Approach

This biological opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "jeopardize the continued existence of" a listed species, which is "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). Therefore, the jeopardy analysis considers both survival and recovery of the species.

This biological opinion relies on the definition of "destruction or adverse modification," which "means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species" (50 CFR 402.02).

The designation of critical habitat for CCV steelhead uses the term primary constituent element (PCE) or essential features. The 2016 critical habitat regulations (50 CFR 424.12) replaced this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting a "destruction or adverse modification" analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this biological opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

The 2019 regulations define effects of the action using the term "consequences" (50 CFR 402.02). As explained in the preamble to the regulations (84 FR 44976), that definition does not change the scope of our analysis and in this opinion we use the terms "effects" and "consequences" interchangeably.

We use the following approach to determine whether a proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- Evaluate the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species and critical habitat.
- Evaluate the effects of the proposed action on species and their habitat using an exposure-response approach.
- Evaluate cumulative effects.
- In the integration and synthesis, add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species and critical habitat, analyze whether the proposed action is likely to: (1) directly or indirectly 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, or (2) directly or indirectly result in an alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.
- If necessary, suggest a reasonable and prudent alternative to the proposed action.

2.2. Rangewide Status of the Species and Critical Habitat

This opinion examines the status of each species that would be adversely affected by the proposed action (Table 3). The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents, such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02. The opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the function of the PBFs that are essential for the conservation of the species.

Table 3. Description of species, current ESA listing classifications, and summary of species status

Species	Listing Classification and Federal Register Notice	Status Summary
CCV steelhead DPS	Threatened, 71 FR 834; January 5, 2006	According to the NMFS 5-year species status review (NMFS 2016), the status of CCV steelhead appears to have remained unchanged since the 2011 status review that concluded that the DPS was in danger of becoming endangered. Most natural-origin CCV populations are very small, are not monitored, and may lack the resiliency to persist for protracted periods, if subjected to additional stressors, particularly widespread stressors, such as climate change. The genetic diversity of CCV steelhead has likely been impacted by low population sizes and high numbers of hatchery fish relative to natural-origin fish. The life-history diversity of the DPS is mostly unknown, as very few studies have been published on traits, such as age structure, size at age, or growth rates in CCV steelhead.
CV Fall-run Chinook salmon evolutionarily significant unit (ESU)	Listing was found not warranted and the species were designated as a candidate species in 1999 (64 FR 50394). In 2004, the CV fall-/late fall-run Chinook salmon ESU was re-classified as a species of concern (69 FR 19975) due to specific risk factors.	According to CDFW's GrandTab (CDFW 2020) compilation of escapement for estimates for CV fall-run Chinook salmon, the status of CV fall-run Chinook in the Sacramento and San Joaquin watersheds seems to decline and rebound based on water year types. Recent trends for the Sacramento River populations show a decline in recent years as a result of drought years (*i.e.*, 2014 -2015). The past five years have seen a declining trend for escapement in the Sacramento River watershed (excluding hatchery escapement abundances). In the San Joaquin River watershed, CV fall-run Chinook salmon escapement estimates have remained relatively stable, and general trends show an increase in escapement estimates into the San Joaquin tributaries (excluding hatchery escapement).
CV Late fall-run Chinook salmon ESU	Listing was found not warranted and the species were designated as a candidate species in 1999 (64 FR 50394). In 2004, the CV fall-/late fall-run Chinook salmon ESU was re-classified as a species of concern (69 FR	CDFW's GrandTab (CDFW 2020) compilation of escapement estimates for CV late fall-run Chinook salmon in the Sacramento River watershed generally indicates a declining trend. There are no escapement or population estimates for CV late fall-run Chinook salmon in the San Joaquin watershed.

Species	Listing Classification and Federal Register Notice	Status Summary
	19975) due to specific risk factors.	

Table 4. Description of critical habitat, listing, and status summary.

Critical Habitat	Designation Date and Federal Register Notice	Description
CCV steelhead DPS	September 2, 2005; 70 FR 52488	Critical habitat for CCV steelhead includes stream reaches of the Feather, Yuba, and American Rivers, Big Chico, Butte, Deer, Mill, Battle, Antelope, and Clear Creeks, the Sacramento River, as well as portions of the northern Delta. Critical habitat includes the stream channels in the designated stream reaches and the lateral extent as defined by the ordinary high-water line. In areas where the ordinary high-water line has not been defined, the lateral extent will be defined by the bankfull elevation. PBFs considered essential to the conservation of the species include: spawning habitat, freshwater rearing habitat, freshwater migration corridors, and estuarine areas. Although the current conditions of PBFs for CCV steelhead critical habitat in the Central Valley are significantly limited and degraded, the habitat remaining is considered highly valuable.

2.2.1. Recovery Plan

In July 2014, NMFS released a final recovery plan for Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon, and CCV steelhead (NMFS 2014b). The recovery plan outlines actions to restore habitat, access, and improve water quality and quantity conditions in the Central Valley to promote the recovery of listed salmonids. Key actions for the recovery plan include conducting landscape-scale restoration throughout the Delta, incorporating ecosystem restoration into Central Valley flood control plans, that includes breaching and setting back levees, and restoring flows throughout the Sacramento and San Joaquin River basins and the Delta. Within the action area, recovery actions that have overlap with planned activities of the PCCP include removing fish passage barriers, consolidating and screening diversions, increasing floodplain connectivity, permanently protecting riparian habitat through easements and/or land acquisition, restoring riparian habitat, controlling non-native predators, providing gravel, and improving instream refuge cover for salmonids to minimize predation.

2.2.2. Global Climate Change

One major factor affecting the rangewide status of the threatened and endangered anadromous fish in the Central Valley and aquatic habitat at large is climate change. Warmer temperatures associated with climate change reduce snowpack and alter the seasonality and volume of seasonal hydrograph patterns (Cohen *et al.* 2000). Central California has shown trends toward warmer winters since the 1940s (Dettinger and Cayan 1995).

Projected warming is expected to affect Central Valley Chinook salmon. Because the runs are restricted to low elevations as a result of impassable rim dams, if climate warms by 5°C (9°F), it is questionable whether any Central Valley Chinook salmon populations can persist (Williams 2006).

Although CCV steelhead will experience similar effects of climate change to Chinook salmon, as they are also blocked from the vast majority of their historic spawning and rearing habitat, the effects may be even greater in some cases, as juvenile steelhead need to rear in the stream for one to two summers prior to emigrating as smolts. In the Central Valley, summer and fall temperatures below the dams in many streams already exceed the recommended temperatures for optimal growth of juvenile steelhead, which range from 14°C to 19°C (57°F to 66°F).

In summary, observed and predicted climate change effects are generally detrimental to the species (McClure 2011, Wade *et al.* 2013), so unless offset by improvements in other factors, the status of the species and critical habitat is likely to decline over time. The climate change projections referenced above cover the time period between the present and approximately 2100. While there is uncertainty associated with projections, which increases over time, the direction of change is relatively certain (McClure *et al.* 2013).

2.3. Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

The PCCP plan area is the area within which Covered Activities will be implemented (see Figure 1, above). Placer County, California covers a total area of 1,500 square miles (962,000 acres) and stretches from the Sacramento Valley east to the Sierra Nevada mountains and the California-Nevada state line. The plan area includes two main parts and associated subcomponents:

- Plan Area A is the main focus of the PCCP and where all future growth and most of the Covered Activities will take place. Plan Area A is the City of Lincoln plus all incorporated lands within western Placer County. Plan Area A is divided into the valley, which is 100,698 acres, and the foothills, which is 109,134 acres, for a total of 209,832 acres.

- Plan Area B comprises several specific additional areas in Placer County and adjacent Sutter County where only specific Covered Activities may occur, see section 1.3.3 above or section 2.5.2 of the PCCP (Placer County 2020b) for more details.

    - B1, permittee activity in non-participating city jurisdiction, 50,636 acres

- B2, PCWA zone 1 operations and maintenance, 6,315 acres
- B3, Raccoon Creek floodplain conservation, 1,724 acres in Sutter County
- B4, fish passage channel improvement, 33 miles of channels in Sutter County
- B5, Big Gun Conservation Bank, 52 acres, not shown in figures

Nearly all of the plan area, approximately 95 percent, is in private ownership.

The PCCP plan area is primarily located in western Placer County, California with an incursion of 1,724 acres for floodplain restoration and 33 stream miles for fish passage improvements into Sutter County, California. As each year, the location, timing, and size of projects to be covered by the PCCP is unknown, it is difficult to determine the extent of all areas affected. Instead, the action area is determined by the PCCP plan area and it includes all streams, rivers, riparian areas, and hydrologically linked upslope areas within the PCCP plan area (see Figure 4, below). To account for water quality and acoustic effects that extend outward from Covered Activities, the action area includes an additional 1,000 feet upstream and downstream from all the PCCP plan area boundaries.

Western Placer County falls within four sub-basins at the U.S. Geological Survey (USGS) hydrologic unit code (HUC) level 8: upper Bear River, Raccoon Creek/Auburn Ravine (including Raccoon Creek, Markham Ravine, Auburn Ravine, and Pleasant Grove Creek), lower American River (which includes Dry Creek in the action area), and upper American River. Note that Raccoon Creek was previously known as Coon Creek and is referenced as such in supporting documents and maps including the NMFS recovery plan (NMFS 2014b), the PCCP updated their language for this creek and we have also updated the language in this opinion to Raccoon Creek anywhere that Coon Creek would have been referenced. Because Nimbus Dam blocks anadromy further downstream, the upper American River no longer supports salmonids and is outside of the action area. If the removal of dams or other fish passage barriers provides an increase in anadromous habitat, those areas will then be included in the action area. The action area includes, either in whole or in part, the following USGS quadrangles (quads): Wheatland, Camp Far West, Wolf, Lake Combie, Nicolaus, Sheridan, Lincoln, Gold Hill, Auburn, Verona, Pleasant Grove, Roseville, Rocklin, Pilot Hill, Rio Linda, Citrus Heights, Folsom, Clarksville.

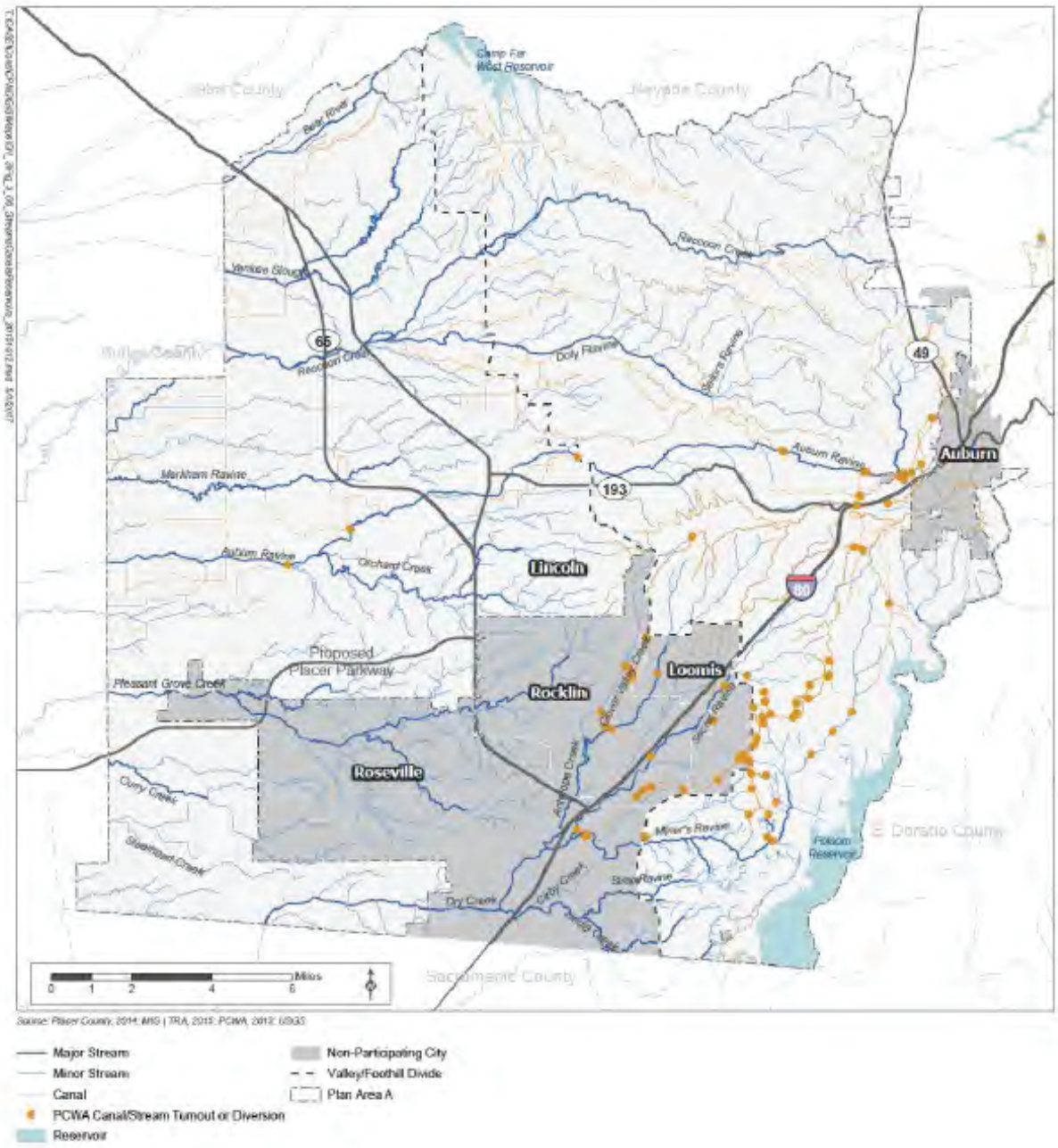


Figure 4. Streams, canals, and reservoirs in the PCCP plan area, from PCCP figure 1-6 (Placer County 2020b).

2.4. Environmental Baseline

The "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 consultations, 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 (50 CFR 402.02).

2.4.1. Status of the Covered Species and Critical Habitat in the Action Area

The action area serves as habitat for anadromous CCV steelhead, CV fall-run Chinook salmon, and CV late fall-run Chinook salmon. CCV steelhead is federally listed as a threatened species, while CV fall-run Chinook salmon and CV late fall-run Chinook salmon are considered species of concern by NMFS. All are considered Covered Species for the PCCP. Designated critical habitat for CCV steelhead occurs within the action area.

Western Placer County has 738 miles of streams and 303 miles of irrigation supply and drainage canals mapped. Chinook salmon and CCV steelhead use 122 miles, or roughly 60 percent, of all major streams in western Placer County (Placer County 2020b). These species occur in the Bear River, Auburn Ravine, and Dry Creek and their tributaries (Table 5).

Table 5. CCV steelhead, CV fall-run Chinook salmon, and CV late fall-run Chinook salmon habitat types across watersheds in western Placer County. Adapted from species maps 9 and 10 from PCCP Appendix D (Placer County 2020c)

Watershed	River/Stream	CCV Steelhead Habitat	CV Late Fall-run/CV Fall-run Chinook Habitat
Bear River	Bear River	Spawning, rearing, and migration	Spawning, rearing, and migration
Auburn Ravine/Raccoon Creek	Raccoon Creek	Spawning, rearing, and migration – independent population	Spawning, rearing, and migration
	Doty Creek	Spawning, rearing, and migration	Spawning, rearing, and migration
	Auburn Ravine (upper)	Spawning, rearing, and migration – independent population	Spawning, rearing, and migration

Watershed	River/Stream	CCV Steelhead Habitat	CV Late Fall-run/CV Fall-run Chinook Habitat
	Auburn Ravine (lower)	Rearing and migration – independent population	Rearing and migration
Dry Creek	Clover Valley Creek	Spawning, rearing, and migration – other sources	Spawning, rearing, and migration – other sources
	Antelope Creek	Spawning, rearing, and migration – other sources	Spawning, rearing, and migration – other sources
	Secret Ravine	Spawning, rearing, and migration	Spawning, rearing, and migration
	Miners Ravine	Spawning, rearing, and migration	Spawning, rearing, and migration
	Linda Creek	Spawning, rearing, and migration – other sources	Spawning, rearing, and migration – other sources
	Cirby Creek	Spawning, rearing, and migration – other sources	Spawning, rearing, and migration – other sources
	Dry Creek	Rearing and migration	Rearing and migration

The Auburn Ravine watershed includes Auburn Ravine, Raccoon Creek, Doty Ravine, Sailor's Ravine, Markham Ravine, and Pleasant Grove Creek. The Dry Creek watershed spans Placer and Sacramento Counties, draining approximately 101 square miles (Placer and Sacramento Counties 2003). The watershed contains four sub-watersheds: Cirby/Linda Creeks (including Strap Ravine), Antelope Creek (including Clover Valley Creek), Secret Ravine, and Miners Ravine. The main tributaries of the Bear River include Steephollow and Greenhorn Creeks above Rollins Lake, and Wolf and Little Wolf Creeks between Lake Combie and Camp Far West Reservoir (Placer County 2020c).

2.4.1.1. CCV Steelhead

The watersheds mentioned above function as spawning, rearing, and migratory habitat for CCV steelhead. Spawning adults, holding post-spawn adults, and rearing juveniles may utilize the area on their way to the estuary. Due to the life history timing of CCV steelhead, it is possible for one or more of the following life stages to be present within the action area throughout the year, including adult migrants, holding and spawning adults, eggs, rearing juveniles, or emigrating juveniles. CCV steelhead are known to be present in the plan area in Bear River, Coon Creek (including the Doty Ravine tributary), Auburn Ravine, and Dry Creek (including Secret Ravine and Miners Ravine tributaries) (Bailey 2003, NMFS 2014b, Placer County 2009).

CCV steelhead enter fresh water from August through April and hold until flows are high enough in tributaries to enter for spawning (Moyle 2002). Steelhead adults typically spawn from December through April, with peaks from January through March in small streams and tributaries where cool, well-oxygenated water is available year-round (Hallock *et al.* 1961, McEwan 2001). Hallock *et al.* (1961) found that juvenile steelhead in the Sacramento River basin migrate downstream during most months of the year, but the peak emigration period occurred in the spring, with a much smaller peak in the fall.

The recovery plan (NMFS 2014b) provides watershed profiles for Auburn Ravine, Dry Creek, and Bear River. The recovery plan identifies these watersheds within the action area as core 2 and core 3 watersheds within the Northern Sierra Nevada diversity group (Table 6).

Table 6. Population presence, risk of extinction, and classification of watersheds for those watersheds containing CCV steelhead designated critical habitat within the action area.

River/Creek	Historic Population	Current Population	Population Extinction Risk (Lindley *et al.* 2007, Williams *et al.* 2011)	Classification*
Auburn Ravine	No	Yes	Uncertain	Core 2
Dry Creek	Yes	Yes	Uncertain	Core 3
Bear River	Yes	Yes	Uncertain	Core 3

*Classification of watersheds as identified in the recovery plan (NMFS 2014b).

Populations identified in the recovery plan as core 1 are those that possess the known ability or potential to support a viable population. Core 2 populations meet, or have the potential to meet, the biological recovery standard for moderate risk of extinction. These watersheds have lower potential to support viable populations than core 1 populations, due to lower abundance, or amount and quality of habitat. These populations provide increased life history diversity to the DPS and are likely to provide a buffering effect against local catastrophic occurrences that could affect other nearby populations, especially in geographic areas where the number of core 1

populations is lowest. Core 3 watersheds have populations that are present on an intermittent basis and require straying from other nearby populations for their existence. These populations likely do not have the potential to meet the abundance criteria for moderate risk of extinction, but are important because, like core 2 populations, core 3 populations aid in recovery of the species by providing genetic diversity and dispersal connectivity to the greater DPS.

2.4.1.1.1. Auburn Ravine Watershed

The streams within the Auburn Ravine watershed provide spawning, rearing, and migratory habitat for CCV steelhead. The upper reaches of Auburn Ravine serve as spawning habitat, while downstream areas are suitable for rearing and migration. California Department of Fish and Game found steelhead to be, on average, the most abundant fish species during both the winter 2004 and spring 2005 fish community survey sampling efforts in Auburn Ravine (Navicky 2008). Enough steelhead data were collected to estimate an average of 2,163 juvenile CCV steelhead present per river mile between the McBean Park and Wise Road sampling locations (Placer County 2020c). CDFW survey results indicate that Auburn Ravine may constitute a probable steelhead spawning area given the presence of very small juveniles during spring (NMFS 2014c). Auburn Ravine may represent a year-round rearing area for juvenile CCV steelhead, given the presence of both young-of-year and larger juveniles during November, December, and April. Data indicate that winter and spring water temperatures are suitable for successful anadromous fish spawning and juvenile rearing (Placer County 2020b).

Raccoon Creek contains good migration corridors for adult salmonids, patchy spawning habitat and good juvenile rearing habitat in the lower reaches, and good spawning habitat and juvenile rearing habitat in the upper reach (Placer County 2020b). Data indicate that winter and spring water temperatures in Raccoon Creek upstream of Gladding Road are suitable for anadromous fish spawning and rearing on an annual basis. CDFW sampling found juvenile steelhead in Raccoon Creek, although far fewer than in Auburn Ravine (Navicky 2008).

Doty Ravine, a tributary to Raccoon Creek, contains spawning habitat, good migration corridors, and juvenile rearing habitat; however, the quality of migration habitat has been reduced by barriers to upstream passage of adult and juvenile salmonids (Placer County 2020b).

2.4.1.1.2. Dry Creek Watershed

CCV steelhead utilize the mainstem Dry Creek as only a migratory corridor, while tributaries, such as Miners Ravine and Secret Ravine, provide spawning and rearing habitat. Current estimates of steelhead in the Dry Creek watershed number a few hundred fish, with most occurring in Miners and Secret Ravines (Placer and Sacramento Counties 2003). Juvenile steelhead have been collected in rotary screw traps immediately downstream of the confluence of Secret and Miners Ravines, as well as captured in Secret Ravine as recently as 2005 (Placer County 2020b). Limited spawning sites have been identified in Miners Ravine, and temperatures are sufficient for summer rearing of juvenile CCV steelhead (Placer County 2020b). Secret Ravine has the highest quality habitat within the Dry Creek watershed, providing spawning and rearing habitat for steelhead (Placer and Sacramento Counties 2003). Electrofishing and screw trap sampling conducted between the winter of 1998 and the summer of 2000 in Miners and Secret Ravine documented the presence of CCV steelhead in both Dry Creek tributaries (Bailey

2003). In addition, several steelhead smolts were caught in the spring of 1999 and 2000 just downstream of the confluence of Secret and Miners Ravine, suggesting the presence of a naturally spawning population. Linda Creek has two sites that might be suitable for spawning and rearing. Antelope Creek provides minimal habitat for CCV steelhead for the purposes of spawning and rearing.

The Dry Creek watershed has a potential to support a viable population of CCV steelhead despite the limited amount of suitable spawning habitat and year-round rearing habitats. Although habitat conditions within the action area are degraded, the importance of this area for the conservation of CCV steelhead is considered to be high. This is mainly because there is very little suitable CCV steelhead habitat remaining in the Central Valley and any habitat that is currently available is essential for sustaining the DPS.

2.4.1.1.3. Bear River Watershed

During periods of high flows, CCV steelhead are known to utilize the river for limited spawning (Jones & Stokes 2004). Because environmental conditions do not support a self-sustaining population of steelhead in the Bear River, those CCV steelhead that do spawn during high flow years have likely originated from the Feather River Fish Hatchery. The lower reach of the Bear River is narrow and incised, and downstream gravel recruitment is limited. In addition, the Camp Far West Reservoir may not provide releases of water temperatures suitable for salmonids downstream.

2.4.1.1.4. Viability

The recovery plan states that presently, no viable independent steelhead populations have been identified and all are at high risk of extinction (NMFS 2014b). The 2016 5-year status review states that the viability of CCV steelhead has changed little since the 2011 status review, and concerns raised in the previous status review remain (NMFS 2016). The 2016 viability assessment stated there has been no change in extinction risk since 2010 viability assessments and the CCV steelhead DPS continues to be at a high risk of extinction (Williams *et al*. 2016).

2.4.1.2. CV Fall-run Chinook Salmon and CV Late Fall-run Chinook Salmon

CV fall-run Chinook salmon and CV late fall-run Chinook salmon spawn and rear in western Placer County streams, including Bear River, Raccoon Creek, Doty Ravine, Auburn Ravine, Dry Creek, Antelope Creek, Clover Valley Creek, Secret Ravine, and Miners Ravine (Jones & Stokes 2005). Bailey (2003) summarized data from multiple sources that found native and hatchery-origin fall-run Chinook to be present in the Raccoon Creek, Auburn Ravine, and Dry Creek watersheds, but they were absent from the Pleasant Grove and Curry Creek watersheds, likely due to their intermittent flow character. The Placer County populations are part of the State's most abundant fall-/late fall-run of Chinook salmon (PCCP appendix D).

CV fall-run Chinook salmon migrate from the Pacific Ocean to Central Valley rivers from approximately July to December. Within western Placer County stream, migration is dependent on adequate flows and suitable water temperatures, which usually occur following storm events in October or November (Jones & Stokes 2005). Fall-run Chinook salmon spawn from late September to December, with peak spawning during late October and November (Moyle 2002).

Egg incubation for fall-run Chinook salmon begins in September and can extend to March (Vogel and Marine 1991). Within western Placer County streams, juvenile CV fall-run Chinook salmon tend to migrate from February through June, with peak migration occurring from March to May (Placer and Sacramento Counties 2003).

Adult CV late fall-run Chinook salmon migrate from the Pacific Ocean to Central Valley rivers from approximately mid-October through mid-April. Late fall-run Chinook spawn from December to April, with peak spawning during February and March. Egg incubation for late fall-run Chinook salmon occurs from January through June (Vogel and Marine 1991). Juvenile rearing and migration occur from April to December.

Due to this life history timing, one or more life stages of CV fall-run Chinook salmon or CV late fall-run Chinook salmon may be present within the action area throughout the year.

CV fall-run Chinook salmon and CV late fall-run Chinook salmon do not have a recovery plan; however, recovery actions identified in the recovery plan (NMFS 2014b) would likely also apply to the recovery of CV fall-run Chinook salmon and CV late fall-run Chinook salmon. Stressors to Chinook salmon in the plan area include passage impediments/barriers affecting adult migration and spawning, low-flow conditions, limited instream gravel supply, water temperature and water quality issues from agricultural and urban runoff, loss of riparian habitat and instream cover, and predation (NMFS 2014b). Numerous hydropower, water storage, and flood-control projects have been built that block access to large areas that were historically used by salmon. This loss of habitat is widely recognized as a major factor in the decline of salmon populations throughout their range.

2.4.1.2.1. Auburn Ravine Watershed

The oldest known record from Auburn Ravine was a CDFG report summarized by Bailey (2003), which estimated that the stream had a run of approximately 300 Chinook salmon. Raccoon Creek and Doty Creek also had historic Chinook salmon runs (Bailey 2003, Placer County 2013). A 2004 – 2005 fish community survey performed by the California Department of Fish and Game in Auburn Ravine and Raccoon Creek documented one juvenile Chinook salmon in Auburn Ravine and 25 juvenile Chinook salmon in Raccoon Creek (Navicky 2008, Placer County 2020c). Additionally, three adult Chinook salmon were observed spawning at the Gladding Road site in December 2004 (Navicky 2008, Placer County 2020c). Juvenile, fall-run Chinook originating from the Feather River and Nimbus hatcheries are known to occur in the Raccoon Creek and Auburn Ravine watersheds (Bailey 2003). Chinook salmon were also found at the Hidden Falls Park after new gravel was placed as part of the construction of a new bridge over Raccoon Creek (Placer County 2013). Additional fall-run sized Chinook salmon were observed in Raccoon Creek near McCourtney Road in May 2015 (Placer County 2020c).

As part of the Placer County Legacy Program, the NID gaging station in the City of Lincoln impeding salmon movement in the Auburn Ravine watershed was modified to allow fish passage (Placer County 2013). Following the modification of the NID gaging station, nearly 300 Chinook salmon ascended the structure in November and December 2012 (Placer County 2013).

2.4.1.2.2. Dry Creek Watershed

The Dry Creek watershed supports annual runs of CV fall-run Chinook salmon and CV late fall-run Chinook salmon. CDFW conducted periodic Chinook salmon spawning escapement surveys in the Dry Creek watershed as far back as 1963, mostly upstream of the confluences with Miners and Secret Ravines (Placer and Sacramento Counties 2003). In 1964, the estimated Chinook salmon population was over 1,000 fish, with the majority of spawning occurring in Secret and Miners Ravines (Jones & Stokes 2005). Recent spawning surveys conducted by the Dry Creek Conservancy during winter months have documented fall-/late-fall run Chinook salmon spawning. Dry Creek is known to support a few hundred fish; however, most occur in Secret and Miners Ravines (Placer County 2020b).

The mainstem of Dry Creek is not suitable spawning or rearing habitat for anadromous fish, but is considered a migration corridor to the spawning and rearing habitat in upstream tributaries, despite degradation of habitat and lack of habitat complexity in channel. Riparian cover in upstream portions of the creek are intact. Throughout the creek, reaches have been altered, resulting in degraded habitat and water quality issues. Dry Creek is heavily influenced by urban development and runoff as well as fish passage barriers, such as Hayder Dam and a rubble dam just downstream of Watt Avenue.

Miners Ravine supports Chinook salmon, and limited spawning sites have been identified. Fall and winter temperatures are sufficient in Miners Ravine to support adult spawning and rearing of juvenile fall-run Chinook salmon. Salmon have been observed spawning in Miners Ravine in 2012 (Placer County 2020b).

Habitat in Secret Ravine has the highest probability of supporting salmonid populations within the watershed. Water temperatures appear to be suitable for Chinook salmon spawning and rearing throughout Secret Ravine. Since the late 1990s, adult Chinook salmon populations in Secret Ravine have averaged about 160 fish per year (Placer and Sacramento Counties 2003). From 1997 to 2002, outmigrating juvenile accounts from Secret Ravine averaged approximately 15,000 per year (Ayres *et al.* 2003).

Antelope Creek provides minimal habitat for Chinook salmon, which is highly degraded due to fish passage barriers, poor water quality, high sediment loads, and sediment size too small for spawning (Placer County 2020b). There are limited gravel areas within Antelope Creek that may be suitable for spawning. Water temperatures in Antelope Creek are suitable for fall-run Chinook salmon spawning and rearing; however, warm summer water temperatures may limit suitable habitat for salmon rearing. Fall-run Chinook salmon continue to be documented in Antelope Creek during the annual one-day salmon count coordinated by the Dry Creek Conservancy (Placer County 2020c). In 2003, 44 live Chinook salmon and 7 carcasses were observed in Antelope Creek (Placer County 2020c). Fall-run Chinook salmon have been documented spawning in Antelope Creek over the last 40 years; therefore, fall-run Chinook are believed to persist in the creek (Bailey 2003).

Salmonids have been observed in Linda Creek, which provides spawning and rearing habitat (Placer County 2020b). Data from 1999–2004 counted a total of 251 live salmon and 226 salmon carcasses observed in Linda Creek. Most of the habitat is degraded with steep eroding banks and high summer water temperatures. The PCCP (Placer County 2020b) specifies that two sites may be suitable for spawning and rearing: one upstream of Cherry Avenue and the other was near the

Old Auburn Road crossing of Linda Creek (Placer and Sacramento Counties 2003). Cirby Creek is heavily urbanized and likely no longer supports salmonids.

Counts of Chinook adults and redds performed by the Dry Creek Conservancy (2009) indicate a negative trend in all Dry Creek watershed tributaries surveyed (Miners Ravine, Secret Ravine, Antelope Creek, Linda/Cirby Creek, and the main stem of Dry Creek), with fewer adults and redds observed from 2003 to 2008 (Dry Creek Conservancy 2009, Placer County 2020c). Factors contributing to the decline of Chinook salmon include increased sediment, altered flow regimes, reduced access to habitat, and toxicity (Ayres *et al.* 2003).

2.4.1.2.3. Bear River Watershed

The Bear River watershed comprises a small portion of northeastern Placer County, and is the second largest tributary to the Feather River. The Bear River historically hosted a "substantial" Chinook run (Reynolds et al. 1993). Currently, the Bear River supports an occasional run of adult fall-run Chinook salmon in years when flows are sufficient to provide passage (Yoshiyama *et al.* 1996, Placer County 2013).

2.4.1.3. Status of Critical Habitat

Critical habitat for CCV steelhead is designated within the action area. CV fall-run Chinook salmon and CV late fall-run Chinook salmon are not currently federally listed, and, therefore, do not have designated critical habitat. Habitat features essential for survival and conservation of these salmon runs are similar to those for CCV steelhead and those described for spring-run Chinook salmon in the recovery plan (NMFS 2014b).

Within the action area, locations on Raccoon Creek, Doty Ravine, Auburn Ravine, Cross Canal, Dry Creek, Miners Ravine, Secret Ravine, and Bear River are located in designated critical habitat for CCV steelhead. Many other creeks within the action area do not contain designated critical habitat, but CCV steelhead may still be present. CCV steelhead may be present in Cirby Creek, Linda Creek, Clover Valley Creek, Antelope Creek, and Strap Ravine, despite non-designated critical habitat.

The PBFs of CCV steelhead designated critical habitat within the action area include freshwater spawning habitat, freshwater rearing habitat, and freshwater migration corridors. The essential features of these PBFs include: water quality and forage, water quantity and floodplain connectivity, water temperature, riparian habitat, natural cover, migration corridors free of obstruction and excessive predation, and water quantity and quality conditions and substrate supporting spawning, incubation, and larval development. However, the condition and function of this habitat have been severely impaired through several factors, including mining, agriculture, urbanization, and removal of riparian vegetation. Such activities throughout these watersheds have resulted in degradation of these PBFs across the entire region. Although the current conditions of PBFs are significantly limited and degraded, the habitat remaining is considered highly valuable to the conservation of the species.

2.4.1.3.1. Auburn Ravine Watershed

The headwaters of Auburn Ravine are characterized by high gradient, steep banks, large boulder and cobble substrates, and abundant riparian vegetation. In the middle reaches, the gradient and substrate size decrease and bank erosion increases, but there is still riparian vegetation and large woody debris. The gradient of Auburn Ravine is very low as it flows through the city of Lincoln, and it is dominated by sandy substrates and a relatively open tree canopy (Placer County 2020b). Further downstream, ranches and farms border the stream. Levees, grazing, and channel maintenance restrict riparian vegetation. High sediment loads, discharge from wastewater treatment plants, and a lack of riparian buffer in the downstream reaches of Auburn Ravine elevate water temperature and diminish habitat quality (Placer County 2020b). In the winter, flows in Auburn Ravine are dominated by runoff and effluent from the City of Auburn WWTP, which contributes discharge year-round (Placer County 2020b). Summer flows are high relative to natural conditions due to water imports from the Bear, Yuba, and American Rivers by NID, PCWA, and PG&E (Placer County 2020b).

The NID Lincoln Gaging Station below has been modified to provide fish passage, and it successfully provides passage, if water conditions are right. Chinook salmon have been observed ascending the structure in 2012 (Placer County 2013). Hemphill Dam currently presents a seasonal barrier to salmonid movement and has not been modified for year-round fish passage.

2.4.1.3.2. Dry Creek Watershed

Historical land uses within the Dry Creek watershed include placer mining, quarry development, agricultural development, and urbanization. Throughout Dry Creek, reaches have been straightened, floodplain areas reduced, reaches dredged, and riparian vegetation removed. This has resulted in eroding banks, sediment deposition, lack of cover, lack of pools and riffles, lack of sediment deposition, and barriers to anadromous fish movement. Sewer and water line crossings create low-flow migration barriers. Hayder Dam and a rubble dam just downstream of Watt Avenue create a partial barrier to anadromous fish migration (PCCP appendix D).

Tributaries within the Dry Creek watershed are known to support anadromous salmonids and other areas likely historically supported anadromous salmonids, but now either have passage barriers or severely degraded habitat. Dry Creek supports a relatively healthy riparian corridor upstream of Folsom Road to the confluence with Miners and Secret Ravines (Placer and Sacramento Counties 2003). Below the confluence with Secret and Miners Ravines, aquatic habitat is characterized by low gradient, slow moving water, dominated by sand/silt substrate. Available fish habitat is limited to undercut banks, overhanging vegetation, and some instream woody material. The mainstem of Dry Creek is not ideal fish habitat, but is considered to be a migratory corridor.

Data from the 2004/2005 surveys conducted by CDFW are consistent with previous studies and anecdotal information suggesting that Dry Creek is utilized as a migratory corridor for anadromous salmonid passage to spawning and rearing habitat in the upstream tributaries (Secret Ravine and Miners Ravine) (NMFS 2014c). Habitat is much more complex in Secret Ravine, with an abundance of pool habitat, large woody material, and suitable spawning habitat. All spawning habitat and accounts of spawning anadromous salmonids have been reported to be located upstream of the Dry Creek Wastewater Treatment Plant.

Miners Ravine still supports salmonids, however, many reaches are heavily degraded. Limited spawning sites have been identified in Miners Ravine, but Miners Ravine would likely support more CCV steelhead and CV fall and late fall-run Chinook salmon if fish passage to spawning sites was improved. Throughout Miners Ravine, reaches have been straightened, floodplain areas reduced, reaches dredged, and riparian vegetation removed resulting in eroding banks, sediment deposition, lack of cover, lack of pools and riffles, lack of sediment deposition, and barrier to anadromous fish movement (Placer County 2020b). High sediment loads and poor water quality limit distribution and success of salmonids. Miners Ravine has a history of placer mining, the mining of stream bed (alluvial) deposits for minerals, which accelerated stream incision down to the bedrock in the upper reaches.

Secret Ravine also still supports salmonids and has the highest quality fisheries habitat in the Dry Creek watershed (Placer and Sacramento Counties 2003). Habitat is complex in Secret Ravine with an abundance of pool habitat, large woody debris, and suitable spawning habitat. Water temperature data from Secret Ravine shows that only the upper portion of the watershed may have suitable conditions for summer rearing of steelhead, but water temperatures are suitable for Chinook salmon spawning and rearing throughout Secret Ravine. Utility pipeline crossings present obstacles to migration.

Linda Creek has two sites that might be suitable for spawning and rearing; however, most of the habitat is generally degraded with steep eroding banks, sedimented streambed, and high summer water temperatures. Cirby Creek is heavily urbanized and likely no longer supports salmonids (Placer and Sacramento Counties 2003).

Antelope Creek provides minimal habitat for the purposes of spawning and rearing. It has limited areas that may be suitable for spawning. Rock dams act as barriers to fish passage in Antelope Creek, degrading migratory habitat, although a few fish have been found in this tributary. Although much of Antelope Creek is degraded and characterized by low water levels, high temperatures, and fine sediment, these factors do not preclude its use for CCV steelhead juvenile rearing. The PCCP (Placer County 2020b) identifies the Antelope Creek stream channel as having the potential for good habitat with some restoration. Clover Valley Creek, a tributary of Antelope Creek, is similarly degraded, with high sediment loads, poor water quality, and rock dam barriers (Placer County 2020b).

2.4.1.3.3. Bear River Watershed

The Bear River watershed contains spawning and migration habitat, and salmonids continue to be found in the Bear River below Camp Far West Dam (Placer County 2020b). The upstream limit of anadromous fish access in the Bear River is the South Sutter Irrigation District's diversion dam, approximately 15 miles above the confluence with the lower Feather River (USFWS 1995). The lower Bear River continues to support remnant and/or “stray” wild and/or hatchery-sustained salmon, and in the past it supported both steelhead and sturgeon as well (Placer County 2020c). Inadequate streamflow in the Bear River prevents the establishment of a self-sustaining steelhead population (Jones & Stokes 2004).

2.4.2. Factors Affecting Covered Species and Critical Habitat in the Action Area

Key stressors identified in the recovery plan (NMFS 2014b) for CCV steelhead and critical habitat in the Auburn Ravine (1), Dry Creek (2), and Bear River (3) are listed below, with numbers corresponding to the watersheds for which they were identified as stressors. These factors also affect the other non-listed salmonids that may migrate, spawn, and rear in these watersheds.

- Passage impediments/barriers (1, 2)
- Flow conditions (*i.e.*, low flows, flow fluctuations) associated with attraction and migratory cues affecting adult immigration spawning, embryo incubation, and/or juvenile rearing and outmigration (1, 2, 3)
- Physical habitat alteration associated with limited supplies of instream gravel, habitat suitability and spawning habitat availability affecting adult spawning (1, 2, 3)
- Flow-dependent habitat availability affecting juvenile rearing and outmigration (1, 2, 3)
- Water temperature and water quality (*e.g.*, agricultural and urban runoff) affecting adult immigration and holding, spawning and embryo incubation, and/or juvenile rearing and outmigration (1, 2, 3)
- Entrainment at individual diversions affecting juvenile rearing and outmigration (1, 3)
- Loss of natural morphology, riparian habitat, floodplain habitat, and instream cover affecting juvenile rearing and outmigration (1, 2, 3)
- Predation associated with non-site-specific and structure-related habitats affecting juvenile rearing and outmigration (1)

These stressors also affect other anadromous species, including CV late fall-run Chinook salmon and CV fall-run Chinook salmon. Watersheds within western Placer County have been degraded from their historic condition and many anthropogenic and naturally occurring factors have led to the decline of anadromous fish in the surrounding ecosystems.

2.4.2.1. Fish Passage Barriers

Impassable dams block access to most of the historical headwater spawning and rearing habitat of CCV steelhead. Table 2 (section 1.3.4.2.2) describes many of the barriers to fish passage within western Placer County, including several dams and diversions. Dams and other passage barriers altered flows and temperatures from their natural and historic regimes. In addition, dams impede movement of aquatic organisms. Affected water quality results in long-term changes to downstream channels, riparian zones, and floodplains (Nilsson and Dynesius 1994, California Department of Water Resources 2002). The availability of steelhead habitat in the Central Valley has been reduced by as much as 95% or more by barriers to movement (*i.e.*, dams). Entrainment of emigrating juvenile salmonids results from unscreened or poorly screened water intakes on

irrigation pumps or hydroelectric generators, and it can be partially mitigated by proper screening.

To facilitate Auburn Ravine water deliveries to users, there are approximately 10 small seasonal diversion dams installed throughout Auburn Ravine. Most of the dams are less than 10 feet high, and they pond water for diversion into agricultural areas. Larger dams also divert water into major canals. Installation of the seasonal dams during the spring and removal during the fall reportedly can affect the upstream migration of some fish species (*e.g.*, CCV steelhead and CV fall-run Chinook salmon) (NMFS 2014c). Despite plans for retrofitting, Hemphill Dam has not been modified for fish passage. There are currently several proposed alternatives to allow for fish passage.

Tributaries within the Dry Creek watershed are known to support salmonids or have historically supported anadromous fish, but many have passage barriers or contain habitat that has been so degraded that they no longer support fish. Migratory access for adult salmonids through Dry Creek and its main tributaries, Antelope Creek, Secret Ravine, and Miners Ravine may be restricted by infrastructure in combination with low flow in the fall (Jones & Stokes 2005). Due to the construction of Cottonwood Dam, as well as various other barriers to passage, flows and temperatures within Miners Ravine have been altered from their natural and historic regimes. Dams convert riverine habitat into pools, which alters downstream flow rates for water and sediment. In addition, dams impede movement of aquatic organisms. The migratory corridor along Antelope Creek has been reduced for adult and juvenile fish by barriers to upstream passage (Jones & Stokes 2005). The percentage of stream flows removed by diversions along Dry or Antelope Creeks have not been documented. However, there are three dams on Dry Creek and the associated diversions are probably active and unscreened (Jones & Stokes 2005). Additionally, there is a dam on Antelope Creek whose associated diversions may be active.

The Bear River Watershed has also been heavily influenced by water management.

Though beavers and their dams are sometimes characterized as nuisances, beavers are native to California (Fountain 2014). Beavers and salmonids co-existed in the same rivers and streams for thousands of years. The impact of beaver dams on salmonids can be complex, with both positive and negative effects depending on conditions (Bouwes et al. 2016). Beaver dams may act as potential barriers to fish movement. However, beaver dams have very different hydraulics from man-made structures, so typical fish passage criteria (*e.g.*, height guidelines) may not be appropriate (Pollock *et al.* 2019). Pollock *et al.* (2019) demonstrated that juvenile steelhead are capable of passing beaver dams. However, beaver dams may not be passable by all life stages under all flow conditions. Taylor *et al*. (2010) provides an example of how, in a low flow year, beaver dams can block spawning habitat. Beaver dams generally have greater impact in narrow channels and under low flows, and they are more likely to significantly impact fish in heavily urbanized and engineered channels (Kemp *et al*. 2012). Conversely, beaver activity can increase habitat complexity and produce pools in otherwise dry areas, providing a benefit to juvenile salmonids including some protection from drought conditions (Pollock *et al.* 2019, Wathen *et al.* 2019). Beaver dam analogs have even been implemented as habitat restoration, including in Pacific Northwest steelhead habitat, with observed benefits to salmonids (Bouwes et al. 2016, Lautz et al. 2019). Beaver dams have been documented in multiple streams within the action area

(Jones & Stokes 2005). However, the effects on fish, including the extent to which these dams may constitute passage barriers for particular life stages or under certain flows, is unknown.

2.4.2.2. Unscreened Water Diversions

Water diversions for irrigated agriculture, municipal and industrial use, and managed wetlands are found within the action area. Depending on the size, location, and season of operation, these unscreened diversions entrain and kill many life stages of aquatic species, including juvenile listed anadromous species (Mussen *et al.* 2013, Mussen *et al.* 2014). Table 2 (section 1.3.4.2.2) notes some of the unscreened diversions within the action area.

There are ongoing efforts to improve fish passage throughout the salmonid watersheds in Placer County. For example, in 2015, the South Sutter Water District (SSWD) installed two cone fish screens on the 80 cfs gravity diversion at the entrance of the Pleasant Grove Canal along Auburn Ravine. The installation of fish screens helps prevent fish species in Auburn Ravine from being diverted into the Pleasant Grove Canal, which is used to provide irrigation water to SSWD customers. Presence of unscreened diversions is a risk to Covered Species, particularly rearing juveniles; however, screening diversions decreases the risk of entrainment.

2.4.2.3. Flow Conditions

Inter-basin transfers artificially augment streamflow in most western Placer County watersheds (Placer County 2020b). Water is delivered to the various watersheds for agriculture, domestic, and commercial use. The main entities involved in the delivery of water in western Placer County include the SSWD, NID, PG&E, and the PCWA.

The present system of dams, diversions, and augmented flows results in abnormal flow fluctuations, in contrast to historical natural seasonal flow variations. Altered flow regimes can influence migratory cues, water quality (including contaminants, dissolved oxygen, and nutrients for primary productivity), sedimentation, and water temperature. Low flows limit habitat area and adversely affect water quality by elevating water temperatures and depressing dissolved oxygen, which stress incubating eggs and rearing juvenile steelhead. Low flows may affect migration of juvenile and adult steelhead by inhibiting adult passage and impeding the downstream movement of juveniles. Low flows in combination with diversions may result in higher entrainment losses (NMFS 2014c). Low flows can confuse or detain migrating juveniles, resulting in higher entrainment at diversions. Reynolds *et al.* (1993) noted that declines in CCV steelhead stocks are due mostly to water development resulting in inadequate flows, flow fluctuations, blockages, and entrainment into diversions. Flows dictate water depth, which must be sufficient to cover spawning fish. Flow volume is also important in maintaining suitable water temperature, a critical variable in successful reproduction, rearing, and survival.

Auburn Ravine receives water imports from the Bear, Yuba, and American Rivers and is used by PG&E, NID, and PCWA as a conveyance feature (Placer County 2020b). In Raccoon Creek, most of the streamflow present during the late spring through early fall consists of imported water en route to downstream agricultural diversions (Placer County 2002). The creek currently receives a daily discharge of around 2 cfs from the Placer County Sewer Maintenance District #1 Wastewater Treatment Plant (WWTP) (Placer County 2020b). Flow in Raccoon Creek is

controlled by releases from Orr Creek Reservoir, operated by NID (Placer County 2020b). Doty Ravine also receives water from deliveries by NID.

Several historically intermittent drainages within the Dry Creek watershed (*e.g.*, Strap Ravine, upper portions of many tributaries) are currently perennial drainages due to nuisance flows (*e.g.*, flows from artificial outfalls, irrigation runoff, and irrigation drainage). These flows may contribute to water quality degradation through associated pollutants and higher water temperatures. A major facility discharging into the Dry Creek mainstem is the Roseville WWTP. Discharges from the Roseville WWTP have minimal impacts to Dry Creek during wet months, however, they can compose a high proportion of flows during dry months (*i.e.*, greater than 50% of total flow at the Vernon Street Bridge) (Placer County 2020b). As development continues to expand within this region, treated effluent discharges will likely increase. Summer stream flows are generally composed of flow from springs and urban runoff, and irrigation drainage and effluent from wastewater treatment systems.

Flows in Bear River are currently largely controlled by the NID system and PG&E (Placer County 2020c). In the 1960s, when growth in the foothills area increased, some of the original water and hydropower infrastructure was replaced or expanded while several new dams, powerhouses, and conveyance works were added. Throughout this period, the Bear River became the region's hydraulic workhorse, conveying water for consumption and energy generation from the upper Yuba, upper American, and its own headwaters and tributaries into the middle and lower Bear, the lower American, and the associated foothill creek-ravine region (Placer County 2020c). Habitat for Chinook salmon and steelhead is limited in Bear River by inadequate streamflow and the high incidence of fine sediment. Inadequate streamflow in the Bear River prevents the establishment of a self-sustaining steelhead population.

2.4.2.4. Limited Suitable Spawning Habitat

Dams, diversions, and dewatering from irrigation limit the access to spawning habitat for salmonids in the Central Valley. Salmonids require specific size gravel for spawning substrate. Sand and silt substrate, as well as boulder-sized riprap, are not suitable for spawning. Proper substrate conditions depend largely on conditions in the upper watershed; sedimentation resulting from logging, development, agriculture, or other activities degrades spawning areas (Placer County 2020c).

The limiting factor for steelhead in the Auburn Ravine system is suitable spawning habitat. Due to the current out-of-basin water imports and related flow regimes, these streams provide spawning and rearing habitats that would otherwise be limited or absent. Rainbow trout (non-anadromous *O. mykiss*) are known to spawn here; however, steelhead spawning has not been confirmed. If suitable spawning habitat were to be established, it is possible that there would be more active use of this creek by CCV steelhead.

Dry Creek substrates are generally composed of a high percentage of fine sediment and spawning habitat appears to be limited (Placer and Sacramento Counties 2003). Dry Creek was not included in the spawning gravel surveys conducted by Jones & Stokes (2005), as CCV steelhead spawn primarily in its tributaries (Placer and Sacramento Counties 2003). However, the percentage of fine sediment in Antelope Creek would likely result in relatively high mortality

of eggs and larvae in all tributary streams. Antelope Creek has two potential CCV steelhead spawning areas and one good resting pool near Antelope Creek's confluence with Dry Creek (Placer and Sacramento Counties 2003), but further concludes these areas are degraded. The PCCP (Placer County 2020b) identifies the Antelope Creek stream channel as having the potential for good habitat with some restoration. Urban development and public access to Antelope Creek, especially in spawning habitat and at potential barriers, translates to a relatively high potential for harassment of spawning adults resulting in reduced fecundity (Jones & Stokes 2005).

2.4.2.5. Water Temperatures

Elevated water temperatures can impact multiple life stages of CCV steelhead, CV fall-run Chinook, and CV late fall-run Chinook salmon. Egg survival is reduced when elevated water temperatures reduce oxygen availability in the gravel. Elevated water temperatures and low dissolved oxygen are a hazard for eggs, fry, and juveniles (Rombough 1988). Increased temperatures also result in increased predation by non-native fish species, reduced growth rates of juveniles (Cech and Myrick 1999, Myrick and Cech 2005, Zillig *et al.* 2018), and cause smoltification to fail (Adams *et al.* 1975) for steelhead. Water temperatures can also prevent migration (Keefer *et al.* 2009). Temperatures that rise to unsuitable levels may limit rearing success and overall survival (Myrick and Cech 2004). Sub-lethal effects on salmonids from high water temperature include increased stress and altered feeding behavior, which leads to decreased fitness and survival.

From June through September in Dry Creek, water temperatures recorded above and below the effluent outfall for the Roseville WWTP have exceeded the water quality standards established for the effluent. In October through December, water temperatures warm downstream of the outfall and exceed the required water quality standards (Placer and Sacramento Counties 2003). Levels of shade in the areas of the watershed are minimal or nonexistent, resulting in higher and potentially harmful water temperatures (Jones & Stokes 2005).

Camp Far West Reservoir may not be able to provide releases or through-flows when needed (*i.e.*, during late summer and early fall) at water temperatures that are suitable to salmonids downstream; the result will depend upon the particular reservoir storage and mixing, as well as the volume, timing, source, and temperature of any upstream flow improvements (Placer County 2020c).

2.4.2.6. Water Quality

Pollutants, in the form of organic material from livestock, fertilizers and pesticides from agriculture, and heavy metals, pesticides, and other toxins from municipal and industrial wastes, impact CCV steelhead and CV fall-/late fall-run Chinook salmon. Due to construction of dams and other passage barriers, flows and temperatures have been altered from their natural and historic regimes. Altered flow regimes can influence water quality, including contaminants, dissolved oxygen, and nutrients for primary productivity. Affected water quality results in long-term changes to downstream channels, riparian zones, and floodplains (Nilsson and Dynesius 1994, California Department of Water Resources 2002).

One of the results of urbanization within Placer County is an increase in wastewater discharge into the streams, which has contributed to the decline of water quality (Placer County 2021a). In particular, Dry Creek receives effluent from the Roseville WWTP and Dry Creek WWTP, as well as inflow from a sewage disposal pond near Rio Linda Central Park and a sewage disposal area near Midtown Park. In addition, it also receives substantial urban runoff. Because this area is being rapidly developed, there is an anticipated increase over time of effluent discharge released to the stream. There is evidence that excessive nutrient loads are due to the WWTP and urban and agricultural runoff (Placer and Sacramento Counties 2003). Unnaturally elevated nutrient inputs can alter biotic communities, result in heavy infestations of invasive species, and present a threat to species' biochemical and hydrologic requirements. Available data on the benthic macroinvertebrate community of Antelope Creek collected by the Dry Creek Conservancy during 2000 and 2001 are consistent with the expectation that contaminants are adversely affecting the aquatic ecosystem. In these samples, the dominant organisms catalogued in the benthic macroinvertebrate community were pollutant-tolerant forms (Bailey 2003).

Continued high levels of mercury in present day Bear River sediments indicate that the majority of the estimated 2.5 million pounds of heavy metals that were discharged into the Bear River watershed during 32 years of hydraulic mining are still present, trapped in the 1.5 billion cubic yards of sediment stripped from hillsides (Placer County 2020c). Mercury can affect the immune, respiratory and cardiovascular systems, reproductive organs, nervous systems, digestive systems, and the blood in fish (Morcillo et al. 2017).

2.4.2.7. Physical Habitat Modification

The loss and degradation of habitat is a major threat to steelhead and Chinook salmon. Human activities, in particular mining and water development activities, have resulted in a loss of salmonid habitat (Reynolds *et al.* 1993). Habitat problems include lack of access to spawning areas, changes in stream conditions, and loss of floodplain rearing habitat.

Throughout these watersheds, there have been numerous activities with negative outcomes for fish: reaches have been straightened, floodplain area reduced, reaches dredged, and riparian vegetation removed, resulting in eroding banks, sediment deposition, lack of cover, lack of pools and riffles, lack of riparian vegetation, and barriers to fish passage. The streams have been largely confined to narrow channels and the riparian plant community reduced to a narrow band along the banks. Stream channels have been converted to irrigation/flood canals, with some riparian vegetation within a generally open grassy levee system. Numerous canals, aqueducts, siphons, reservoirs, ponds, dams, pipelines, and other natural and non-natural water features significantly influence local hydrology within the watersheds. Modification of the watershed's hydrology is compounded by modification of the instream configuration by channelization, levees, dredging, and reduced floodplain area. These modifications also result in altered stream flow where flow is faster in some areas (*i.e.*, channelized conveyances), contributing to erosion and faster peak flow timing, but slower in other areas (*i.e.*, behind dams and other impeding structures), contributing to flooding and sediment deposition. Bank modification (*i.e.*, construction embankments and bank armoring) has changed the geomorphic processes and the success of riparian vegetation.

Riparian vegetation and habitat throughout these watersheds have been removed or degraded. Trees have been removed for firewood, construction materials, and to facilitate grazing and farming (Placer County 2002). Riparian vegetation provides a large host of ecosystem services and its removal has diminished habitat value within the action area. Riparian vegetation plays a key role in the conservation value of rearing habitat for all salmonid life stages. It provides shading to lower stream temperatures and provides overhanging cover for rearing fish; increases the recruitment of large woody material into the river, increasing habitat complexity; provides shelter from predators and; enhances the productivity of terrestrial and aquatic invertebrates, which contribute to the fish food base (Anderson and Sedell 1979, Pusey and Arthington 2003). It has also been shown to directly influence channel morphology and may be directly correlated with improved water quality in aquatic systems (Schlosser and Karr 1981, Dosskey *et al.* 2010). The result of these changes has been the reduction in quantity and quality of several essential features of migration and rearing habitat required by CCV steelhead and Chinook salmon to grow and survive.

2.4.2.8. Predation

Predation on juvenile salmon by non-native fish has been identified as an important threat to fall- and late fall-run Chinook salmon in areas with high densities of non-native predators (Lindley and Mohr 2003). Predation on steelhead parr and smolts by both native and non-native predators is highly likely both in their natal rivers and during their migration through the lower rivers in the Delta. Warm water temperatures cause stress, suppress growth, and increase susceptibility to pathogens and parasites, all of which increase vulnerability to predators. Moreover, non-native fish are adapted to warmer water temperatures; their predatory efficiency is increased by the same condition that heightens the vulnerability of juvenile steelhead (PCCP appendix D). Low flows can be caused by drought conditions, but they are more likely to result from dams and diversions that restrict and regulate streamflow. Loss of riparian vegetation results from clearing riparian areas for agriculture or flood control. Dam removal and water management for a more natural flow regime and riparian restoration can help mitigate these problems.

In Dry Creek, spotted bass (*Micropterus punctulatus*) and Sacramento pikeminnow (*Ptychocheilus grandis*), both of which prey on juvenile salmonids, are commonly found (Placer and Sacramento Counties 2003). Bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), and smallmouth bass (*Micropterus dolomieu*) have also been observed in Dry Creek, and these species also prey on juvenile salmonids (Bailey 2003). Species that have been observed in Antelope Creek include black bullhead catfish (*Ameiurus melas*), brown bullhead catfish (*A. nebulosus*), common carp (*Cyprinus carpio*), and green sunfish (Bailey 2003). HDR snorkel surveys in 2015 also revealed the presence of bullfrogs (*Lithobates catesbeianus*) and crayfish (*Cambarus* spp.) along the creek. All of these species except Sacramento pikeminnow are non-native species, and all could potentially prey on juvenile salmonids.

2.4.2.9. Agriculture Operations

Agricultural and ranch land within Placer County are used for fruit and nut crops, irrigated field crops (such as rice), nursery stock, non-irrigated pasture, and livestock, including approximately 11,900 head of cattle and 9,000 sheep. Agricultural use has altered the watershed and can have adverse effects. The dominant land use in the portion of the watersheds west of Lincoln is rice

farming. This land use drives the current water management practices and the timing and flow volumes of water that is delivered during the spring, summer, and early fall (Placer County 2002). Lower elevations within the Auburn Ravine watershed, which were once dominated by marshlands, have been largely converted to irrigated agriculture, resulting in a loss of these wetland habitats. Historic vernal pool grasslands have been largely replaced by farmland. Upstream, streams flow through non-native grassland (often grazed) and agricultural fields, with a thin margin of mixed native and non-native riparian species along the creeks (Placer County 2002). Adverse effects of agricultural operations also include bank destruction from livestock compaction and decline in water quality due to agricultural and fertilizer runoff.

2.4.2.10. Hydraulic Mining Impacts

Portions of Auburn Ravine, Dutch Ravine, Doty Ravine, and Raccoon Creek were placer mined—mining the stream bed for minerals—in the mid-to-late 1800s (Placer County 2002). This activity resulted in removal of riparian vegetation, excavation of soil, and redeposition of tailings. Hydraulic mining is a form of placer mining using a powerful jet of water to dislodge minerals. Large quantities of sediment generated by hydraulic mining were washed into stream channels and most of this sediment was deposited on the valley floor. The Dry Creek watershed also has a history of riparian and streambed augmentation due to mining. Placer mining in Secret, Strap, and Miners Ravines accelerated stream incision down to the bedrock in the upper reaches.

The Bear River was far more heavily impacted by hydraulic mining than the Yuba or American Rivers and contains a large volume of mining sediment stored in its main channel, which is subjected to continual erosion. The Bear River contains an estimated 125 million cubic meters (160 million cubic yards) of mining sediment, which, in combination with restricting levees, has caused the lower Bear River to change from wide and shallow to deeply incised (Placer County 2020c). In addition, mercury imported from the Coastal Ranges is found in sediments within the historic gold mining areas downstream of Spaulding Reservoir on both the Yuba and Bear Rivers (May *et al.* 2000).

2.4.2.11. Urban and Suburban Development

Watersheds in Placer County have undergone significant urbanization. Streams receive surface runoff from adjacent developed areas via culverts and sheet flow from residential areas. Construction of impervious hardscape cover within a 100-foot buffer of the streams can result in loss of in-stream cover, bank stability, and affect percent of silt, sand, and fine gravel in the watershed. These changes can also result in higher water temperatures. Some bridges within the action area have in-channel abutments within critical habitat, reducing quality and quantity of habitat. Impervious cover (in this case, a proxy for urban development) is a source of aquatic life impairment in urbanized watersheds, which can result in reduction of habitat quality and quantity for CCV steelhead and Chinook salmon.

Many homes have landscaped backyards that come to the edges of streams. The run-off from landscaped yards may contain chemicals from fertilizers, animal waste, and other contaminants that have a detrimental effect on water quality, which could affect all life stages of salmonids (California Department of Water Resources 2002). These residential influences also affect the

natural process of erosion, which, in turn, decreases the recruitment of gravel back into the system. Creek banks near homes are typically buffered with riprap, which allows only fine sediment to enter the creek (California Department of Water Resources 2002).

Auburn Ravine flows through the middle of the city of Auburn, where it is channelized and passes through a variety of culverts. The land adjacent to this portion of the watershed is highly urbanized. Immediately west of Auburn, the character of the channel changes, adjacent land uses change, and water from various sources is discharged into the channel (Placer County 2002). The primary ecological and land use concern in the Auburn Ravine and Raccoon Creek watersheds is the conversion of existing land uses from agriculture to urban and suburban development. Stream and riparian zone areas will face further ecological stress due to the conversion of adjacent upland habitats to urban and suburban development. Additionally, it is anticipated that water quality will decline with urbanization of the surrounding watersheds. Urbanization can contribute to declines in water quality due to increased sedimentation, fertilizer and pesticide use, automobile chemical leakage and tire wear, and increased runoff from impermeable surfaces carrying pollutants (Katz *et al.* 2013, NMFS 2014b, Tian *et al.* 2021).

Auburn Ravine is experiencing the greatest pressures from urban encroachment with the expansion of housing tracts in the Lincoln area. Development could be a major constraint on fishery restoration as most land in the watershed is in private ownership and has no permanent protection (Placer County 2020c). Due to large parcel sizes, particularly along Raccoon Creek upstream of Gladding Road, blue oak woodlands are relatively intact and unfragmented, thus providing large patch sizes for terrestrial species. The Auburn Ravine upper watershed is more fragmented with smaller land parcels under a single owner.

Dramatic levels of urbanization have occurred in the Dry Creek watershed since the 1950s, particularly in the Roseville and Rocklin areas. Many roads traverse the stream valleys, modifying floodplain areas and channels where bridges and culverts have been installed for crossings. Streams have been channelized, moved or straightened to fit floodplain developments, and riparian vegetation has been removed mechanically or by use of herbicides, resulting in bank instability and erosion (Placer and Sacramento Counties 2003). Generally, the middle portion of the Dry Creek watershed has been subject to extreme development pressure by relatively recent growth, primarily within the cities of Roseville and Rocklin. The upper and lower portions of the watershed are anticipated to experience similar growth in the coming years. Such development generally has been perceived to have exacerbated normal historical flooding conditions lower in the watershed, particularly in Sacramento County, by contributing greater and faster flood flows during storm events. In addition, water quality concerns have arisen, due to the perceived increase in sedimentation and potential contamination from non-point sources.

Within the Dry Creek watershed, much of the native vegetation has been removed and either replaced with non-native species (*e.g.*, landscaping, agriculture), developed, or left bare. The reduction in native vegetation has contributed to significant degradation of the watershed water resources. Reduction of riparian habitat and/or replacement with non-native species (*e.g.*, ornamentals) occurs within all tributaries of the watershed. Historically, livestock compaction and off-road recreational vehicle activities have contributed to bank destruction. This has contributed to bank destabilization and erosion, higher water temperatures, and reduction in suitable habitat for aquatic life. In many areas, channels have been deepened, straightened,

and/or relocated to accommodate roads, to create agricultural land, for sewage treatment ponds, to convey flows, and for other developments. This channelization and reconfiguration has resulted in reduced area for overbank flow and reduced channel meandering. Whether by erosive processes, historical placer mining or channel reconfiguration, these deepened channels have lowered the shallow groundwater table, particularly in the upper tributary reaches (Placer and Sacramento Counties 2003).

2.4.2.12. Restoration Activities

A number of restoration activities have been undertaken in the action area and more are expected in the future. These restoration efforts include the Auburn Ravine Fish Passage Project, the SSWD Pleasant Grove Canal fish screen project, Sundance-Lakeview Farms Restoration Project, and the Miners Ravine Restoration Project.

The Auburn Ravine Fish Passage Improvement project entailed construction of a fish ladder to enhance Chinook salmon and steelhead trout passage over the Nevada Irrigation District's stream gaging structure located in the Lincoln Crossing Nature Preserve, 1,000 feet downstream of Highway 65 in Lincoln (McKenzie 2020). This is a "nature-like fishway" consisting of a series of constructed rock chutes and armored step pools in a way that mimics the morphology of a natural channel. The constructed chutes and pools span the channel downstream of the existing gaging station and are designed to dissipate stream power over the drop from the facility's existing concrete flume to the streambed below. It provides upstream passage for adult fish to access spawning habitat located above the gaging station and downstream passage for migrating juvenile fishes while maintaining the ability to accurately measure stream flows occurring during the typical irrigation season (April 15–October 15). Permitting and construction were completed in 2011, and Chinook salmon ascended the fish ladder at the gaging station site in November 2012 (Johnson 2013).

The SSWD Pleasant Grove Canal fish screen project was completed in December 2015. The canal is an 80 cubic feet per second gravity canal located off of the Auburn Ravine in Placer County (McKenzie 2020). The project was screened with two 14-foot diameter Intake Screens, Inc. (ISI) cone screens and necessary screen components. As a part of the project, a PG&E power line was also installed to power the fish screen system through the Aitken Ranch Mitigation Bank.

The goal of the Sundance-Lakeview Farms Wetlands Restoration Project was to enhance existing wildlife habitat on its approximately 440-acre property in western Placer County (Placer County 2021b). Work was limited to a 60-acre parcel north of Coon Creek and adjacent to Dowd Road and its 380-acre hunting preserve, which is under a conservation easement held by the National Resource Conservation Service. The scope of work encompasses 7.04 acres of riparian area restoration within a setback levee as well as 2,527 linear feet of stream restoration. Project work included widening of the riparian habitat along the stream channel, biotechnical bank stabilization (through installation of native sedges, rushes, grasses, and trees) to create a habitat corridor, and expansion of the floodplain. Work was completed in November 2008.

Miners Ravine Restoration Project occurred across three sites within the Placer County-owned Miners Ravine Nature Preserve (Placer County 2011). The Miners Ravine Nature Preserve is on

Auburn Folsom Road north of Douglas Boulevard in Granite Bay. The Miners Ravine Preserve restoration project included debris removal, floodplain creation/restoration, public education, re-contour and stabilization of stream banks, and revegetation of native riparian species. Initial work commenced in late September 2002 and was substantially completed by December 1, 2002.

2.4.2.13. Fish Hatcheries

Artificial propagation programs (*i.e.*, hatchery production) for steelhead, fall-run Chinook salmon, and late fall-run Chinook salmon in the Central Valley present multiple threats to wild populations (NMFS 2014b). During spawning, hatchery- and natural-origin salmonids may compete for habitat, and interbreeding may reduce genetic integrity. Throughout juvenile rearing and outmigration, hatchery- and natural-origin salmonids may compete for habitat and food. When larger, juvenile, hatchery-origin steelhead are released into the river and may predate on smaller natural-origin salmonids. Hatchery programs in the Central Valley are currently operated to mitigate for natural habitats that have already been permanently lost as a result of dam construction. The loss of this available habitat results in dramatic reductions in natural population abundance, which is mitigated for through the operation of hatcheries. These hatchery programs are also intended to supplement natural spawning populations and contribute to commercial and recreational fisheries. Hatcheries in the California Central Valley that produce steelhead, fall-run Chinook salmon, and/or late fall-run Chinook salmon are Coleman National Fish Hatchery, Feather River Hatchery, Nimbus Fish Hatchery, Mokelumne River Hatchery, and Merced River Hatchery. Coleman National Fish Hatchery is run by USFWS and Nimbus Fish Hatchery is funded by the U.S. Bureau of Reclamation, so these hatcheries will be considered part of the environmental baseline. Feather River Hatchery, Mokelumne River Hatchery, and Merced River Hatchery are state-run hatcheries and will be considered in the cumulative effects, section 2.6.2.

Increases in the proportion of hatchery fish relative to naturally produced fish, the use of out-of-basin stocks for hatchery production, and the straying of hatchery-produced adults have degraded the genetic integrity of Chinook salmon and steelhead populations in the Central Valley through reductions in genetic diversity and increases in hatchery influence (NMFS 2014b). Threats related to hatchery programs in the Central Valley include the mortality of natural-origin steelhead in fisheries targeting hatchery-origin fish, disease transmission, genetic introgression by hatchery-origin fish that spawn naturally and interbreed with natural populations, and competition for food and spawning areas (NMFS 2014b). Recent evaluations of these hatchery programs and hatchery and genetic management plans (HGMPs) have proposed or recommended changes in hatchery policies and management to address these impacts (California Hatchery Scientific Review Group 2012).

The genetic impacts of artificial propagation programs in the Central Valley are primarily caused by straying of hatchery fish and the subsequent interbreeding of hatchery fish with wild fish. Practices such as transferring eggs between hatcheries and trucking hatchery-produced smolts to distant sites for release contribute to elevated straying levels (California Hatchery Scientific Review Group 2012). To maximize survival, and as a result of the degraded conditions of downstream migration corridors in the Central Valley, most Chinook salmon hatchery production has been routinely released off-site, significantly downstream of the hatchery or in the estuary. The exception is Coleman National Fish Hatchery, where hatchery managers have

consistently implemented in-river releases to reduce straying (NMFS 2014a). This approach was temporarily suspended during the 2014–2015 drought when environmental conditions in Battle Creek and the upper Sacramento River were likely to result in adverse impacts and significant mortality. In order to circumvent these unfavorable conditions, the majority of the Chinook salmon produced at Coleman National Fish Hatchery and other Central Valley hatcheries were trucked and released offsite. Although this offsite release practice has improved survival rates and resulted in increased ocean harvest of hatchery fish, it has also led to widespread straying of hatchery fish throughout the Sacramento-San Joaquin system (California Hatchery Scientific Review Group 2012).

Genetic effects are expected to be greatest when hatchery stocks originate from outside of the basin in which they are released and are adapted to environmental conditions atypical of the Central Valley. For example, Nimbus Fish Hatchery on the American River rears steelhead that originate from coastal streams (Eel/Mad Rivers) and releases them into the Sacramento River basin. Adult steelhead from the Nimbus Fish Hatchery that do not return to the hatchery but instead spawn naturally in the Central Valley would be expected to pass along traits associated with improving fitness in coastal streams, which may differ dramatically from conditions in the Central Valley. One of the recommendations in the California Hatchery Scientific Review Group (2012) report was to identify and designate new local sources of steelhead broodstock to replace the current out-of-basin steelhead stock at Nimbus Fish Hatchery.

Hatchery-origin fish can also pose a threat to wild Chinook salmon and steelhead stocks through the spread of disease, genetic impacts, competition for food and other resources between hatchery and wild fish, predation of hatchery fish on wild fish, and increased fishing pressure on wild stocks as a result of hatchery production (Waples 1991). The steady production of Chinook salmon and steelhead in Central Valley hatcheries, concomitant with decreased levels of natural production, has led to a reversal of the relative numbers of hatchery and natural salmonid stocks in the Central Valley. For example, the Chipps Island midwater trawl data provide information on the trend in abundance for the CCV steelhead DPS as a whole. Updated through 2019, the trawl data indicate that the production of natural-origin steelhead remains very low relative to hatchery production. Catch-per-unit effort has fluctuated and generally increased over the past decade, but the proportion of the catch that is adipose fin-clipped (100% of hatchery-origin steelhead production have been adipose fin-clipped starting in 1998) has risen steadily, exceeding 90% in recent years and reaching 96% during the drought in 2015. This suggests that the vast majority of steelhead outmigrating from the Delta are of hatchery-origin. The lack of improved natural production as estimated by exit at Chipps Island, and low abundances coupled with large hatchery influence is a cause for concern.

Impacts of hatchery fish can occur in both freshwater and marine ecosystems. Limited marine carrying capacity has implications for naturally produced fish experiencing competition with hatchery production (Hatchery Scientific Review Group 2004). Increased salmonid abundance in the marine environment may also decrease growth and size at maturity, and reduce fecundity, egg size, age at maturity, and survival (Bigler et al. 1996). There may be years when hatchery production may be in excess of the marine carrying capacity, placing depressed natural fish at a disadvantage by directly inhibiting their opportunity to recover (Hatchery Scientific Review Group 2004).

2.4.3. Recovery Plan for CCV Steelhead DPS

The recovery plan (NMFS 2014b), included recovery delisting criteria and diversity group priorities. For CCV steelhead, these include the following: two viable populations in the Basalt and Porous Lava diversity group (Battle Creek and reintroduction into the McCloud River, as well as maintaining core 2/dependent populations in Cow Creek, and other tributaries); one viable population in the Northwestern California diversity group (Clear Creek, and maintaining core 2 population in Cottonwood/Beegum Creek); four viable populations in the Northern Sierra Nevada diversity group (Antelope, Deer, and Mill Creeks, and reintroduction in the Yuba River upstream of Englebright Dam), as well and maintaining core 2 populations (lower Yuba River, Butte Creek, Feather River, Big Chico Creek, Auburn Ravine, and the American River); and two viable populations in the Southern Sierra Nevada diversity group. Currently, none of these populations are considered viable.

The PCCP action area includes a portion of priority watersheds in the Northern Sierra Nevada diversity group identified for the recovery of CCV steelhead. Improvements to habitat for these populations would support recovery.

2.5. Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

Of the proposed Covered Activities, some types are expected to have only beneficial effects to covered fish species and habitat. These types include protection of riparian habitat, protection of riverine habitat, protection of oak woodlands for fish, and riparian habitat restoration activities that will occur outside of the wetted channel and without disturbance to existing riparian. The PCCP plans to protect 2,200 acres of riverine/riparian habitat consisting of at least 1,410 acres of riparian and 88.6 linear miles of streams/riverine habitat. Maximum adverse effects presented below are limits, which cannot be exceeded without amending the permits and the plan (section 10.5.3 of the PCCP).

Many of the Covered Activities will have temporary or permanent effects to covered fish species and habitat, most of which will be mitigated for through the conservation activities. Specifically, the assessment will consider the potential short- and long-term impacts related to covered fish species and their habitat resulting from the construction, operation, maintenance, and research and monitoring associated with Covered Activities, as well as any other activities expected to occur as a result of Covered Activities (*i.e.*, public use of trails), including:

- contaminants or hazardous materials entering the water;
- increased turbidity and suspended sediment;

- physical disturbance effects;
- acoustic effects from pile driving;
- temporary and permanent loss of riparian vegetation;
- temporary and permanent loss of riverine habitat;
- injury or death resulting from dewatering;
- fish capture and relocation;
- disturbance and contaminants resulting from increased urbanization; and
- disturbance from use of new trails by the public.

2.5.1. Effects of the Action on Covered Fish Species

2.5.1.1. Water Quality

Water quality may be impaired by Covered Activities including land conversion and urbanization. This threat includes dissolved oxygen, heavy metals, disturbed sediments, and agricultural and urban runoff. Impacts to water quality may adversely affect adult immigration, staging, and spawning; eggs; and juvenile rearing and outmigration from or through the action area. Impaired water quality may lead to reduced growth, survival probability, reproductive success, and/or lifetime reproductive success.

Water quality encompasses the physical, chemical, and biological properties of aquatic environments. Physical properties include temperature, turbidity, and dissolved gases. Chemical properties include pH, hardness, organic and inorganic contaminants, and metals. Biological properties include pathogens, fishes, insects, algae, and other organisms (Karr and Dudley 1981).

2.5.1.1.1. Contaminants and Pollution-related Effects

Some of the Covered Activities described in the proposed action will involve heavy construction equipment and many potential sources of hazardous material contamination in the action area. Potential sources of pollutants include hazardous material spills, petroleum product leaks in construction equipment, introduction of metals from the operation of equipment and vehicles, stormwater drainage, cleaning of irrigation channels, fire retardant use, and the disturbance of sediments that may contain hazardous suspended particulates. BMPs will be implemented, minimizing the probability of spills, but some pollutant incursion into the action area is likely from non-spill sources. Unlike sedimentation, turbidity, and other short-term effects, potential pollution-related effects may be persistent in the action area and may affect multiple life stages if they were to occur.

Incursion of contaminants into the action area has the potential to adversely affect CCV steelhead, CV fall-run Chinook salmon, and/or CV late fall-run Chinook salmon that may be migrating, rearing, or spawning/incubating in the action area at or after the time of a pollution

event. Construction equipment and heavy machinery will be present in the action area, and metals may be deposited through their use and operation (Paul and Meyer 2008).

Metals, such as copper and aluminum, may also be deposited within the action area due to cleaning and flushing of channels in the PCWA channel system. Metals have been shown to alter juvenile salmonid behavior through disruptions to various physiological mechanisms, including sensory disruption, endocrine disruption, neurological dysfunction, and metabolic disruption (Scott and Sloman 2004).

Oil-based products used in combustion engines are known to contain polycyclic aromatic hydrocarbons (PAHs), which have been known to bio-accumulate in other fish taxa, such as flatfishes (order Pleuronectiformes) and have carcinogenic, mutagenic, and cytotoxic effects (Johnson *et al.* 2002). The exact toxicological effects of PAHs in juvenile salmonids are not well understood, although studies have shown that increased exposure of salmonids to PAHs reduced immunosuppression, increasing their susceptibility to pathogens (Arkoosh *et al.* 1998, Arkoosh and Collier 2002).

Covered fish species are expected to be present in the action area during construction activities in low numbers and would likely be exposed if a pollution event occurred. If contaminants were to settle within the substrate in the action area, fish could be adversely affected later in time when the substrate becomes disturbed and contaminants resurface.

Avoidance and minimization measures are described in section 1.3.5 and will aid in reducing the potential risk of exposure to contaminants. However, small amounts of pollutants or contaminants may be introduced to small localized portions of the action area during the 50-year permit term. Fish present in areas exposed to contaminants would be expected to experience harm through physiological impacts, temporary displacement, reduced feeding, and increased predation, and a very small proportion could die as a result of increased contaminants. Expected effects of contaminants include behavioral effects, physical injury, or death to all life stages of fish unable to leave the area subjected to contaminants. Juvenile fish and eggs will be more vulnerable to these effects than adult fish due to their smaller size, longer time spent in the action area, and decreased or lack of mobility and swimming speed.

2.5.1.1.2. Increased Sedimentation and Turbidity

Increased sedimentation and turbidity may result from Covered Activities in and along the river banks. Sedimentation and high turbidity levels are expected to have varying effects among different covered fish species and different life stages present in the action area during in-water work. High levels of suspended sediment reduce the ability of fish to feed and respire, resulting in increased stress levels and reduced growth rates, and reduced tolerance to fish diseases and toxicants (Waters 1995). Spawning occurs within the action area, so impacts to egg life stages by sedimentation and turbidity may also occur. In a lab study, juvenile steelhead were found to occupy a parcel of water by choice between 57 and 77 nephelometric turbidity units (NTU) (Sigler *et al.* 1984). This result suggests that juvenile salmonids may not exhibit avoidance behavior in low to moderate turbidity levels during migration. One effect of high turbidity levels that has important implications for juvenile salmonids is that predator avoidance behavior has been shown to decrease at increased levels of turbidity (Gregory 1993). Decreased growth and

survival amidst increased sediment and turbidity levels have also been shown to result from reduced prey detection and availability and physical injury due to increased activity, aggression, and gill fouling (Sigler *et al.* 1984, Suttle *et al.* 2004, Kemp *et al.* 2011).

Fish responses to increased turbidity and suspended sediment can range from behavioral changes (*e.g.*, alarm reactions, abandonment of cover that could lead to predation, and avoidance) to sublethal effects (*e.g.*, reduced feeding rate), and, at high suspended sediment concentrations for prolonged periods, lethal effects (Newcombe and Jensen 1996). Temporary spikes in suspended sediment may result in behavioral avoidance of the site by fishes; several studies have documented active avoidance of turbid areas by juvenile and adult salmonids (Bisson and Bilby 1982, Sigler *et al.* 1984, Lloyd *et al.* 1987, Servizi and Martens 1992). Individual salmonids that encounter increased turbidity or sediment concentrations will likely move away from affected areas into suitable surrounding habitat (Sigler *et al.* 1984).

High turbidity and suspended sediment levels can lead to reduced growth, survival, and reproduction due to reduced foraging ability, impaired disease resistance, or interference with cues necessary for orientation in homing and migration (Lloyd *et al.* 1987). Laboratory studies have demonstrated that chronic or prolonged exposure to high turbidity and suspended sediment levels can lead to reduced growth rates in juvenile salmonids. For example, Sigler *et al.* (1984) found that steelhead exhibited reduced growth rates and higher emigration rates in turbid water (25–50 NTU) compared to clear water.

Increases in turbidity associated with instream work are likely to be brief and remain localized to approximately 300 feet downstream, attenuating downstream as suspended sediment settles out of the water column. Also, avoidance and minimization techniques will be implemented during Covered Activities as well as BMPs to minimize sedimentation and turbidity increases (described in section 1.3.5). These actions will reduce the extent of adverse effects associated with Covered Activities. Due to their use of the nearshore habitat in the action area, juvenile covered fish in close proximity to construction activities are expected to be subject to mobilized sediment and short-term increases in turbidity. Sedimentation and turbidity are expected to cause behavioral effects, physical injury, or death to all life stages of fish unable to leave the area subjected to high levels of sedimentation and turbidity. Juvenile fish and eggs will be more vulnerable to these effects than adult fish due to their smaller size, longer time spent in the action area and in nearshore habitat, and decreased or lack of mobility and swimming speed.

2.5.1.1.3. Erosion Control

Erosion control is part of the conservation strategy. These actions may temporarily increase sedimentation and turbidity within the action area as described above, but will eventually improve water quality for the long term. Erosion control will reduce sedimentation and turbidity, which can lead to improved growth, survival, and reproduction due to increased foraging ability, predator detection, and egg survival.

2.5.1.2. Physical Disturbance

Physical disturbance of aquatic habitat may occur during construction activities and the placement of materials in streams. Physical disturbances have the potential to result in injury or

death to covered fish species. Physical disturbance may include debris falling into the active channel, placement of structures in streams, tools and/or equipment falling into the active channel, or noise generated by displaced rock and sediment and the operation of construction machinery. Any life stages of covered fish species present during in-water work would be affected by physical disturbance. BMPs, avoidance, and minimization techniques will be implemented, reducing the probability and magnitude of physical disturbance effects in the action area.

Adult and juvenile covered fish species could potentially encounter falling debris, be hit, or become trapped by equipment as work occurs, which could cause physical injury or death. Physical disturbance noise may alter behavior, which may result in displacement from a position normally occupied in their habitat for short or long durations. Depending on the innate behavior that is being disrupted, the effects could be varied. This is of particular concern for juvenile fish as there are innate behaviors that are essential to their maturation and survival, such as feeding, sheltering, and migratory patterns. For example, construction activities could cause cessation or alteration of migratory behavior. In the context of the action area, the migratory and rearing behavior of juvenile salmonids may be affected by various physical disturbance effects.

Avoidance and minimization measures are described in section 1.3.5 and will aid in reducing the potential risk and magnitude of effects of physical disturbance. The primary expected effects of physical disturbances is behavioral effects, however physical injury, or death is also expected to occur in low numbers. Juvenile fish and eggs will be more vulnerable to these effects than adult fish due to their smaller size, longer time spent in the action area, and decreased or lack of mobility and swimming speed.

2.5.1.3. Acoustic Effects from Pile Driving

2.5.1.3.1. Vibratory Pile Driving

Pile driving for Covered Activities will use vibratory hammers instead of impact hammers to the maximum extent practical. Vibratory hammers use counter-rotating eccentric weights to transmit vertical vibrations into the pile, causing the sediment surrounding the pile to liquefy and allow the pile to penetrate the substrate. The vibratory hammer produces sound energy that is spread out over time and is generally 10 to 20 decibels (dB) lower than impact pile driving for the same type and size pile (Buehler *et al.* 2015). Based on the results of hydroacoustic monitoring of vibratory hammer pile installations (Buehler *et al.* 2015), the sound levels generated by vibratory hammer use will be considerably below the injury and mortality thresholds for both single strike and cumulative sound exposure level (SEL). Pile-driving activities by vibratory hammer are expected to result in noise that startles covered fish. Startled fish may hide, move to adjacent suitable habitat, or cease activities, such as feeding or holding station, until the disturbance has ended. In addition, sound associated with vibratory pile driving may mask environmentally relevant noise that could prevent covered fish from detecting predators or conspecifics. Those fish exposed to vibratory hammer activity are expected to experience behavioral responses.

2.5.1.3.2. Impact Pile Driving

Piles that are driven into streambed substrate propagate sound vibrations through the water that can damage a fish's swim bladder and other organs by causing sudden rapid changes in pressure. This causes the swim bladder to resonate (vibrate), thus rupturing or hemorrhaging tissue in the swim bladder directly or in tissues adjacent to the organ (Gisiner 1998, Popper *et al.* 2006). The swim bladder is the primary physiological mechanism that controls a fish's buoyancy. A perforated or hemorrhaged swim bladder has the potential to compromise the ability of a fish to orient itself both horizontally and vertically in the water column. This can result in a diminished ability to feed, migrate, and avoid predators. Sensory cells and other internal organ tissue may also be damaged by noise generated during pile-driving activities as sound reverberates through a fish's viscera (Gaspin 1975). In addition, morphological changes to the form and structure of auditory organs (sensory cilia and inner ear otoliths within the saccule, utricle, and lagenae) have been observed after intense noise exposure (Hastings 1995). It is important to note that acute injury resulting from acoustic impacts should be scaled based on the mass of a given fish. Juveniles and fry have less inertial resistance to a passing sound wave and are therefore more at risk for non-auditory tissue damage (Popper and Hastings 2009).

Fish can also be injured or killed when exposed to lower sound pressure levels for longer periods of time. Hastings (1995) found death rates of 50 percent and 56 percent for gouramis (*Trichogaster* sp.) when exposed to continuous sounds at 192 dB (re 1 µPa) at 400 Hz and 198 dB (re 1 µPa) at 150 Hz, respectively, and 25 percent for goldfish (*Carassius auratus*) when exposed to sounds of 204 dB (re 1 µPa) at 250 Hz for two hours or less. Hastings (1995) also reported that acoustic "stunning," a potentially lethal effect resulting in a physiological shutdown of body functions, immobilized gourami within eight to thirty minutes of exposure to the aforementioned sounds.

Multiple studies have shown responses in the form of behavioral changes in fish due to human-produced noise (Wardle *et al.* 2001, Slotte *et al.* 2004, Popper and Hastings 2009). Instantaneous behavioral responses may range from slight variations (mild awareness) to a startle response. Fish may also exhibit movements that displace them from a position normally occupied in their habitat for short or long durations. Depending on the innate behavior that is being disrupted, the adverse effects could be varied. This is of particular concern for juvenile fish as there are innate behaviors that are essential to their maturation and survival, such as feeding, sheltering, and migratory patterns. An example of an adverse effect would be cessation or alteration of migratory behavior. In the context of the implementation of the Covered Activities, the migratory behavior of juvenile salmonids is expected to be affected by acoustic impacts of pile driving. Though pile driving may affect migratory behavior, it is not expected to prevent salmonids from passing upstream or downstream, because pile driving will not be continuous through the day and will not occur at night, when the majority of fish migrate.

Cumulative acoustic effects are expected for any situation in which multiple strikes are being made to an object with a single strike peak dB level above the effective quiet threshold of 150 dB. NMFS currently uses a dual metric criteria to assess onset of injury for fish exposed to pile-driving sounds (Fisheries Hydroacoustic Working Group 2008). Specifically, this includes a peak level of 206 dB and an accumulated SEL of 187 dB for fish equal to or greater than 2 grams or 183 dB for fish less than 2 grams. If either threshold is exceeded, then physical injury is assumed to occur. There is uncertainty as to the decibel level at which fish exhibit a behavioral response to high levels of underwater sound produced when driving piles in or near water. Based

on the information currently available, and until new data indicate otherwise, NMFS uses a 150 dB RMS threshold for behavioral responses in salmonids. Though the dB value is the same, the 150 dB RMS threshold for behavioral effects is unrelated to the 150 dB effective quiet threshold.

Avoidance and minimization measures (described in section 1.3.5) for pile driving include limiting pile driving to daylight hours to minimize exposure as it allows migration through the area at night, vibrating piles to the maximum extent possible, using the smallest driver and minimum force necessary to complete work, and the use of attenuation methods. Distances to the thresholds for acoustic effects will vary under different construction scenarios depending on the type and size of piles, the number of strikes per pile, and the type of attenuation used. As a result, pile driving with an impact hammer is expected to result in behavioral effects, physical injury, or death to all life stages of fish unable to leave the area subjected to impact pile driving. Smaller fish and eggs will be more vulnerable to these effects due to their smaller size, and thus greater sensitivity to acoustic impacts, and decreased or lack of both mobility and swimming speed.

2.5.1.4. Dewatering

Some Covered Activities may employ temporary dewatering of a portion of a stream associated with the activity. Any dewatering activities will result in a temporary reduction in the amount of available habitat to in-stream species, including covered fish species. During the installation of temporary diversion systems, covered fish species may swim away from the noise and activity, resulting in displacement from preferred habitat and altered behavior. If covered fish species are expected to be present based on project timing, fish will be captured and relocated. Covered fish species that evade capture and remain in the construction area may be injured or killed from construction activities. This includes desiccation if fish remain in the dewatered area, or death if fish are crushed by personnel or equipment. Redds that are dewatered may lead to desiccation and death of eggs. However, because experienced biologists will be collecting fish, most fish are expected to be removed from the area before construction and redds are expected to be avoided.

Avoidance and minimization measures are described in section 1.3.5 and will aid in reducing the potential risk and magnitude of dewatering effects. Those fish that evade capture and remain in the area to be dewatered are expected to be injured or killed. Adult fish will likely be able to move out of the construction area, but small numbers of juveniles are more likely to be stranded in smaller pools and remain undetected.

2.5.1.5. Fish Capture

2.5.1.5.1. Fish Capture from Dewatering Activities

For some Covered Activities where dewatering will occur, any fish present will first be captured and removed from the area to be dewatered. Fish capture and relocation may cause stress, injury, or death, even though it will be conducted by a qualified fish biologist and intends to prevent stress, injury, or death from Covered Activities. Adult fish will likely be able to move out of the construction area and are not expected to be captured/relocated. Juvenile fish are expected to be captured and handled in small numbers due to longer time spent in the action area and decreased swimming speed. A small proportion of fish captured are expected to be injured or killed, as well as a small proportion killed due to remaining undetected in the dewatered area.

2.5.1.5.2. Fish Surveys and Capture for Research, Monitoring, and Adaptive Management

Fish surveys and capture are planned to occur as part of research or monitoring activities that support conservation programs and inform adaptive management. Fish surveys and capture for research and monitoring will occur in the reserve system and potentially on land being considered for acquisition. Visual surveys will be conducted for spawning adult salmonids. This may include counting live adults, carcasses, and/or redds, and may also include using rotary screw traps, nets, snorkel surveys, and other methods to determine juvenile salmonid abundances.

Access to streams to conduct research/monitoring may cause temporary disturbances to riparian habitat, physical disturbances within the stream, sedimentation, and increased turbidity. Visual surveys for adults, carcasses, and redds may lead to physical disturbance within the stream, sedimentation, and turbidity. These may cause behavioral changes to spawning adults and could potentially impact eggs.

Juvenile fish captured for research/monitoring will be handled, measured, marked, and tagged. Exact numbers of fish expected to be captured for research and monitoring are currently unknown as baseline data for the action area is sparse and surveys are still in the preliminary planning process, but targets will be a very small proportion of the population. NMFS will be involved in the research/monitoring planning process following PCCP implementation. Research and monitoring efforts will also aid in adaptive management of the PCCP, which is expected to benefit covered fish species and habitat. The capture and handling of fish for research and monitoring purposes will cause stress, injury, or death to a moderate number of fish over the permit term, even though it will be conducted by a qualified fish biologist. Adult fish will not be targeted and are expected to evade capture by juvenile sampling equipment so will likely be captured in extremely low numbers. Approximately 100 juveniles of each of the three covered fish species, are expected to be captured throughout the action area per survey year, a small proportion of which may be injured or killed.

Avoidance and minimization measures are described in section 1.3.5 and will aid in reducing the potential risk and magnitude of injury or death.

2.5.1.6. Water Quantity

Some of the Covered Activities are expected to use ground and surface water. These uses may decrease the amount of water available in streams for covered fish species. Reduced flows may impact covered fish species' ability to migrate and get past barriers, and may increase water temperatures. These impacts may affect spawning, migrating, and/or rearing salmonids. Some PCCP conservation actions will reduce existing issues related to water quantity and will improve the ability of covered fish species to move up or downstream. Effects to water quantity as a result of Covered Activities are expected to be minimal.

2.5.1.7. Disturbance to Riparian Habitat

The PCCP described the expected extent of effects to riverine and riparian habitat, by combining the two, see PCCP 3-16 (Placer County 2020b). The maximum amount of temporary effects to riverine/riparian habitat is estimated at 165 acres, with a maximum of 115 acres that can be

effects to riparian habitat. The maximum amount of permanent effects to riverine/riparian habitat is estimated at 490 acres of riverine/riparian habitat with a maximum of 375 acres that can be riparian habitat. Assuming an even distribution of the maximum amount of riparian habitat effects over the 50-year permit term, an average of 2.3 acres per year will be temporarily impacted and 7.5 acres per year will be permanently impacted.

The PCCP defined temporary effects as disturbed areas that must recover to pre-project or ecologically improved conditions within 1 year. Further, the PCCP describes that if the same permittee does the same project every ten years on the same piece of land and temporarily impacts the same two acres, that area will only be counted as two acres of temporary impacts. Temporary effects will be subject to a temporary effect fee (see section 9.4.1.5 of the PCCP, Temporary Effect Fee). Most construction projects will not qualify as temporary effects under the PCCP due to their size and their level of land disturbance, which usually cannot conform to the required 1-year timeframe for complete restoration. Most of the temporary effects anticipated to occur under the PCCP relate to urban development, such as construction corridors for pipelines, utilities, roads, and other infrastructure for flood control. The PCCP estimated the extent of temporary effects as a proportion of the estimate of permanent effects. For future in-stream flood management and future new and replaced stream crossings, temporary effects were calculated as follows:

- 35 percent for aquatic/wetland and riverine/riparian complex in the valley, A1 and A2
- 25 percent for aquatic/wetland and riverine/riparian complex in the foothills, A3 and A4
- 200 percent for aquatic/wetland and riverine/riparian complex in Plan Area B

Examples of permitted temporary effects include routine maintenance in stream channels for flood control, maintenance along roadsides for highways, and short-term disturbance of the landscape for a linear project, such as a pipeline. Because of the way a project site is determined (see PCCP section 6.2), most disturbed areas associated with urban development will be included in the permanent site footprint and assessed as permanent effects.

Impacts to riparian habitat will be avoided to the maximum extent practicable. Temporary and permanent loss of riparian habitat is expected to occur as a result of Covered Activities. Disturbed riparian areas, not intended for future road access or gravel placement, will be revegetated with native plant species within a year following the completion of construction activities. Areas that are revegetated within a year are expected to have multiple years of impacts to fish, until vegetation returns to full growth (typically 2–5 years for riparian habitat), and will be considered permanent effects under the PCCP. Permanent loss of riparian habitat will be mitigated for by restoration of riparian habitat at a ratio of 1.52:1. Effects on salmonid habitat will be mitigated in kind (for example, impacts to riparian habitat in spawning areas will be mitigated by restoration of spawning area riparian habitat within the plan area). Temporary loss of riparian habitat will be assessed a temporary effect fee, see section 9.4.1.5 of the PCCP for more details (Placer County 2020b).

Loss of riparian vegetation is expected to impact covered fish species by reducing instream cover, which may lead to increased water temperatures, reduced access to food input, and

reduced escape cover for juveniles from predators. Juvenile life stages of covered fish species are most likely to be impacted by disturbance to riparian vegetation. Loss of riparian habitat is likely to result in reduced fitness, reduced growth, and/or reduced survival. However, these impacts are expected to be offset through mitigation. The stay-ahead provision of the PCCP requires that within each calendar year the amount of habitat protected, restored, or created is equal to or greater than that type of habitat loss from Covered Activities.

Avoidance and minimization measures are described in section 1.3.5 and will aid in reducing disturbance to riparian habitat.

2.5.1.8. Disturbance to Riverine Habitat

Since the PCCP combined estimated impacts to riverine and riparian habitat, there is no maximum for temporary or permanent impacts to riverine habitat, other than the combined maximum for riverine/riparian habitat. So, if the maximum temporary effects to riparian habitat occurs, up to 50 acres of riverine habitat may be temporarily affected. However, if less than the 115 acres of temporary effects to riparian habitat are expressed, more impacts to riverine habitat can occur up to the maximum for riverine/riparian habitat of 165 acres. This same concept holds for the permanent impacts to a total of 490 acres of riverine/riparian habitat of which a maximum of 375 acres can be to riparian habitat. So, if the maximum permanent impacts to riparian habitat occur, 115 acres of riverine habitat may be permanently affected. If less than the 375 acres of permanent effects to riparian habitat are expressed, more impacts to riverine habitat can occur up to the maximum for riverine/riparian habitat of 490 acres. Assuming an even distribution of the maximum amount of riverine habitat effects over the 50-year permit term, an average of 3.3 acres per year will be temporarily impacted and 9.8 acres per year will be permanently impacted.

Impacts to riverine habitat will be avoided to the maximum extent practicable. Permanent loss of riverine habitat will be mitigated by restoration of riverine habitat at a ratio of 1.52:1. Effects on salmonid habitat will be mitigated in kind.

The PCCP estimates effects from in-stream programs by the linear extent of riverine habitat affected, which are summarized in Table 7. The PCCP plan area contains 576.15 total stream miles; 68.17 of those miles are spawning/rearing habitat for salmonids, and 24.49 of those miles are migration/rearing habitat for salmonids. Temporary effects to 21.5 miles are expected from all road crossings, of which 3.6 miles are in spawning/rearing habitat and 0.38 in migration/rearing habitat. PCWA pipelines outside of roadways are expected to temporarily affect 0.19 miles of streams, 0.03 in spawning/rearing habitat and 0.01 in migration/rearing habitat. Flood control projects are expected to temporarily impact 14.82 total stream miles of which 4.72 will be in spawning/rearing habitat and 2.45 in migration/rearing habitat.

Table 7. Temporary and permanent effects to streams and salmonid habitat.

	Temporary Effects (miles)				Permanent Effects (miles)			
	All Streams	Spawning/ Migration/ Rearing Habitat	Migration/ Rearing Habitat	All Salmonid Habitat	All Streams	Spawning/ Migration/ Rearing Habitat	Migration/ Rearing Habitat	All Salmonid Habitat
All Road Crossings	21.5	3.6	0.38	3.98	4.75	0.77	0.09	0.86
PCWA Pipelines Outside Roadway	0.19	0.03	0.01	0.04	0.02	0.01	0.01	0.02
Flood Control	14.82	4.72	2.45	7.17	0.74	0.24	0.12	0.36
All In-Stream Activities	36.51	8.35	2.84	11.19	5.51	1.02	0.22	1.24
Total Stream Miles	576.15	68.17	24.49	92.66	576.15	68.17	24.49	92.66
Proportion of Existing Streams	6.3%	12.3%	11.6%	12.1%	1.0%	1.5%	0.9%	1.3%

Adapted from PCCP tables 4-7A and 4-7B (Placer County 2020b).

All in-stream activities together are expected to temporarily impact 36.51 miles, 8.35 miles in spawning/rearing habitat and 2.84 in migration/rearing habitat or 12.3% and 11.6%, respectively. Total salmonid habitat temporary effects will be 11.19 miles.

Permanent effects to 4.75 miles are expected from all road crossings, 0.77 miles in spawning/rearing habitat and 0.09 in migration/rearing habitat. PCWA pipelines outside of roadways are expected to permanently affect 0.02 miles of streams, 0.01 in spawning/rearing habitat and 0.01 in migration/rearing habitat. Flood control projects are expected to permanently impact 0.74 total stream miles of which 0.24 will be in spawning/rearing habitat and 0.12 in migration/rearing habitat.

All in-stream activities together are expected to permanently impact 5.51 miles, 1.02 miles in spawning/rearing habitat and 0.22 in migration/rearing habitat or 1.5% and 0.9%, respectively. Total salmonid habitat permanent effects will be 1.24 miles. Loss of riverine habitat is expected to impact covered fish species by reducing available instream habitat, creating obstructions resulting in blocked or delayed migration, and decreasing habitat for aquatic insects that serve as prey for fish. Loss of riverine habitat is likely to result in reduced fitness, reduced growth, and/or reduced survival. However, these impacts are expected to be offset through mitigation. The stay-ahead provision of the PCCP requires that within each calendar year the amount of habitat protected, restored, or created is equal to or greater than that type of habitat loss from Covered Activities.

Avoidance and minimization measures are described in section 1.3.5 and will aid in reducing disturbance to riverine habitat.

2.5.1.9. Riparian Habitat Restoration

Riparian habitat restoration will occur as part of the conservation strategy and as mitigation for Covered Activities that impact riparian habitat. Restoration activities that will occur outside of the wetted channel and without disturbance to existing riparian vegetation are expected to have only beneficial effects to covered fish species and their habitat. Restoration activities that occur within the wetted channel or disturb existing riparian vegetation will have temporary impacts on covered fish species and their habitat, such as sedimentation, turbidity, and temporary loss of riparian habitat, as described in the sections above.

A minimum of 32 acres of riparian habitat will be restored. Additionally, impacts from other Covered Activities will be mitigated by the restoration of riparian habitat at a ratio of 1.52:1 up to an additional 1,425 acres of combined riverine/riparian complex. Effects on salmonid habitat will be mitigated in kind. Enhancement of riparian habitat will also occur as part of the conservation strategy. Vegetation management, including the removal of invasive weeds, may also be employed to help improve riparian habitat. Restoration of riparian vegetation will provide increased temperature refugia and increased instream cover for juvenile covered fish species. These improvements are expected to increase juvenile growth and survival.

2.5.1.10. Riverine Habitat Restoration and Stream Enhancement

Riverine habitat restoration will occur as mitigation for Covered Activities that impact riverine habitat. Some restoration activities will have temporary impacts on covered fish species and their habitat, such as sedimentation, increased turbidity, and temporary loss of riparian habitat.

Impacts from other Covered Activities will be mitigated by the restoration of riverine habitat at a ratio of 1.52:1 up to an additional 1,425 acres of combined riverine/riparian complex. Effects on salmonid habitat will be mitigated in kind. Enhancement of riverine habitat will also occur as part of the conservation strategy. Vegetation management, including the removal of invasive weeds in streams, may also be employed to help improve riverine habitat. Effects within the stream system will be mitigated by stream enhancements. Stream enhancements may include actions, such as removing or modifying barriers to fish passage, screening unscreened water diversions, improvement of in-channel features, and control of non-native animal species.

2.5.1.10.1. Fish Passage Improvements

As part of the conservation strategy and as mitigation for effects within the stream system, fish passage improvements to barriers and diversions will occur. Several potential barriers to fish passage have been identified and will be removed or improved. The PCA will remove or modify two high-priority fish passage barriers: the barrier at Doty Ravine at Garden Bar Road and one other barrier identified in Table 2. As partnerships allow, the PCA will remove or modify up to three more of the fish passage barriers identified in Table 2. If the PCA is successful in negotiating with partners to remove and/or create reliable fish passage at Hemphill Dam on Auburn Ravine that would remove a significant barrier to fish passage and allow improved passage for at least six miles up Auburn Ravine. Fish passage improvements will have some temporary effects to covered fish species and their habitat, such as physical disturbance effects, sedimentation and turbidity, and temporary loss of riparian habitat, as described in the sections above. Barrier removal projects will ultimately benefit covered fish species, as they will improve upstream and downstream migration for salmonids. Some of the fish barriers currently limit anadromy, so removal of those will increase habitat availability and survival for fish.

The PCA aims to modify all unscreened diversions on salmonid streams in the reserve system. Modifications to unscreened diversions, including installation of fish screens, would result in short-term construction effects to fish, such as physical disturbance effects, sedimentation and turbidity, dewatering, fish capture/relocation, and temporary loss of riparian habitat. Unscreened diversions present a risk of entrainment and death to covered fish species, so screening currently unscreened diversions will improve migration for salmonids and improve survival in and through

the action area. Juvenile fish are most susceptible to entrainment and death due to unscreened diversions, so screening previously unscreened diversions will increase their survival within the action area.

2.5.1.10.2. Control of Introduced Predators

The control of introduced predators may have temporary impacts on covered fish species and their habitat. Gaining access to streams and capturing predators may cause effects, such as sedimentation, turbidity, dewatering, covered fish species capture/relocation, and temporary loss of riparian habitat. As introduced predators decrease the survival of covered fish species, the control of introduced predators will benefit covered fish species in the action area. Since juvenile fish are most susceptible to predation, removal of predators will increase their survival within the action area.

2.5.1.10.3 Improvement of In-channel Features

Improvements to in-channel features, such as those described above in section 1.3.3.7.2.2, may have temporary impacts on covered fish species and their habitat. Gaining access to streams and moving features to improve in-channel habitat may cause effects, such as physical disturbance, dewatering, fish capture, sedimentation, increased turbidity, and temporary loss of riparian and/or riverine habitat. Improvements to in-channel features will eventually benefit covered fish species by providing additional and improved habitat and protection from predators. These improvements are expected to improve adult spawning success, egg survival, and juvenile growth and survival.

2.5.1.10.4. Floodplain Enhancement

Floodplain enhancement activities, such as levee setbacks and grading, may have temporary impacts on covered fish species and their habitat, such as physical disturbance, sedimentation, turbidity, and temporary loss of riparian habitat, as described in the sections above. These improvements will eventually benefit covered fish species by providing additional and improved juvenile rearing habitat and protection from predators. These improvements are expected to increase juvenile growth and survival.

2.5.1.11. Adaptive Management

Adaptive management is a decision-making process that will be used during PCCP 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. Integrating adaptive management and monitoring will help successfully implement the PCCP conservation strategy. Adaptive management actions are developed, in part, from the results of monitoring.

Effects to fish will include those for fish capture and handling for research, monitoring, and adaptive management, described above in section 2.5.1.2. The adaptive management aims to reduce impacts to Covered Species and habitat over the permit term. The PCA will share information gained through the adaptive management process to other county and State agencies,

so these decisions will help to improve survival for all life stages of fish present in the plan area and potentially beyond as information is shared with other entities.

2.5.1.12. Effects from Other Activities

A maximum of 70 miles of new trails will be created within the reserve system, an addition of approximately 50 acres of trails. Creation of the trails is a Covered Activity, but public use of new trails created as part of the PCCP is considered here as an "other activity" that would not occur but for the proposed action. Increased human recreation activity is expected to occur, resulting in new disturbances to covered fish species in areas previously inaccessible. Introduction of human-generated noise, litter, pets, and in-stream foot traffic into previously inaccessible areas is expected to occur with the creation of recreational trails in acquired open space areas. In-stream foot traffic by people and pets is expected to lead to physical disturbance, sedimentation, and turbidity. Greater access to streams by the public is expected to lead to infrequent disturbance of spawning adults, rare destruction of redds and eggs, and disturbance to rearing juveniles resulting in behavioral modifications (leaving the area).

2.5.2. Effects of the Action on Critical Habitat and Covered Fish Habitat

Covered Activities are expected to have short- and long-term effects on habitat quantity and quality, including effects to the PBFs of designated critical habitat of CCV steelhead and analogous features for CV fall-run and CV late fall-run Chinook salmon. The PBFs within the action area for CCV steelhead are: (1) freshwater rearing sites; (2) freshwater migration corridors; and (3) spawning habitat. While critical habitat has not been designated for CV fall-run or CV late fall-run Chinook salmon, their habitat uses and needs are similar to CCV steelhead, so effects to PBFs for CCV steelhead will be similar to the analogous features of CV fall-run and CV late fall-run Chinook salmon habitat and will be discussed together.

The PCCP split salmonid habitat into spawning/rearing and migrating/rearing throughout the PCCP (Placer County 2020b). Since migration will also occur in and through spawning areas, this opinion will consider protections to both the PCCP's spawning/rearing habitat and migrating/rearing habitat as protections to migration habitat.

Temporary effects to rearing, migration, and spawning habitat PBFs for covered fish species include dewatering, changes in water quality, and changes in water quantity. Permanent effects to habitat include incursion of new structures into streams, changes to flow, increased urban and suburban runoff, protection of riverine and riparian habitat, restoration of riverine and riparian habitat, fish passage improvements, stream enhancement, floodplain enhancement, and control of non-native species. The PCCP will protect 900 acres of riparian habitat along salmonid habitat and 35 miles of riverine habitat. These protections include 558 acres of riparian habitat along salmonid spawning habitat and 25 miles of riverine habitat in salmonid spawning habitat. Additionally, permanent effects to salmonid habitat due to Covered Activities will be mitigated for in kind at a ratio of 1.52:1 for riverine/riparian effects, and streams will be enhanced to promote habitat complexity and function at a ratio of 1.5:1 for affected stream habitat.

2.6. Cumulative Effects

"Cumulative effects" are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02 and 402.17(a)). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Some continuing non-Federal activities are reasonably certain to contribute to climate effects within the action area. However, it is difficult if not impossible to distinguish between the action area's future environmental conditions caused by global climate change that are properly part of the environmental baseline vs. cumulative effects. Therefore, all relevant future climate-related environmental conditions in the action area are described in the environmental baseline (section 2.4).

2.6.1. Increased Urbanization

Increases in urbanization and housing developments that are not a part of PCCP Covered Activities due to being in non-participating cities or that are upstream of the action area could impact habitat by altering watershed characteristics and changing both water use and stormwater runoff patterns within the action area. Increased growth will place additional burdens on resource allocations, including natural gas, electricity, and water, as well as on infrastructure, such as wastewater sanitation plants, roads and highways, and public utilities. Some of these actions, particularly those which are situated away from water bodies, will not require Federal permits, and thus will not undergo review through the ESA section 7 consultation process with NMFS. Increased urbanization and development will result in increased traffic as the state and cities continue to build roads to access the buildout areas. These activities will result in construction disturbance, noise, and increased runoff from roads, which can degrade water quality.

Increased urbanization of nearby areas may also increase recreational activities in the action area. Among the activities expected to increase in volume and frequency is recreational boating. Boating activities typically result in increased wave action and propeller wash in waterways. This potentially will degrade riparian and wetland habitat by eroding channel banks and mid-channel islands, thereby causing an increase in siltation and turbidity. Wakes and propeller wash also churn up benthic sediments thereby potentially re-suspending contaminated sediments and degrading areas of submerged vegetation. This will reduce habitat quality for the invertebrate forage base required for the survival of juvenile salmonids and green sturgeon moving through the system. Increased recreational boat operation is anticipated to result in more contamination from the operation of gasoline and diesel-powered engines on watercraft entering the associated water bodies.

2.6.2. Fish Hatcheries

More than 32 million fall-run Chinook salmon, 2 million spring-run Chinook salmon, 1 million late fall-run Chinook salmon, 0.25 million winter-run Chinook salmon, and 2 million steelhead are released annually from six hatcheries producing anadromous salmonids in the Central Valley. All of these facilities are currently operated to mitigate for natural habitats that have already been

permanently lost as a result of dam construction. The loss of this available habitat results in dramatic reductions in the abundance of natural populations, which is mitigated for through the operation of hatcheries. Production of non-listed Central Valley fall-run Chinook salmon is the largest contributor of hatchery-origin Chinook salmon in the state, with a total combined release of nearly 30 million smolts annually. These fish originate from the following five hatchery facilities: Coleman National Fish Hatchery, Feather River Hatchery, Nimbus Fish Hatchery, Mokelumne River Hatchery, and Merced River Hatchery. Coleman National Fish Hatchery is run by USFWS and Nimbus Fish Hatchery is funded by the U.S. Bureau of Reclamation, so these hatcheries were considered in the environmental baseline, section 2.4.2.13. Releasing large numbers of hatchery fish can pose a threat to natural-origin Chinook salmon populations through genetic impacts, displacement, competition for food and other resources, predation of hatchery fish on natural-origin fish, and increased fishing pressure on natural-origin stocks as a result of hatchery production (Waples 1991).

The relatively low number of adult spawners needed to sustain a hatchery population can result in high harvest-to-escapement ratios in waters where fishing regulations are set according to hatchery population. California salmon fishing regulations are set according to the combined abundance of hatchery and natural stocks, which can lead to over-exploitation and reduction in the abundance of natural-origin populations existing in the same system as hatchery populations due to incidental bycatch (McEwan 2001). Currently, hatchery-produced fall-run Chinook salmon comprise the majority of fall-run adults returning to Central Valley streams. Hatcheries in the Central Valley follow a 25 percent constant fractional marking/tagging regime for hatchery-produced fall-run Chinook salmon juveniles. Any returning populations with adipose fin-clipped adult escapement greater than 25 percent, would indicate that hatchery-produced fish are the predominate source in those spawning populations.

More localized impacts of hatcheries may also affect salmonid populations in the action area. Recent evaluations of these hatchery programs have proposed or recommended changes in hatchery policies and management to address these impacts (California Hatchery Scientific Review Group 2012). However, the lack of approved HGMPs for a number of Central Valley hatchery programs has been identified as a potential risk to ESA-listed salmonids in the Central Valley. The California Hatchery Scientific Review Group (2012) recommends that the funding entities for each hatchery facility provide the necessary resources to prepare and implement HGMPs for all California anadromous fish hatchery programs. The detailed descriptions and operational protocols provided in HGMPs are expected to help to guide adaptive management decisions made at the hatchery and provide accountability for deviations from established operational protocols. Until HGMPs are completed and approved for all hatchery programs in the Central Valley, the production of hatchery-origin Chinook salmon and steelhead are expected to remain at current levels and off-site releases will continue for a proportion of the annual production, which may result in straying to streams within the action area.

2.6.3. Recreational Fishing

While hatchery CCV steelhead and Chinook salmon are targeted in recreational fisheries, incidental catch of naturally produced CCV steelhead can occur in portions of the action area that do not have seasons timed to protect CCV steelhead (NMFS 2014b). Since 1998, all hatchery CCV steelhead have been marked with an adipose fin clip, allowing anglers to tell the

difference between hatchery and wild CCV steelhead. Current regulations restrict anglers from keeping non-clipped CCV steelhead in Central Valley streams, except in the upper Sacramento River.

Current sport fishing regulations do not prevent wild CCV steelhead from being caught and released many times over while on the spawning grounds, where they are more vulnerable to fishing pressure. Studies on hooking mortality based on spring-run Chinook salmon have found a 12 percent mortality rate for the Oregon in-river sport fishery (Lindsay *et al.* 2004). Applying a 30 percent contact rate for Central Valley rivers (*i.e.*, the average of estimated Central Valley harvest rates), approximately 3.6 percent of adult steelhead die before spawning from being caught and released in the recreational fishery. Studies have consistently demonstrated that hooking mortality increases with water temperatures. Mortality rates for steelhead may be lower than those for Chinook salmon, due to lower water temperatures.

In addition, survival of eggs is reduced by anglers walking on redds in spawning areas while targeting hatchery CCV steelhead or salmon. Roberts and White (1992) identified up to 43 percent mortality from a single wading over developing trout eggs, and up to 96 percent mortality from twice daily wading over developing trout eggs. Salmon and trout eggs are sensitive to mechanical shock at all times during development (Leitritz and Lewis 1980). While state angling regulations have moved towards restrictions on selected sport fishing to protect listed fish species, hook-and-release mortality of steelhead and trampling of redds by wading anglers may continue to cause a threat.

Fish that were caught and released within the action area may be killed, injured, or stressed and less able to handle other effects. Migrating fish that were caught or released upstream or downstream of the action area may have reduced survivability to further effects as they continue their migrations through the action area.

2.6.4. Agricultural Practices

Non-Federal actions that may affect the action area include ongoing agricultural activities. Farming and ranching activities within, adjacent to, or upstream of the action area may have negative effects on water quality due to runoff laden with agricultural chemicals. Ongoing ranching operations, such as road construction, road maintenance, or intensive livestock grazing, may limit or degrade habitat for species. Stormwater and irrigation discharges related to agricultural activities contain numerous pesticides and herbicides that may adversely affect salmonid reproductive success and survival rates (King *et al.* 2014). Grazing activities from cattle operations can degrade or reduce suitable critical habitat for listed salmonids by increasing erosion and sedimentation, as well as introducing nitrogen, ammonia, and other nutrients into the watershed, which then flow into the receiving waters of the associated watersheds. Agricultural practices in the action area may adversely affect riparian and wetland habitats through upland modifications of the watershed that lead to increased siltation or reductions in water flow.

2.6.5. Non-agricultural Pesticide Use

Though pesticide use will not be covered by the Federal permits, it will be covered by the State permits, so will occur within the action area. As covered by the State PCCP permits, pesticides

will be used to achieve invasive plant or invasive animal control. Any pesticide use must comply with the EPA's Endangered Species Protection Program. In areas downstream of pesticide/herbicide use, stormwater and irrigation discharges may contain pesticides and herbicides. Pesticides and herbicides may adversely affect salmonid reproductive success and survival rates (King *et al.* 2014).

2.6.6. Mining Activities

Increased water turbidity levels for prolonged periods of time may result from adjacent mining activities and increased urbanization and/or development of riparian habitat, which could adversely affect the ability of young salmonids to feed effectively and result in reduced growth and survival. Turbidity may cause harm, injury, or mortality to juvenile anadromous fish in the vicinity and downstream of the project area. High turbidity levels can reduce the ability of covered fish to feed and respire, resulting in increased stress levels and reduced growth rates, and reduce tolerance to fish diseases and toxicants. Mining activities may adversely affect water quality, riparian function, and stream productivity.

2.6.7. Water Supply

The PCCP proposes that the permits cover the actions of two water suppliers (the PCWA and the City of Lincoln), while two other water suppliers—NID and South Sutter Irrigation District—also have a network of irrigation canals and use some of the same creeks for water transport. NID and South Sutter Irrigation District are not permittees to the PCCP, and, therefore, unless they apply through Placer County or the City of Lincoln to have their projects covered, they are not included as part of the Federal action.

Water transportation and diversions can affect the upstream migration of salmonids (*e.g.*, CCV steelhead and CV fall-run Chinook salmon), while low flows can impede fish passage (NMFS 2014c). Altered flow regimes can influence migratory cues, water quality, sedimentation, and water temperature. Low flows limit habitat area and adversely affect water quality by elevating water temperatures and depressing dissolved oxygen, which stress multiple fish life stages. Low flows can also confuse or detain migrating juveniles, resulting in entrainment at diversions.

2.7. Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (section 2.5) to the environmental baseline (section 2.4) and the cumulative effects (section 2.6), taking into account the status of the species and critical habitat (section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

CCV steelhead DPS, CV fall-run Chinook salmon ESU, and CV late fall-run Chinook salmon ESU have experienced significant declines in abundance and available habitat in the California Central Valley relative to historical conditions. The status of the species (section 2.2) details the

current range-wide status of these ESUs and DPS and CCV steelhead critical habitat, indicating the status of CCV steelhead appears to have remained unchanged since 2011 and the DPS was in danger of becoming endangered, and CV fall-run Chinook salmon and CV late fall-run Chinook salmon populations have shown a decline in recent years. The environmental baseline (section 2.4) describes the current baseline conditions found in the action area. Factors affecting Covered Species in the action area include passage barriers, entrainment and low flows due to diversions, and loss of riparian and floodplain habitat. Section 2.2.1 discusses the vulnerability of listed species and critical habitat to climate change projections in the California Central Valley and specifically in the action area. Reduced summer flows and increased water temperatures will likely be exacerbated by increasing surface temperatures in the action area. Some watersheds within the action area are manipulated systems with flow and temperature regimes that differ drastically from their historical condition. Cumulative effects (section 2.6) are likely to include effects of aquaculture and fish hatcheries, recreational fishing, agricultural practices, mining activities, decreased water supply, and increased urbanization that is not part of Covered Activities.

2.7.1. Summary of Effects of the Proposed Action to Listed Species

Minimal or minor effects to all life stages are expected to occur as a result of the proposed action, including short-term localized increases in turbidity, or water levels, resulting in behavioral modification. Small proportions of populations are expected to be harassed during Covered Activities, and small numbers of juvenile or adult covered fish species are expected to be injured or killed when they are captured and relocated from areas to be dewatered or captured for research and monitoring. However, the avoidance and minimization measures proposed will minimize the extent of injuries and mortalities to listed salmonids. Impact pile driving is expected to result in behavioral effects, injury, or death from acoustic effects. Behavioral effects from pile driving would include temporary disruptions in the feeding, sheltering, and migratory behavior of adult and juvenile covered fish species, resulting in reduced growth and increased susceptibility to predation. Though pile driving will likely result in delay in fish passage, it is not expected to prevent fish species from passing upstream or downstream, because pile driving will not be continuous through the day, and will not occur at night when the majority of fish migrate.

Covered fish species are expected to be adversely affected through general physical disturbance effects, sedimentation and increased turbidity, and pollution and contamination. With the avoidance and minimization measures included in the PCCP, potential injuries or mortalities associated with these activities are expected to be reduced.

Beneficial effects to fish will include adaptive management, fish passage improvements, screening of previously unscreened diversions, control of introduced predators, improvement of in-channel features, and floodplain enhancement. These improvements will increase survival of covered fish species within the action area.

2.7.2. Effects of the Proposed Action to Critical Habitat and Covered Fish Habitat

The PCCP combines the anticipated effects to riverine and riparian habitat within designated critical habitat or covered fish habitat. The maximum amount of temporary effects to riverine/riparian habitat is 165 acres of which a maximum of 115 acres can be to riparian habitat.

If the maximum temporary effects to riparian habitat are expressed, up to 50 acres of riverine habitat may be temporarily affected. However, if less than the 115 acres of temporary effects to riparian habitat are expressed, more impacts to riverine habitat can occur up to the total impacts to riverine/riparian habitat of 165 acres. This same concept holds for the permanent impacts to a total of 490 acres of riverine/riparian habitat, of which a maximum of 375 acres can be to riparian habitat. So, if the maximum permanent impacts to riparian habitat occur, 115 acres of riverine habitat may be permanently affected. If less than the 375 acres of permanent effects to riparian habitat are expressed, more impacts to riverine habitat can occur up to the total impacts to riverine/riparian habitat of 490 acres. The expected result of these temporary and permanent effects to PBFs of riverine and riparian habitat is a decrease in fitness, reduced growth, and/or reduced survival for fish species.

To offset these impacts to habitat, the project will implement restoration of a minimum of 32 acres of riparian habitat. Temporary effects to riparian and riverine habitat will be returned to pre-project conditions within one year of construction activities. Permanent impacts to riparian and riverine habitat will be mitigated for via conservation activities at a ratio of 1.52:1. So, if the maximum amount of permanent effects to riparian habitat occur, there will be a net addition of an additional 570 acres of riparian habitat. If the maximum amount of permanent effects to riparian/riverine habitat occur 174.8 to 744.8 acres of riverine habitat will be restored, depending on the extent of permanent riparian effects. The stay-ahead provision of the PCCP requires that within each calendar year the amount of habitat protected, restored, or created is equal to or greater than that type of habitat loss from Covered Activities. This offset of impacts is expected to result in an increase in fitness, increased growth, and/or increased survival for fish species.

Removal of fish passage barriers and screening of previously unscreened diversions will increase available habitat for fish and increase survival during migration. These improvements will result in an increase in fitness and increased survival for fish species.

2.7.3. Survival and Recovery of the DPS/ESU

The action area contains spawning populations of CCV steelhead, CV fall-run Chinook salmon, and CV late fall-run Chinook salmon, making it an important area in terms of range-wide conservation or recovery for these species. The recovery plan (NMFS 2014b) identified Auburn Ravine as a core 2 population and Dry Creek and Bear River as core 3 populations for CCV steelhead. The recovery plan does not classify Raccoon Creek on its own, but often groups Raccoon Creek with Auburn Ravine.

Delisting criteria for CCV steelhead is described in the recovery plan (NMFS 2014b), and includes establishing and maintaining nine viable populations (core 1) for the DPS, none of which are currently viable. Core 1 populations have a known ability or potential to support independent viable populations. Core 2 populations meet, or have the potential to meet, the biological recovery standard for moderate risk of extinction. These watersheds have lower potential to support viable populations than core 1 populations, due to lower abundance, or amount and quality of habitat. These populations provide increased life history diversity to the DPS and are likely to provide a buffering effect against local catastrophic occurrences that could affect other nearby populations, especially in geographic areas where the number of core 1 populations is lowest. Core 3 watersheds have populations that are present on an intermittent

basis and require straying from other nearby populations for their existence. These populations likely do not have the potential to meet the abundance criteria for moderate risk of extinction, but are important because, like core 1 populations, core 3 populations aid in recovery of the species by providing genetic diversity and dispersal connectivity to the greater DPS.

We expect Covered Species to use available habitat in adjacent areas, because the majority of effects are minimized through the use of AMMs, and the area of permanent impacts is fairly small compared to the available habitat in the action area and the range-wide DPS/ESU. Further, any permanent effects to salmonid habitat will be mitigated for in kind, so that permanent effects will lead to a net increase in available quality habitat over the permit term of 50 years.

The addition of adverse and minimal effects to CCV steelhead, CV fall-run Chinook salmon, and CV late fall-run Chinook salmon within the action area to the environmental baseline and the cumulative effects, taking into account the status of the species and critical habitat, is not expected to (1) reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated critical habitat as a whole for the conservation of the species.

2.8. Conclusion

After reviewing and analyzing the current status of the covered fish species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of CCV steelhead, CV fall-run Chinook salmon, or CV late fall-run Chinook salmon, nor destroy or adversely modify designated critical habitat for CCV steelhead. No critical habitat has been designated or proposed for CV fall-run Chinook salmon or CV late fall-run Chinook salmon, however, if critical habitat is designated in the action area in the future, the proposed action is not likely to destroy or adversely modify designated critical habitat.

2.9. Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a 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. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

NMFS anticipates incidental take of the following Covered Species, currently not listed or proposed for listing under the ESA, during the 50-year permit term: CV fall-run and CV late fall-

run Chinook salmon. There are no take prohibitions under the ESA for these salmon runs at the time of writing this biological opinion. The incidental take statement and ITP shall become effective for CV fall-run and CV late fall-run Chinook salmon if they become listed under the ESA during the terms of this opinion and the ITP.

For any USACE permits required for construction components under the Covered Activities, and to the extent this opinion satisfies the level of detail needed to analyze the associated effects, this biological opinion satisfies the requirements for the USACE to consult with NMFS under section 7 of the ESA.

2.9.1. Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows:

NMFS anticipates that covered fish species will be harassed, harmed, or killed due to impacts related to impaired water quality, physical disturbance effects, acoustic effects from pile driving, dewatering, and fish capture and relocation.

NMFS cannot precisely quantify and track the amount or number of individuals per species that are expected to be taken incidentally as a result of Covered Activities. This is due to the variability and uncertainty associated with the exact number and nature of Covered Activities to occur in anadromous streams, the response of listed species to the effects of Covered Activities, the varying population size of each species, annual variation in the timing of migration, individual habitat use within the action area, and difficulty in observing injured or dead fishes. However, it is possible to estimate the extent of incidental take by designating as ecological surrogates, which are those elements of the project that are expected to result in incidental take. Ecological surrogates are more predictable and/or measurable and monitoring those surrogates will determine the extent to which incidental take is occurring.

Incidental take will occur during trapping and handling of covered fish species for research and monitoring within the reserve system and on land being considered for acquisition into the reserve system. Approximately 100 juveniles of each of the three covered fish species, are expected to be captured throughout the action area per survey year, a small proportion of which may be injured or killed. Harassment, harm, or death resulting from capture, handling, measuring, or marking fish is expected to occur. Incidental mortality is expected to be less than 5% of fish captured and released. If more than five CCV steelhead juveniles or ten Chinook salmon are killed in any survey year, the anticipated incidental take levels described are also exceeded, triggering the need to reinitiate consultation.

Harassment, harm, or death resulting from fish capture and relocation due to Covered Activities that include dewatering. Fish present and unable to avoid the fish capture location would be harassed, harmed, or killed during fish capture and relocation. Incidental mortality is expected to be less than 3% of fish captured and released. If mortality greater than 3% occurs, the anticipated incidental take levels described are also exceeded, triggering the need to reinitiate consultation.

The most appropriate threshold for most of the incidental take associated with the PCCP are ecological surrogates of temporary and permanent habitat disturbance during Covered Activities.

The ecological surrogate for covered fish species responses that result from habitat disturbance is described as follows. If permanent physical disturbance of 655 acres or temporary disturbance of 165 acres of combined riparian/riverine habitat is exceeded, the anticipated incidental take levels described are also exceeded, triggering the need to reinitiate consultation. NMFS anticipates incidental take due to habitat disturbance from the following:

(1) Harassment, harm, or death resulting from habitat-related disturbances during construction activities, resulting in the incursion of contaminants into the action area. Increases in contaminants are reasonably certain to result in harm to the species through modification or degradation of the PBFs for rearing, spawning, and migration that will result in physiological impacts (*i.e.*, to the gills of fishes), temporary displacement of individuals, reduced feeding, and increased predation. A very small proportion of fish present would be expected to die as a result of contaminant increases.

(2) Harassment, harm, or death resulting from habitat-related disturbances during construction activities, resulting in turbidity increases extending up to 100 feet from the bank and 300 feet downstream. Increases in turbidity are reasonably certain to result in harm to the species through modification or degradation of the PBFs for rearing and migration that will result in physiological impacts (*i.e.*, to the gills of fishes), temporary displacement of individuals, reduced feeding, and increased predation. A very small proportion of fish present would be expected to die as a result of turbidity increases.

(3) Harassment, harm, or death during construction 100 feet beyond the construction footprint in all directions on the stream side of Covered Activities, including moving, removal, or addition of material into the active channel during construction, modification, or removal of structures. Fish present in the action area would startle and move to adjacent deeper water resulting in increased predation and reduced survival. Fish present and unable to avoid the construction site activities would be crushed and killed.

(4) Harassment, harm, or death resulting from exposure to temporary high noise levels (> 206 dB peak) or sustained exposure to lower sound levels (>183 or >187 dB SEL, depending on fish size) within the water column during pile driving with impact hammers. Fish present and unable to avoid waters that reach the 206 dB peak may be harmed or killed, and juvenile and adult fish present and unable to avoid waters that reach the 183 or 187 dB SEL, respectively, may be injured or killed.

(5) Harm from temporary and permanent physical disturbance to a total area of up to 490 acres of riparian habitat. The maximum amount of temporary effects to riparian habitat is 115 acres. The maximum amount of permanent impacts to riparian habitat is 375 acres. Removal of vegetation is reasonably certain to result in harm to the species through modification or degradation of the PBFs for spawning, rearing, and migration that will result in temporary displacement of individuals, loss of cover, increased predation, and reduced growth due to decreased food inputs.

(6) Harm from temporary and permanent physical disturbance to a total area of up to 655 acres of riverine habitat. The maximum amount of temporary effects to riverine habitat

is 165 acres. The maximum amount of permanent impacts to riverine habitat is 490 acres. Disturbance to riverine habitat is reasonably certain to result in harm to the species through modification or degradation of the PBFs for spawning, rearing, and migration that will result in temporary displacement of individuals, loss of cover, and increased predation.

Harassment, harm, or death resulting from other activities (recreation). Fish or eggs present and unable to avoid people or dogs in the water will be harassed, harmed, or killed. A maximum of 70 miles of new trails will be created within the reserve system, an addition of approximately 50 acres of trails. If this is exceeded, the anticipated incidental take levels described are also exceeded, triggering the need to reinitiate consultation.

2.9.2. Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the covered fish species or destruction or adverse modification of critical habitat.

2.9.3. Reasonable and Prudent Measures

"Reasonable and prudent measures" are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

NMFS believes that implementation of the entire PCCP constitutes measures appropriate to minimize take of all covered fish species. The following chapters of the PCCP will specifically minimize the take of covered fish species:

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

Additionally, NMFS includes the following reasonable and prudent measure:

(1) The permittees shall take measures to ensure that individual Covered Activities authorized annually through the PCCP will minimize incidental take of covered fish species, will monitor and report incidental take of covered fish species, and where feasible, obtain specific project information to better assess the effects and benefits of Covered Activities authorized through the PCCP.

2.9.4. Terms and Conditions

The terms and conditions described below are non-discretionary, and NMFS or any applicant must comply with them in order to implement the RPMs (50 CFR 402.14). NMFS or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

(1) The following terms and conditions implement reasonable and prudent measure 1:

a. In order to monitor the impact and track incidental take of covered fish species, the permittees, which are responsible for administration of the PCCP, must annually submit to NMFS a report of the previous year's Covered Activities. The annual report shall include a summary of the specific type and location of each project, stratified by individual project, 5th field HUC, affected species, and ESU/DPS. Further, the report shall include:

i. Summary narrative detailing fish relocation and survey activities, including the number and species of fish captured and the number and species injured or killed. Any capture, injury, or mortality of adult covered fish species will be noted in the monitoring data and report. Any injuries or mortality from a fish relocation site that exceeds 3 percent of the affected Covered Species shall have an explanation describing why. Any injuries or mortality from a fish survey that exceeds 5 percent of the affected Covered Species shall have an explanation describing why.

ii. The amount of aquatic habitat disturbed at each project site, in linear feet and/or acres.

iii. The total number and species of fish captured and the total number and species injured or killed during the previous three years of PCCP implementation.

iv. The number and type of instream structures implemented within salmonid stream channels.

v. The number and type of fish passage barriers that have been remediated or removed including screening of previously unscreened diversions, fish ladders built, dams removed, etc. including the number of miles of restored access to unoccupied salmonid habitat.

vi. The annual and running total amounts of riparian habitat temporarily impacted, permanently impacted, and restored.

vii. The annual and running total amounts of riverine habitat temporarily impacted, permanently impacted, and restored.

b. The annual report(s) shall be filed not later than July 1st, covering the previous calendar year. The report should be submitted (preferably by email) to the following:

Assistant Regional Administrator
California Central Valley Office
National Marine Fisheries Service
650 Capitol Mall, Suite 5-100
Sacramento CA 95814
Phone: (916) 930-3600
Fax: (916) 930-3629
Email: ccvo.consultationrequests@noaa.gov

2.10. Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

(1) All permittees and participating special entities should conduct in-water work only during the recommended work window of June 1 to October 31.

(2) All permittees and participating special entities should minimize any potential take whenever possible, and implement practices that avoid or minimize negative impacts to salmon, steelhead, and their critical habitat.

(3) All permittees and participating special entities should support and promote aquatic and riparian habitat restoration within Placer County, especially those with listed aquatic species. Practices that avoid or minimize adverse effects to listed species should be encouraged.

(4) All permittees and participating special entities should work cooperatively with State and Federal agencies, private landowners, governments, and local watershed groups to identify opportunities for cooperative analysis and funding to support salmonid habitat restoration projects and implement high priority actions in the NMFS Central Valley Salmon and Steelhead Recovery Plan.

(5) All permittees and participating special entities should encourage and post interpretative signage near critical habitat and waters that may contain Covered Species to inform land users of the endangered and threatened salmon and steelhead that occur within Placer County and actions that they can take to help and/or prevent further harm to those species. Signage could include information about the months when Covered Species are present or spawning, appearance of redds, notice to avoid redds, how to avoid impact to species, etc.

(6) All permittees and participating special entities should work cooperatively with State and Federal agencies, private landowners, governments, local watershed groups, and any other applicable entities to maintain flows and water temperatures in Auburn Ravine to sustain the Covered Species.

(7) All permittees and participating special entities should consider alternative management options to beaver and beaver dam removal where dams could positively affect salmonids and their habitat. These management options could include protecting culverts by screening the entrance, notching beaver dams rather than removing, or attracting beavers to other locations where they could be beneficial. All permittees should stay informed on best management and conservation practices for beavers and their dams. The PCA should stay informed on research on beavers' impacts on salmonid habitat. The PCA should consider working with partners to conduct or fund similar research within the reserve system.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, NMFS requests notification of the implementation of any conservation recommendations.

2.11. Reinitiation of Consultation

This concludes formal consultation for the Placer County Conservation Program Habitat Conservation Plan.

As 50 CFR 402.16 states, reinitiation of consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental taking specified in the ITS is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) 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 (4) a new species is listed or critical habitat designated that may be affected by the action.

3. Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the physical, biological, and chemical properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on

EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH [CFR 600.905(b)].

This analysis is based, in part, on the EFH assessment determined by NMFS and descriptions of EFH for Pacific Coast salmon (Pacific Fishery Management Council [PFMC] and NMFS 2014b) contained in the fishery management plans developed by the PFMC and approved by the Secretary of Commerce.

NMFS completed this EFH consultation on the proposed issuance of an ITP by NMFS for the PCCP, in accordance with section 305(b)(2) of the MSA (16 U.S.C. 1801 et seq.) and implementing regulations at 50 CFR 600.

NMFS has completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at the NOAA Library Institutional Repository. A complete record of this consultation is on file at NMFS' California Central Valley Office.

3.1. Essential Fish Habitat Affected by the Project

EFH is designated under the Pacific Coast Salmon FMP, which includes the action area of the proposed action. EFH in the action area consists of adult migration habitat, spawning habitat, and juvenile rearing and migration habitat for two Chinook salmon runs (fall- and late fall-run Chinook salmon). Habitat areas of particular concern (HAPCs) that may be either directly or indirectly adversely affected include: (1) complex channels and floodplain habitats, (2) thermal refugia, and (3) spawning habitat. The other HAPCs for Pacific Coast Salmon: (4) estuaries, and (5) marine and estuarine submerged aquatic vegetation, are not present in the action area.

3.2. Adverse Effects on Essential Fish Habitat

Chinook salmon EFH affected by the PCCP includes Covered Activities that are unable to avoid impacts to riparian and/or riverine habitat. The action area provides three general habitat functions essential to one or more life stages, including freshwater spawning and egg incubation, juvenile rearing, and juvenile and adult migration for Chinook salmon. The relative value of these habitats is based on the condition of the habitat itself and the functions that they provide. With regard to the proposed action, and where the specific action components are expected to cause a change in habitat conditions, the changes are identified based on flow, water temperature, and the availability of spawning, rearing, and migration habitats. Long-term effects of Covered Activities are expected to include a loss of approximately 490 acres of EFH within the action area. Temporary effects of Covered Activities are expected to impact 165 acres of EFH. A minimum of 32 acres of riparian habitat will be restored. Additionally, impacts from other Covered Activities will be mitigated by the restoration of riparian habitat at a ratio of

1.52:1 up to an additional 1,425 acres of combined riverine/riparian complex. Therefore, up to 1,457 acres of combined riverine/riparian complex may be restored, which would be a net increase in EFH of up to 967 acres.

Consistent with the ESA portion of this document, which determined that aspects of the proposed action would result in impacts to covered fish species and covered fish habitat, we conclude that aspects of the proposed action would also adversely affect EFH for Chinook salmon. Effects to the HAPCs listed in Section 3.1 were described in Section 2.5 and subsections. A list of temporary and permanent adverse effects to EFH HAPCs is included in this EFH consultation. We conclude that the following adverse effects on EFH designated for Pacific Coast Salmon are reasonably certain to occur (affected HAPCs are indicated by number, corresponding to the HAPCs listed above in Section 3.1).

3.2.1. Water Quality

3.2.1.1. Contaminants and Pollution-related Effects

- Degraded water quality (1, 2, 3)
- Reduction in aquatic macroinvertebrate production (1)

3.2.1.2. Sedimentation and Turbidity

- Reduced habitat complexity (1)
- Degraded water quality (1, 2, 3)
- Reduction in aquatic macroinvertebrate production (1)

3.2.2. Physical Disturbance Effects

- Reduced habitat complexity (1)
- Degraded water quality (1, 2, 3)

3.2.3. Acoustic Effects from Impact Pile Driving

- Ensonification of eggs (3)

3.2.4. Dewatering

- Reduced habitat complexity (1)
- Degraded water quality (1, 2, 3)
- Reduction in aquatic macroinvertebrate production (1)

3.2.5. Land Conversion and Urbanization

- Reduced habitat complexity (1)
- Degraded water quality (1, 2, 3)
- Reduction in aquatic macroinvertebrate production (1)

3.2.6. Water Quantity

- Reduced habitat complexity (1)
- Degraded water quality (1, 2, 3)
- Reduction in aquatic macroinvertebrate production (1)

3.2.7. Disturbance to Riparian Habitat

- Reduced habitat complexity (1)
- Degraded water quality (1, 2, 3)
- Reduction in aquatic macroinvertebrate production (1)

3.2.8. Disturbance to Riverine Habitat

- Reduced habitat complexity (1)
- Degraded water quality (1, 2, 3)
- Reduction in aquatic macroinvertebrate production (1)

3.3. Essential Fish Habitat Conservation Recommendations

The restoration and conservation planned by the PCCP will offset adverse effects to EFH, so no further conservation recommendations are provided. Therefore, the statutory response requirement will be met through the reporting requirements as outlined in the terms and conditions of this opinion.

3.4. Supplemental Consultation

NMFS must reinitiate EFH consultation with itself if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations (50 CFR 600.920(l)).

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The Data Quality Act (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

4.1. Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this opinion are NMFS, USACE, USFWS, and PCCP permittees. Other interested users could include Placer County, City of Lincoln, SPRTA, PCWA, PCA, CDFW, DWR, Central Valley Regional Water Quality Control Board, U.S. Environmental Protection Agency (EPA), Friends of Auburn Ravine, Save Auburn Ravine Salmon and Steelhead. Individual copies of this opinion were provided to NMFS, USFWS, USACE, and Placer County. The document will be available within two weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. The format and naming adheres to conventional standards for style.

4.2. Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

4.3. Objectivity

Information Product Category: Natural Resource Plan

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this opinion and EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

5. REFERENCES

Adams, B. L., W. S. Zaugg, and L. R. Mclain. 1975. Inhibition of Salt-Water Survival and Na-K-ATPase Elevation in Steelhead Trout (*Salmo-Gairdneri*) by Moderate Water Temperatures. Transactions of the American Fisheries Society 104(4):766-769.

Anderson, N. H. and J. R. Sedell. 1979. Detritus Processing by Macroinvertebrates in Stream Ecosystems. Annual Review of Entomology 24(1):27.

Aquatic Nuisance Species Task Force. 2017. Stop Aquatic Hitchhikers. http://www.protectyourwaters.net/. 09/17/2020.

Arkoosh, M. and T. Collier. 2002. Ecological Risk Assessment Paradigm for Salmon: Analyzing Immune Function to Evaluate Risk. Human and Ecological Risk Assessment 8(2):265-276.

Arkoosh, M. R., E. Casillas, E. Clemons, A. N. Kagley, R. Olson, P. Reno, and J. E. Stein. 1998. Effect of Pollution on Fish Diseases: Potential Impacts on Salmonid Populations. Journal of Aquatic Animal Health 10(2):182-190.

Ayres, E., E. Knapp, S. Lieberman, J. Love, and K. Vodopals. 2003. Assessment of Stressors on Fall-Run Chinook Salmon in Secret Ravine (Placer County, CA). California: University of California, Santa Barbara.

Bailey, R. 2003. Streams of Western Placer County: Aquatic Habitat and Biological Resources Literature Review.

Bailey, R. and J. W. Buell. 2005. Anadromous Fish Screening and Passage Opportunities in Western Placer County and Southern Sutter County.

Bigler, B. S., D. W. Welch, and J. H. Helle. 1996. A Review of Size Trends among North Pacific Salmon (Oncorhynchus Spp.). Canadian Journal of Fisheries and Aquatic Sciences 53(2):455-465.

Bisson, P. A. and R. E. Bilby. 1982. Avoidance of Suspended Sediment by Juvenile Coho Salmon. North American Journal of Fisheries Management 2(4):371-374.

Bouwes, N., N. Weber, C. E. Jordan, W. C. Saunders, I. A. Tattam, C. Volk, J. M. Wheaton, and M. M. Pollock. 2016. Ecosystem Experiment Reveals Benefits of Natural and Simulated Beaver Dams to a Threatened Population of Steelhead (*Oncorhynchus mykiss*). Scientific Reports 6(1):1-12.

Buehler, D., R. Oestman, J. Reyff, K. Pommerenck, and B. Mitchell. 2015. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. California Department of Transportation, pp. 532.

California Department of Fish and Game. 2011. California Salmonid Stream Habitat Restoration Manual. California Department of Fish and Game, pp. 525.

California Department of Fish and Wildlife. 2020. GrandTab California Central Valley Chinook Population Database Report.

California Department of Water Resources. 2002. Miners Ravine Habitat Assessment. California Department Water Resources, pp. 51.

California Hatchery Scientific Review Group. 2012. California Hatchery Review Report. Prepared for the US Fish and Wildlife Service and Pacific States Marine Fisheries Commission, pp. 110.

California Invasive Plant Council. 2020. Prevention. http://www.cal-ipc.org/ip/prevention/index.php. 09/17/2020.

California Invasive Plant Council. 2021. The Cal-Ipc Inventory. https://www.cal-ipc.org/plants/inventory/. 01/07/2021.

CBEC Inc. 2017. Coon Creek Watershed Assessment. pp. 264.

Cech, J. J., Jr. and C. A. Myrick. 1999. Steelhead and Chinook Salmon Bioenergetics: Temperature, Ration, and Genetic Effects. Project Number UCAL-WRC-W-885, University of California Water Resources Center.

CH2M Hill. 1993. Cross Canal Watershed Flood Control Plan. pp. 69.

Cohen, S. J., K. A. Miller, A. F. Hamlet, and W. Avis. 2000. Climate Change and Resource Management in the Columbia River Basin. Water International 25(2):253-272.

Dettinger, M. D. and D. R. Cayan. 1995. Large-Scale Atmospheric Forcing of Recent Trends toward Early Snowmelt Runoff in California. Journal of Climate 8(3):606-623.

Dosskey, M. G., P. Vidon, N. P. Gurwick, C. J. Allan, T. P. Duval, and R. Lowrance. 2010. The Role of Riparian Vegetation in Protecting and Improving Chemical Water Quality in Streams. 1752-1688, Wiley Online Library.

Dry Creek Conservancy. 2009. One Day Count.

Fisheries Hydroacoustic Working Group. 2008. Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities. pp. 3.

Foothill Associates. 2006. Pleasant Grove and Curry Creek Ecosystem Restoration Plan. pp. 223.

Fountain, S. M. 2014. Ranchers' Friend and Farmers' Foe: Reshaping Nature with Beaver Reintroduction in California. Environmental History 19(2):239-269.

Gaspin, J. B. 1975. Experimental Investigations of the Effects of Underwater Explosions on Swimbladder Fish. I. 1973 Chesapeake Bay Tests. DTIC Document.

Gisiner, R. C. 1998. Proceedings: Workshop on the Effects of Anthropogenic Noise in the Marine Environment, 10-12 February 1998. United States, Office of Naval Research.

Gregory, R. S. 1993. Effect of Turbidity on the Predator Avoidance Behaviour of Juvenile Chinook Salmon (Oncorhynchus tshawytscha). Canadian Journal of Fisheries and Aquatic Sciences 50(2):241-246.

Hallock, R. J., W. F. Van Woert, and L. Shapovalov. 1961. An Evaluation of Stocking Hatchery-Reared Steelhead Rainbow Trout (*Salmo Gairdnerii Gairdnerii*) in the Sacramento River System. Fish Bulletin 114.

Hastings, M. C. 1995. Physical Effects of Noise on Fishes. Inter-noise and Noise-con Congress and Conference Proceedings 1995(2):979-984.

Hatchery Scientific Review Group. 2004. Hatchery Reform: Principles and Recommendations of the Hatchery Scientific Review Group.

Johnson, L. L., T. K. Collier, and J. E. Stein. 2002. An Analysis in Support of Sediment Quality Thresholds for Polycyclic Aromatic Hydrocarbons (PAHs) to Protect Estuarine Fish. Aquatic Conservation: Marine and Freshwater Ecosystems 12(5):517-538.

Johnson, M. J. 2013. Status Update - Chinook Salmon in the Auburn Ravine Watershed. Community Development/Resource Agency, pp. 6.

Jones & Stokes. 2004. Bear River and Western Pacific Interceptor Canal Levee Improvements Project Final Environmental Impact Report. pp. 485.

Jones & Stokes. 2005. Assessment of Habitat Conditions for Chinook Salmon and Steelhead in Western Placer County, California. pp. 158.

Karr, J. R. and D. R. Dudley. 1981. Ecological Perspective on Water Quality Goals. Environmental Management 5(1):55-68.

Katz, J., P. B. Moyle, R. M. Quiñones, J. Israel, and S. Purdy. 2013. Impending Extinction of Salmon, Steelhead, and Trout (Salmonidae) in California. Environmental Biology of Fishes 96(10-11):1169-1186.

Keefer, M. L., C. A. Peery, and B. High. 2009. Behavioral Thermoregulation and Associated Mortality Trade-Offs in Migrating Adult Steelhead (*Oncorhynchus mykiss*): Variability among Sympatric Populations. Canadian Journal of Fisheries and Aquatic Sciences 66(10):1734-1747.

Kemp, P., D. Sear, A. Collins, P. Naden, and I. Jones. 2011. The Impacts of Fine Sediment on Riverine Fish. Hydrological Processes 25(11):1800-1821.

Kemp, P. S., T. A. Worthington, T. E. Langford, A. R. Tree, and M. J. Gaywood. 2012. Qualitative and Quantitative Effects of Reintroduced Beavers on Stream Fish. Fish and Fisheries 13(2):158-181.

King, K. A., C. E. Grue, J. M. Grassley, R. J. Fisk, and L. L. Conquest. 2014. Growth and Survival of Pacific Coho Salmon Smolts Exposed as Juveniles to Pesticides within Urban Streams in Western Washington, USA. Environmental toxicology and chemistry 33(7):1596-1606.

Lautz, L., C. Kelleher, P. Vidon, J. Coffman, C. Riginos, and H. Copeland. 2019. Restoring Stream Ecosystem Function with Beaver Dam Analogues: Let's Not Make the Same Mistake Twice. Hydrological Processes 33(1):174-177.

Leitritz, E. and R. C. Lewis. 1980. Trout and Salmon Culture: Hatchery Methods. UCANR Publications.

Lindley, S. T. and M. S. Mohr. 2003. Modeling the Effect of Striped Bass (*Morone saxatilis*) on the Population Viability of Sacramento River Winter-Run Chinook Salmon (*Oncorhynchus tshawytscha*). Fishery Bulletin 101(2):321-331.

Lindley, S. T., R. S. Schick, E. Mora, P. B. Adams, J. J. Anderson, S. Greene, C. Hanson, B. P. May, D. McEwan, R. B. MacFarlane, C. Swanson, and J. G. Williams. 2007. Framework for Assessing Viability of Threatened and Endangered Chinook Salmon and Steelhead in the Sacramento-San Joaquin Basin. San Francisco Estuary and Watershed Science 5(1):28.

Lindsay, R. B., R. K. Schroeder, K. R. Kenaston, R. N. Toman, and M. A. Buckman. 2004. Hooking Mortality by Anatomical Location and Its Use in Estimating Mortality of Spring Chinook Salmon Caught and Released in a River Sport Fishery. North American Journal of Fisheries Management 24(2):367-378.

Lloyd, D. S., J. P. Koenings, and J. D. Laperriere. 1987. Effects of Turbidity in Fresh Waters of Alaska. North American Journal of Fisheries Management 7(1):18-33.

May, J. T., R. L. Hothem, C. N. Alpers, and M. A. Law. 2000. Mercury Bioaccumulation in Fish in a Region Affected by Historic Gold Mining: The South Yuba River, Deer Creek, and Bear River Watersheds, California, 1999. U.S. Geological Survey, 00-367, pp. 35.

McClure, M. M. 2011. Climate Change *in* Status Review Update for Pacific Salmon and Steelhead Listed under the ESA: Pacific Northwest., M. J. Ford, editor, NMFS-NWFCS-113, 281 p.

McClure, M. M., M. Alexander, D. Borggaard, D. Boughton, L. Crozier, R. Griffis, J. C. Jorgensen, S. T. Lindley, J. Nye, M. J. Rowland, E. E. Seney, A. Snover, C. Toole, and K. Van Houtan. 2013. Incorporating Climate Science in Applications of the U.S. Endangered Species Act for Aquatic Species. Conservation Biology 27(6):1222-1233.

McEwan, D. R. 2001. Central Valley Steelhead. Fish Bulletin 179(1):1-44.

McKenzie, G. 2020. Restoration Activities in the Placer County Conservation Program Plan Area. pers. comm. E. Keller.

Morcillo, P., M. A. Esteban, and A. Cuesta. 2017. Mercury and Its Toxic Effects on Fish. AIMS Environmental Science 4(3):386-402.

Moyle, P. B. 2002. Inland Fishes of California. University of California Press, Berkeley and Los Angeles.

Mussen, T. D., D. Cocherell, Z. Hockett, A. Ercan, H. Bandeh, M. L. Kavvas, J. J. Cech, and N. A. Fangue. 2013. Assessing Juvenile Chinook Salmon Behavior and Entrainment Risk near Unscreened Water Diversions: Large Flume Simulations. Transactions of the American Fisheries Society 142(1):130-142.

Mussen, T. D., O. Patton, D. Cocherell, A. Ercan, H. Bandeh, M. L. Kavvas, J. J. Cech, N. A. Fangue, and J. Post. 2014. Can Behavioral Fish-Guidance Devices Protect Juvenile Chinook Salmon (*Oncorhynchus tshawytscha*) from Entrainment into Unscreened Water-Diversion Pipes? Canadian Journal of Fisheries and Aquatic Sciences 71(8):1209-1219.

Myrick, C. A. and J. J. Cech. 2004. Temperature Effects on Juvenile Anadromous Salmonids in California's Central Valley: What Don't We Know? Reviews in Fish Biology and Fisheries 14:113-123.

Myrick, C. A. and J. J. Cech. 2005. Effects of Temperature on the Growth, Food Consumption, and Thermal Tolerance of Age-0 Nimbus-Strain Steelhead. North American Journal of Aquaculture 67(4):324-330.

National Marine Fisheries Service. 1999. Endangered and Threatened Species; Threatened Status for Two Chinook Salmon Evolutionarily Significant Units (ESUs) in California. Federal Register 64(179):50394-50415.

National Marine Fisheries Service. 2001. Guidelines for Salmonid Passage at Stream Crossings. U.S. Department of Commerce, pp. 14.

National Marine Fisheries Service. 2004. Endangered and Threatened Species; Take of Anadromous Fish. Federal Register 69(73):19975-19979.

National Marine Fisheries Service. 2005. Endangered and Threatened Species: Designation of Critical Habitat for Seven Evolutionarily Significant Units of Pacific Salmon and Steelhead in California. Federal Register 70(170):52488-56627.

National Marine Fisheries Service. 2006. Endangered and Threatened Species: Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead; Final Rule. Federal Register 71(3):834-861.

National Marine Fisheries Service. 2014a. Biological Opinion on the Coleman National Fish Hatchery Complex Artificial Propagation Programs. U.S. Department of Commerce, pp. 233.

National Marine Fisheries Service. 2014b. Final Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-Run Chinook Salmon and Central Valley Spring-Run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead. West Coast Region, pp. 428.

National Marine Fisheries Service. 2014c. Final Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-Run Chinook Salmon and Central Valley Spring-Run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead - Appendices. West Coast Region, pp. 1134.

National Marine Fisheries Service. 2015. Concurrence Letter for the I-80/SR 65 Interchange Improvements Project. NMFS California Central Valley Office, pp. 10.

National Marine Fisheries Service. 2016. 5-Year Review: Summary and Evaluation of California Central Valley Steelhead Distinct Population Segment. U.S. Department of Commerce, pp. 44.

Navicky, J. 2008. Summary of 2004 and 2005 Fish Community Surveys in Auburn Ravine and Coon Creek (Placer County). California Department of Fish and Game, pp. 12.

Newcombe, C. P. and J. O. T. Jensen. 1996. Channel Suspended Sediment and Fisheries: A Synthesis for Quantitative Assessment of Risk and Impact. North American Journal of Fisheries Management 16(4):693-727.

Nilsson, C. and M. Dynesius. 1994. Ecological Effects of River Regulation on Mammals and Birds: A Review. Regulated Rivers: Research Management 9(1):45-53.

Pacific Fishery Management Council and National Marine Fisheries Service. 2014. Environmental Assessment and Regulatory Impact Review Pacific Coast Salmon Plan Amendment 18: Incorporating Revisions to Pacific Salmon Essential Fish Habitat. pp. 351.

Paul, M. J. and J. L. Meyer. 2008. Streams in the Urban Landscape. Pages 207-231 *in* Urban Ecology. Springer.

Placer and Sacramento Counties. 2003. Dry Creek Watershed Coordinated Resource Management Plan. pp. 352.

Placer County. 2002. Auburn Ravine/Coon Creek Ecosystem Restoration Plan. pp. 315.

Placer County. 2009. Auburn Tunnel Outlet Modification. Prepared for Placer County Water Agency by HDR, pp. 186.

Placer County. 2011. Dry Creek Watershed Flood Control Plan. Flood Control and Water Conservation District, pp. 435.

Placer County. 2012. Placer County Community Wildfire Protection Plan. pp. 321.

Placer County. 2013. Placer County General Plan. pp. 208.

Placer County. 2020a. Placer County Conservation Program: Western Placer County Aquatic Resources Program. pp. 220.

Placer County. 2020b. Placer County Conservation Program: Western Placer Habitat Conservation Plan/Natural Community Conservation Plan. pp. 952.

Placer County. 2020c. Placer County Conservation Program: Western Placer Habitat Conservation Plan/Natural Community Conservation Plan - Appendices. pp. 1020.

Placer County. 2021a. Dry Creek Management Plan. https://placerair.org/3501/Dry-Creek-Management-Plan. 01/12/2021.

Placer County. 2021b. Sundance-Lakeview Farms. https://placerair.org/3497/Sundance-Lakeview-Farms. 03/03/2021.

Pollock, M. M., S. Witmore, and E. Yokel. 2019. A Field Experiment to Assess Passage of Juvenile Salmonids across Beaver Dams During Low Flow Conditions in a Tributary to the Klamath River, California, USA. bioRxiv:856252.

Popper, A. N., T. J. Carlson, A. D. Hawkins, B. L. Southall, and R. L. Gentry. 2006. Interim Criteria for Injury of Fish Exposed to Pile Driving Operations: A White Paper. pp. 15.

Popper, A. N. and M. C. Hastings. 2009. The Effects of Human-Generated Sound on Fish. Integrative Zoology 4(1):43-52.

Pusey, B. J. and A. H. Arthington. 2003. Importance of the Riparian Zone to the Conservation and Management of Freshwater Fish: A Review. Marine and Freshwater Research 54(1):1-16.

Reynolds, F., T. Mills, R. Benthin, and A. Low. 1993. Restoring Central Valley Streams: A Plan for Action. California Department of Fish and Game.

Roberts, B. C. and R. G. White. 1992. Effects of Angler Wading on Survival of Trout Eggs and Pre-Emergent Fry. North American Journal of Fisheries Management 12(3):450-459.

Rombough, P. J. 1988. Growth, Aerobic Metabolism, and Dissolved-Oxygen Requirements of Embryos and Alevins of Steelhead, Salmo-Gairdneri. Canadian Journal of Zoology-Revue Canadienne De Zoologie 66(3):651-660.

Schlosser, I. J. and J. R. Karr. 1981. Riparian Vegetation and Channel Morphology Impact on Spatial Patterns of Water Quality in Agricultural Watersheds. Environmental Management 5(3):233-243.

Scott, G. R. and K. A. Sloman. 2004. The Effects of Environmental Pollutants on Complex Fish Behaviour: Integrating Behavioural and Physiological Indicators of Toxicity. Aquatic Toxicology 68(4):369-392.

Servizi, J. A. and D. W. Martens. 1992. Sublethal Responses of Coho Salmon (Oncorhynchus kisutch) to Suspended Sediments. Canadian Journal of Fisheries and Aquatic Sciences 49(7):1389-1395.

Sigler, J. W., T. C. Bjornn, and F. H. Everest. 1984. Effects of Chronic Turbidity on Density and Growth of Steelheads and Coho Salmon. Transactions of the American Fisheries Society 113(2):142-150.

Slotte, A., K. Hansen, J. Dalen, and E. Ona. 2004. Acoustic Mapping of Pelagic Fish Distribution and Abundance in Relation to a Seismic Shooting Area Off the Norwegian West Coast. Fisheries Research 67(2):143-150.

Suttle, K. B., M. E. Power, J. M. Levine, and C. McNeely. 2004. How Fine Sediment in Riverbeds Impairs Growth and Survival of Juvenile Salmonids. Ecological Applications 14(4):969-974.

Taylor, B. R., C. MacInnis, and T. A. Floyd. 2010. Influence of Rainfall and Beaver Dams on Upstream Movement of Spawning Atlantic Salmon in a Restored Brook in Nova Scotia, Canada. River Research and Applications 26(2):183-193.

Tian, Z., H. Zhao, K. T. Peter, M. Gonzalez, J. Wetzel, C. Wu, X. Hu, J. Prat, E. Mudrock, R. Hettinger, A. Cortina, R. G. Biswas, F. V. C. Kock, R. Soong, A. Jenne, B. Du, F. Hou, H. He, R. Lundeen, A. Gilbreath, R. Sutton, N. L. Scholz, J. W. Davis, M. C. Dodd, A. Simpson, J. K. McIntyre, and E. P. Kolodziej. 2021. A Ubiquitous Tire Rubber-Derived Chemical Induces Acute Mortality in Coho Salmon. Science 371(6525):185-189.

U.S. Fish and Wildlife Service. 1995. Working Paper on Restoration Needs: Habitat Restoration Actions to Double Natural Production of Anadromous Fish in the Central Valley of California (Volumes 1-3). pp. 293.

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Consultation Handbook. pp. 315.

U.S. Fish and Wildlife Service and Placer County. 2020. Placer County Conservation Program: Final Environmental Impact Statement/Environmental Impact Report. pp. 950.

Vogel, D. and K. Marine. 1991. U.S. Bureau of Reclamation Central Valley Project Guide to Upper Sacramento River Chinook Salmon Life History. RDD/R42/003.51.

Wade, A. A., T. J. Beechie, E. Fleishman, N. J. Mantua, H. Wu, J. S. Kimball, D. M. Stoms, and J. A. Stanford. 2013. Steelhead Vulnerability to Climate Change in the Pacific Northwest. Journal of Applied Ecology 50:1093-1104.

Waples, R. S. 1991. Definition of "Species" under the Endangered Species Act: Application to Pacific Salmon. Page 18 *in* U.S. Department of Commerce, editor., Seattle, Washington.

Wardle, C., T. Carter, G. Urquhart, A. Johnstone, A. Ziolkowski, G. Hampson, and D. Mackie. 2001. Effects of Seismic Air Guns on Marine Fish. Continental Shelf Research 21(8):1005-1027.

Waters, T. F. 1995. Sediment in Streams: Sources, Biological Effects, and Control. American Fisheries Society Monograph 7.

Wathen, G., J. E. Allgeier, N. Bouwes, M. M. Pollock, D. E. Schindler, and C. E. Jordan. 2019. Beaver Activity Increases Habitat Complexity and Spatial Partitioning by Steelhead Trout. Canadian Journal of Fisheries and Aquatic Sciences 76(7):1086-1095.

Western Wood Preservers Institute. 2021. WWPI - Home of the Western Preserved Wood Industry. https://wwpinstitute.org/. 01/07/2021.

Williams, J. G. 2006. Central Valley Salmon: A Perspective on Chinook and Steelhead in the Central Valley of California. San Francisco Estuary and Watershed Science 4(3):416.

Williams, T. H., S. T. Lindley, B. C. Spence, and D. A. Boughton. 2011. Status Review Update for Pacific Salmon and Steelhead Listed under the Endangered Species Act: Update to January 5, 2011 Report., National Marine Fisheries Service, Southwest Fisheries Science Center. Santa Cruz, CA.

Williams, T. H., B. C. Spence, D. A. Boughton, R. C. Johnson, L. Crozier, N. Mantua, M. O'Farrell, and S. T. Lindley. 2016. Viability Assessment for Pacific Salmon and Steelhead Listed under the Endangered Species Act: Southwest, Memorandum from Steve Lindley to Will Stelle.

Yoshiyama, R. M., E. Gerstung, F. Fisher, and P. Moyle. 1996. Historical and Present Distribution of Chinook Salmon in the Central Valley Drainage of California.

Zillig, K. W., R. A. Lusardi, and N. A. Fangue. 2018. Variation in Thermal Eco-Physiology among California Salmonids: Implications for Management. U.C. Davis.

6. APPENDICES

ENCLOSURE 4

Central Valley Regional Water Quality Control Board

GENERAL ORDER NO. [R5-2020-0048] WASTE DISCHARGE REQUIREMENTS AND CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION

Effective Date: 16 October 2020

Expiration Date: 16 October 2025

Program Type: Fill/Excavation

Project Type: Other

Reg. Meas.	437728
Place ID:	866264
WDID:	5A31CR00534
USACE:	SPK-2005-00485

Project: Western Placer County Habitat Conservation Program/Natural Communities Conservation Plan (HCP/NCCP) Programmatic General Permit (PGP) (Project)

Applicant: United States Department of the Army, Corps of Engineers

Applicant Contact: Michael S. Jewell
Chief, Regulatory Division
Sacramento District
1325 J Street
Sacramento, CA 95814-2922
Phone: (916) 557-5250

Water Board Staff: Greg Hendricks
Environmental Scientist
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670
Phone: (916) 464-4709
Email: Greg.Hendricks@waterboards.ca.gov

Water Board Contact Person:

If you have any questions, please call Central Valley Regional Water Quality Control Board (Central Valley Water Board) Staff listed above or (916) 464-3291 and ask to speak with the Water Quality Certification Unit Supervisor.

Table of Contents

I. General Order 3
II. Public Notice 3
III. Project Purpose 3
IV. Project Description 4
V. Project Location 4
VI. Project Impact and Receiving Waters Information 4
VII. Description of Direct Impacts to Waters of the State 5
VIII. Description of Indirect Impacts to Waters of the State 5
IX. Avoidance and Minimization 6
X. Compensatory Mitigation 6
XI. California Environmental Quality Act (CEQA) 6
XII. Petitions for Reconsideration 6
XIII. Fees Received 6
XIV. Conditions 6
XV. Water Quality Certification 25

Attachment A Western Placer County HCP/NCCP Plan Map
Attachment B CEQA Findings of Facts
Attachment C Reporting and Notification Requirements
Attachment D Signatory Requirements
Attachment E Notice of Intent Form

I. General Order

This General Order for California Water Code Section 13263 General Waste Discharge Requirements (WDRs) and Clean Water Act Section 401 Water Quality Certification (Order) was issued at the request of the United States Army Corps of Engineers, Sacramento District (USACE), for certification of the Western Placer County Habitat Conservation Program/Natural Communities Conservation Plan (HCP/NCCP) Programmatic General Permit (PGP) (Project). This Order is for the purpose described in the application submitted by the USACE. The application was received on 21 April 2020. The application was deemed complete on 21 May 2020.

The Central Valley Water Board may prescribe general waste discharge requirements for a category of discharges if all of the following criteria apply to the discharges in that category:

i. The discharges are produced by the same or similar operations.

ii. The discharges involve the same or similar type of waste.

iii. The discharges require the same or similar treatment standards.

iv. The discharges are more appropriately regulated under general WDRs than individual WDRs.

Discharges from individual projects covered under the HCP/NCCP PGP that will be regulated under this Order are consistent with the criteria listed above and therefore a general order is appropriate. All discharges regulated under this order will be from similar operations which pose similar types of threat to water quality and will require similar treatment methods. Individual WDRs are not necessary because the discharges are similar and discharge requirements would be similar if individual WDRs were issued.

II. Public Notice

In addition to the USACE notice, the Central Valley Water Board provided public notice of the application starting 24 April 2020 and the draft order from 14 August 2020 to 13 September 2020, pursuant to California Code of Regulations, title 23, sections 3858 and 3861 and Water Code section 13167.5, subdivision (a)(1).

III. Project Purpose

The USACE requested an Order by the Central Valley Water Board for the Western Placer County HCP/NCCP PGP. The USACE issued the HCP/NCCP PGP to authorize certain Covered Activities in the HCP/NCCP and Western Placer County Aquatic Resources Program (CARP) (as defined in Section XIV.F) that require USACE permits under Section 404 of the Clean Water Act, to eliminate the need for individual project applicants to seek separate review from the USACE for individual projects that are applicable for the HCP/NCCP PGP, and to expedite review of certain Covered Activities through other programmatic elements, such as compliance with Section 7 of the federal Endangered Species Act (ESA). The HCP/NCCP PGP will increase certainty, reduce time, and improve efficiency for individual projects applicants through synergies with processes implemented by local jurisdictions, such as those associated with land use entitlements, while protecting aquatic resources, including waters of the state.

Activities covered under the HCP/NCCP PGP are substantially similar in nature, would result in minimal individual and cumulative impacts on the aquatic environment, and have been authorized under the local Aquatic Resources Program.

The HCP/NCCP PGP will protect the aquatic environment and the public interest while effectively authorizing activities that have no more than minimal individual and cumulative adverse environmental effects.

IV. Project Description

The Placer County Conservation Program (PCCP) includes the HCP/NCCP and the CARP. The 269,672-acre PCCP is a regional approach to address issues related to planned development, species habitat conservation, and aquatic resource protection following a comprehensive conservation strategy, over a 50-year period. The HCP/NCCP covers 14 species of wildlife, including 9 that are state and/or federally listed as threatened or endangered. The HCP/NCCP will establish a reserve system comprised of approximately 47,300 acres of interconnected land blocks including all major streams. The reserve system created by the HCP/NCCP will also connect to approximately 15,957 acres of existing reserves. The CARP provides a comprehensive local program for the protection and restoration of aquatic resources in western Placer County. Compensatory mitigation fees collected for impacts in the Potential Future Growth area will be used to purchase, restore and preserve land in the Reserve Acquisition Area, thereby providing permanent protection to more intact watersheds and avoiding and minimizing impacts to natural resources on a regional scale. An individual project covered under the HCP/NCCP and authorized under the PGP and this Order may not result in the loss of more than 3.0 acres of waters of the state, and the loss of streambed shall not exceed 500 linear feet of jurisdictional streams, and/or a total of 1,000 linear feet of irrigation or drainage ditch (provided the irrigation or drainage ditch is not a relocated or channelized stream), as verified by USACE. The acreage of loss of streambed for streams and/or ditches shall be included in the acreage threshold for loss of waters of the state.

V. Project Location

Individual projects authorized by the Central Valley Water Board under this Order may occur anywhere within the HCP/NCCP boundary. The HCP/NCCP area encompasses approximately 269,672 acres within Placer County. Within western Placer County, the Plan Area is bounded on the north by Nevada and Yuba Counties, on the east by the City of Auburn and California Highway 49, on the south by Sacramento County, and on the west by Sutter County. With the exception of activities conducted by the Placer County Water Agency (PCWA), the Plan Area in western Placer County excludes the Cities of Auburn, Rocklin, and Roseville and Town of Loomis. Within Sutter County, the Plan Area includes 1,724 acres along the Raccoon Creek floodplain, and 33 miles of Auburn Ravine, Raccoon Creek, Cross Canal, and East Side Canal. A map showing the HCP/NCCP boundary is found in Attachment A of this Order.

VI. Project Impact and Receiving Waters Information

Individual projects authorized under this Order are located within the jurisdiction of the Central Valley Water Board. Receiving waters and groundwater potentially impacted by the individual project are protected in accordance with the Water Quality Control

Plan for the Sacramento River and San Joaquin River Basins, Fifth Edition, revised May 2018 (Basin Plan). The Basin Plan for the region and other plans and policies may be accessed online at: (http://www.waterboards.ca.gov/plans_policies/). The Basin Plan includes water quality standards, which consist of existing and potential beneficial uses of waters of the state, water quality objectives to protect those uses, and the state and federal antidegradation policies.

It is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This Order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.

The person or entity proposing to enroll under the HCP/NCCP PGP (Enrollee) must identify the receiving waters and beneficial uses of waters of the state to be impacted by a proposed individual project, as listed in the Basin Plan. The Enrollee will include this information in the Notice of Intent (NOI; Attachment E), which must be completed by the Enrollee to enroll under this Order. The Enrollee may attach a copy of the application for a CARP authorization for the proposed individual project (CARP Application) to the NOI and, in the NOI, refer to applicable sections of the CARP Application to provide the information required by the NOI.

VII. Description of Direct Impacts to Waters of the State

The Enrollee will describe and quantify all proposed direct and indirect individual project impacts to waters of the state in the NOI. Dewatering will occur within the individual project area.

Total individual project fill/excavation quantities for all permanent impacts will be submitted annually by the Placer Conservation Authority (PCA). Permanent impacts are categorized as those resulting in a physical loss in area and also those degrading ecological condition.

VIII. Description of Indirect Impacts to Waters of the State

The Central Valley Water Board recognizes the potential for indirect impacts to waters of the state associated with HCP/NCCP PGP individual projects. The Enrollee will identify individual project activities resulting in indirect impacts to waters of the state and quantify indirect impacts in the NOI.

Activities resulting in indirect impacts may include areas where a direct impact to a wetland, reduces the functions of existing wetland habitat, where impervious surfaces reduce water quality of receiving waters, or where direct impacts to a riparian zone reduces the water quality of receiving waters. HCP/NCCP PGP individual project activities that may result in indirect impacts to waters of the state, further described in chapter 4 of the HCP/NCCP Environmental Impact Statement/Environmental Impact Report (EIS/EIR), include new urban development physically changing existing landscapes and watersheds, removal or changes to existing vegetation, construction and long-term maintenance of buildings and infrastructure, new or increased human activities, and increased vehicle traffic.

IX. Avoidance and Minimization

The PGP provides benefits by encouraging individual project proponents to minimize their proposed impacts to waters of the state and design their individual project within the scope of the PGP, rather than applying for individual permits for activities that could result in greater adverse impacts to the aquatic environment. Individual project impacts to waters of the state must be avoided and minimized to the greatest practicable extent.

As required by section 5.2 of the CARP, the Enrollee shall provide a description of the methods used to avoid and minimize impacts to protected resources to the extent practicable (project design, stream structural setbacks, etc.) to impact aquatic resources of Placer County. This information must be included with the NOI for enrollment under this Order.

The Enrollee shall implement the General Avoidance and Minimization Measures listed in Appendix C 1 & 2 of the CARP, incorporated herein by reference, and the Best Management Practices (BMPs).

X. Compensatory Mitigation

The Enrollee shall provide proof of compensatory mitigation consistent with CARP section 5.2.7, *Proof of Fulfillment of Mitigation Requirements,* and chapter 6, *Avoidance, Minimization and Mitigation Requirements,* for direct and indirect impacts as described in section XIV.K for permanent impacts.

XI. California Environmental Quality Act (CEQA)

On 1 September 2020, the County of Placer, as lead agency, certified an EIS/EIR (State Clearinghouse (SCH) No. 2005032050) for the Project and filed a Notice of Determination (NOD) at the SCH on 2 September 2020. Pursuant to CEQA, the Central Valley Water Board has made Findings of Facts (Findings) which support the issuance of this Order and are included in Attachment B.

XII. Petitions for Reconsideration

Any person aggrieved by this action may petition the Central Valley Water Board to reconsider this Order in accordance with California Code of Regulations, title 23, section 3867. A petition for reconsideration must be submitted in writing and received within 30 calendar days of the issuance of this Order.

XIII. Fees Received

An application fee is required for a HCP/NCCP PGP individual project under this Order. The application fee amount for individual projects authorized under this Order is determined as required by California Code of Regulations, title 23, sections 3833(b)(3) and 2200(a)(3), and is calculated as A - Fill & Excavation Discharges (fee code 84) or E – Low Impact Discharges (fee code 87) with the dredge and fill fee calculator located at (http://www.waterboards.ca.gov/water_issues/programs/cwa401/index.shtml). Note that this fee calculator is periodically adjusted. The Enrollee should confirm the correct fee amount prior to submitting a NOI to the Central Valley Water Board.

XIV. Conditions

The Central Valley Water Board will independently review the record of any individual project proposed for authorization under this Order to analyze impacts to water quality

and designated beneficial uses within the watersheds of the individual project. In accordance with this Order, the Enrollee may proceed with the individual project under the following terms and conditions:

A. Reporting and Notification Requirements: The following section details the reporting and notification types and timing of submittals. Requirements for the content of these reporting and notification types are detailed in Attachment C, including specifications for photo and map documentation. Written reports and notifications must be submitted using the Reporting and Notification Cover Sheet located in Attachment C, which must be signed by the authorized representative.

1. Request for Authorization and Fee Requirements

a. The prospective Enrollee must submit a request for authorization under this Order by submitting a NOI to the Central Valley Water Board at least 45 days before any individual project activity. Effective 13 October 2014, request for authorization and attachments, and submission of material for the development of the water quality certification must be submitted electronically.

The Enrollee must submit all notifications, submissions, materials, data, correspondence, and reports in a searchable Portable Document Format (PDF). Documents less than 50 MB must be emailed to: centralvalleysacramento@waterboards.ca.gov.

In the subject line of the email, include the Central Valley Water Board Contact, individual project name, and WDID. Documents that are 50 MB or larger must be transferred to a disk and mailed to the Central Valley Water Board Contact.

b. The Enrollee shall pay the required fee in accordance with California Code of Regulations, title 23, section 2200 and follow notification and reporting requirements described in the Project Status Notifications Section below and found in Attachment C of this Order.

c. Once the Central Valley Water Board receives a completed NOI and the correct fee from the Enrollee, the Central Valley Water Board will transmit a Notice of Applicability (NOA) to the Enrollee verifying enrollment in this Order.

d. The Central Valley Water Board may deny any NOI and instead require the project proponent to obtain coverage under an individual permit. Further, a project proponent may choose to apply for an individual permit in lieu of submitting an NOI for coverage under this Order

2. Project Reporting

a. Enrollee Monthly Reporting: The Enrollee must submit a Monthly Report to the Central Valley Water Board on the 1st day of each month beginning the month after the submittal of the Commencement of Construction Notification. Monthly reporting shall continue until the Central Valley Water Board issues a Notice of Project Complete Letter to the Enrollee.

b. Enrollee Annual Reporting: The Enrollee shall submit an Annual Report each year shall be submitted on the 1st day of the month beginning one

year after the submittal of the Commencement of Construction Notification. Annual reporting shall continue for each individual project until the Central Valley Water Board issues a Notice of Project Complete Letter to the Enrollee.

c. **PCA Annual Impact Report:** The PCA shall submit an Annual Impact Report consistent with the requirements of the PGP. Annual Impact reporting shall continue until the expiration date of this Order.

3. Project Status Notifications

a. **Commencement of Construction:** The Enrollee shall submit a Commencement of Construction Notice at least seven (7) days prior to start of initial ground disturbance activities and must include the corresponding Waste Discharge Identification Number (WDID#) issued under the PGP and, if applicable, the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ; NPDES No. CAS000002).

b. **Request for Notice of Completion of Discharges Letter:** The Enrollee shall submit a Request for Notice of Completion of Discharges Letter following completion of active individual project construction activities. This request shall be submitted to the Central Valley Water Board staff within thirty (30) days following completion of all individual project construction activities. Upon acceptance of the request, Central Valley Water Board staff shall issue a Notice of Completion of Discharges Letter to the Enrollee which will end the active discharge period and associated annual fees.

c. **Request for Notice of Project Complete Letter:** The Enrollee shall submit a Request for Notice of Project Complete Letter when construction and/or any post-construction monitoring is complete, and no further individual project activities will occur. This request shall be submitted to Central Valley Water Board staff within thirty (30) days following completion of all individual project activities. Upon approval of the request, the Central Valley Water Board staff shall issue a Notice of Project Complete Letter to the Enrollee which will end the post discharge monitoring period and associated annual fees.

4. **Conditional Notifications and Reports:** The following notifications and reports are required, as applicable:

a. **Accidental Discharges of Hazardous Materials[1]:** Following an accidental discharge of a reportable quantity of a hazardous material, sewage, or an

[1] "Hazardous material" means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment. (Health & Saf. Code, section 25501.)

unknown material, the following applies (Water Code, section 13271):

i. As soon as (A) the Enrollee has knowledge of the discharge or noncompliance, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures then:

- first call – 911 (to notify local response agency)
- then call – Office of Emergency Services (OES) State Warning Center at: (800) 852-7550 or (916) 845-8911
- lastly follow the required OES procedures as set forth in: (http://www.caloes.ca.gov/FireRescueSite/Documents/CalOES-Spill_Booklet_Feb2014_FINAL_BW_Acc.pdf).

ii. Following notification to OES, the Enrollee shall notify the Central Valley Water Board, as soon as practicable (ideally within 24 hours). Notification may be via telephone, e-mail, delivered written notice, or other verifiable means.

iii. Within five (5) working days of notification to the Central Valley Water Board, the Enrollee must submit an Accidental Discharge of Hazardous Material Report.

b. Violation of Compliance with Water Quality Standards: The Enrollee shall notify the Central Valley Water Board of any event causing a violation of compliance with water quality standards. Notification may be via telephone, e-mail, delivered written notice, or other verifiable means.

i. Examples of noncompliance events include: lack of storm water treatment following a rain event, discharges causing a visible plume in a water of the state, and water contact with uncured concrete.

ii. This notification must be followed within three (3) working days by submission of a Violation of Compliance with Water Quality Standards Report.

c. In-Water Work and Diversions

i. The Enrollee shall notify the Water Board at least forty-eight (48) hours prior to initiating work in flowing or standing water or stream diversions. Notification may be via telephone, e-mail, delivered written notice, or other verifiable means.

ii. Within three (3) working days following completion of work in water or stream diversions, an In-Water Work/Diversions Water Quality Monitoring Report must be submitted to Central Valley Water Board staff.

d. Modifications to Project: The Enrollee shall give advance notice to the Central Valley Water Board if individual project implementation as described in the NOI application materials is altered in any way or by the imposition of subsequent permit conditions by any local, state or federal regulatory authority by submitting a Modifications to Project Report. The Enrollee shall inform Central Valley Water Board staff of any individual project

modifications that will interfere with the Enrollee's compliance with this Order.

e. **Transfer of Property Ownership:** Authorization under this Order is not transferable in its entirety or in part to any person or organization except after notice to the Central Valley Water Board in accordance with the following terms:

   i. The Enrollee must notify the Central Valley Water Board of any change in ownership or interest in ownership of the individual project area by submitting a Transfer of Property Ownership Report. The Enrollee and purchaser must sign and date the notification and provide such notification to the Central Valley Water Board at least 10 days prior to the transfer of ownership. The purchaser must also submit a written request to the Central Valley Water Board to be named as the Enrollee in a revised order.

   ii. Until such time as this Order has been modified to name the purchaser as the enrollee, the Enrollee shall continue to be responsible for all requirements set forth in this Order.

f. **Transfer of Long-Term BMP Maintenance:** If maintenance responsibility for post-construction BMPs is legally transferred, the Enrollee must submit to the Central Valley Water Board a copy of such documentation and must provide the transferee with a copy of a long-term BMP maintenance plan that complies with manufacturer or designer specifications. The Enrollee must provide such notification to the Central Valley Water Board with a Transfer of Long-Term BMP Maintenance Report at least 10 days prior to the transfer of BMP maintenance responsibility.

B. Water Quality Monitoring

1. **General:** Continuous visual surface water monitoring shall be conducted during active construction periods to detect accidental discharge of construction related pollutants (e.g. oil and grease, turbidity plume, or uncured concrete). The Enrollee shall perform surface water sampling[2] :

   a. when performing any in-water work;

   b. during the entire duration of temporary surface water diversions;

   c. in the event that individual project activities result in any materials reaching surface waters; or

   d. when any activities result in the creation of a visible plume in surface waters.

2. **Accidental Discharges/Noncompliance:** Upon occurrence of an accidental discharge of hazardous materials or a violation of compliance with a water quality standard, Central Valley Water Board staff may require water quality monitoring based on the discharge constituents and/or related water quality

[2] Sampling is not required in a wetland where the entire wetland is being permanently filled, provided there is no outflow connecting the wetland to surface waters.

objectives and beneficial uses.

3. **In-Water Work or Diversions:** For individual projects involving planned work in water or stream diversions, a water quality monitoring plan shall be submitted to Central Valley Water Board staff for acceptance at least 30 days in advance of any discharge to the affected water body. Water quality monitoring shall be conducted in accordance with the approved plan.

   a. Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

   b. For surface water bodies the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95-percentile concentration shall not fall below 75 percent of saturation. The dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time:

   - Waters designated WARM 5.0 mg/l
   - Waters designated COLD 7.0 mg/l
   - Waters designated SPWN 7.0 mg/l

   c. For individual projects involving the fill of wet concrete into waters of the state, individual project activities shall not cause pH to be depressed below 6.5 nor raised above 8.5 in surface water.

   d. Activities shall not cause turbidity increases in surface water to exceed:

   i. where natural turbidity is less than 1 Nephelometric Turbidity Units (NTUs), controllable factors shall not cause downstream turbidity to exceed 2 NTU;

   ii. where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU;

   iii. where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;

   iv. where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs;

   v. where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

   In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. Averaging periods may only be used with prior permission of the Central Valley Water Board Executive Officer.

   e. Activities shall not cause temperature in surface waters to increase more than 5°F above natural receiving water temperature for waters with designated COLD or WARM beneficial uses.

Table 1: Sample Type and Frequency Requirements			
Parameter	Unit of Measurement	Type of Sample	Minimum Frequency
Dissolved Oxygen	mg/L & % saturation	Grab	Every 4 hours
pH	Standard Units	Grab	Every 4 hours
Turbidity	NTU	Grab	Every 4 hours
Temperature	°F (or as °C)	Grab	Every 4 hours
Visible construction related pollutants[3]	Observation	Visual Inspections	Continuous throughout the construction period

Sampling during in-water work or during the entire duration of temporary water diversions shall be conducted in accordance with Table 1 sampling parameters[4]. For linear waterways with an upstream and downstream, the applicable sampling requirements in Table 1 shall be conducted upstream out of the influence of the individual project and approximately 300 feet downstream of the work area. For non-linear waterways, the sampling in Table 1 shall be conducted in ambient waters outside the influence of the individual project to obtain a representative sample and within the in-water work area, discharge area, or within the visible plume to characterize the discharge to the lake.

The sampling frequency may be modified for certain individual projects with written approval from Central Valley Water Board staff. An In-Water Work and Diversion Water Quality Monitoring Report, as described in Attachment C, shall be submitted within two weeks on initiation of in-water construction, and every two weeks thereafter. In reporting the data, the Enrollee shall arrange the data in tabular form so that the sampling locations, date, constituents, and concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the individual project complies with Order requirements. The report shall include surface water sampling results, visual observations, and identification of the turbidity increase in the receiving water applicable to the natural turbidity conditions specified in the turbidity criteria in XIV.C.3.b.

4. **Post-Construction:** If the proposed individual project includes ground

[3] Visible construction-related pollutants include oil, grease, foam, fuel, petroleum products, and construction-related, excavated, organic or earthen materials.

[4] Pollutants shall be analyzed using the analytical methods described in 40 Code of Federal Regulations Part 136; where no methods are specified for a given pollutant, the method shall be approved by Central Valley Water Board staff. Grab samples shall be taken between the surface and mid-depth and not be collected at the same time each day to get a complete representation of variations in the receiving water. A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring shall be maintained onsite.

disturbance, visually inspect the individual project site during the rainy season (October 15 – April 15) until a Notice of Completion is issued to ensure excessive erosion, stream instability, or other water quality pollution is not occurring in or downstream of the individual project site. If water quality pollution is occurring, contact the Central Valley Water Board staff member overseeing the individual project within three (3) working days. The Central Valley Water Board may require the submission of a Violation of Compliance with Water Quality Standards Report. Additional permits may be required to carry out any necessary site remediation.

C. Standard

1. This Order is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330, and California Code of Regulations, title 23, chapter 6 commencing with sections 2050-2068, inclusive. Additionally, the Central Valley Water Board reserves the right to suspend, cancel, or modify authorization for individual projects, after providing notice to the Enrollee, if the Central Valley Water Board determines that: the individual project fails to comply with any of the conditions of this Order; or, when necessary to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act (Water Code, section 13000 et seq.) or federal Clean Water Act section 303 (33 U.S.C. section 1313). For purposes of Clean Water Act section 401(d), the condition constitutes a limitation necessary to assure compliance with water quality standards and appropriate requirements of state law.
2. This Order is not intended and shall not be construed to apply to any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent certification application was filed pursuant to subsection 3855(b) of chapter 28, title 23 of the California Code of Regulations, and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
3. This Order is conditioned upon total payment of any fee required under title 23 of the California Code of Regulations and owed by the Enrollee.
4. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state and federal law. For purposes of Clean Water Act, Section 401(d), the applicability of any state law authorizing remedies, penalties, processes, or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this Order.

D. Programmatic Certification Conditions

1. The Enrollee shall submit a NOI. Central Valley Water Board staff may contact the Enrollee for other information to assist in the preparation of the NOA to obtain coverage under this Order for any individual project(s) located within the HCP/NCCP boundary at least 45 days prior to initiating construction.

2. The Enrollee shall submit the entire fee with the NOI as required by section 3833(b)(3)(A) and section 2200(a)(3) of the California Code of Regulations.
3. The Enrollee shall obtain a separate Water Quality Certification for additional impacts not covered in the HCP/NCCP PGP, including impacts not within the HCP/NCCP boundary.
4. The Central Valley Water Board staff will review the NOI and evaluate whether it qualifies for enrollment under this Order. Within 30 days of NOI receipt, Central Valley Water Board staff shall determine if the application is complete. If the application is complete, within 45 days of NOI receipt, the Central Valley Water Board will issue a Notice of Applicability (NOA), informing the Enrollee that the proposed activity qualifies for authorization. The Central Valley Water Board reserves the authority to request additional information or exclude any segments from coverage if it cannot determine that the work on the proposed segments is consistent with the impacts identified in the HCP/NCCP PGP or is not sufficiently protective of water quality standards or beneficial uses. The Enrollee must receive an NOA prior to in-water work.

E. General Compliance

1. Failure to comply with any condition of this Order shall constitute a violation of the Porter-Cologne Water Quality Control Act and the Clean Water Act. The Enrollee may then be subject to administrative and/or civil liability pursuant to Water Code section 13385.
2. Permitted actions must not cause a violation of any applicable water quality standards, including impairment of designated beneficial uses for receiving waters as adopted in the water quality control plans the Central Valley Water Board or any applicable State Water Board (collectively Water Boards) water quality control plan or policy. The source of any such discharge must be eliminated as soon as practicable.
3. In response to a suspected violation of any condition of this Order, the Central Valley Water Board may require the Enrollee to furnish, under penalty of perjury, any technical or monitoring reports the Water Boards deem appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. The additional monitoring requirements ensure that permitted discharges and activities comport with any applicable effluent limitations, water quality standards, and/or other appropriate requirement of state law.
4. The Enrollee must, at all times, fully comply with engineering plans, specifications, and technical reports submitted to support this Order; and all subsequent submittals required as part of this Order. The conditions within this Order and Attachments supersede conflicting provisions within Enrollee submittals for coverage under this Order.
5. This Order and all of its conditions contained herein continue to have full force and effect regardless of the expiration or revocation of any federal license or permit issued for the individual project. For purposes of Clean Water Act, section 401(d), this condition constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements of

state law.

6. **Construction General Permit Requirement:** The Enrollee shall obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities Order No. 2009-0009-DWQ, as amended, for discharges to surface waters comprised of storm water associated with construction activity, including, but not limited to, demolition, clearing, grading, excavation, and other land disturbance activities of one or more acres, or where individual projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres.

F. Activities Covered

1. This Order applies only to HCP/NCCP covered activities that are substantially similar in nature, would result in minimal individual and cumulative impacts on the aquatic environment, and have been approved for coverage under the CARP and USACE PGP. HCP/NCCP covered activities are described briefly below and in greater detail in chapter 4 of the HCP/NCCP document, hereby incorporated by reference.
2. **Valley Potential Future Growth (PFG) Area:** Discharges of dredged and/or fill material into waters of the state associated with rural and urban land uses within the Valley Potential Future Growth (PFG) area in Plan Area A1, as shown in the Placer County Conservation Program – Environmental Impact Statement/Environmental Impact Report (EIS/EIS). Specific activities included in this Order within the Valley PFG include those Covered Activities identified in chapter 2.6, section 2.6.1 of the HCP/NCCP.
3. **Valley Conservation and Rural Development Area:** Discharges of dredged and/or fill material into waters of the state associated with rural and urban land uses within the Valley Conservation and Rural Development Area in Plan Area A2, as shown on the 2018, Figure 2-1 Plan Area Components, Placer County Conservation Program – EIS/EIR. Specific activities included in this Order within the Valley Conservation and Rural Development Area include those Covered Activities identified in chapter 2.6, section 2.6.2 of the HCP/NCCP.
4. **Foothills PFG Area:** Discharges of dredged and/or fill material into waters of the state associated with rural and urban land uses within the Foothills PFG area in Plan Area A3, as shown on the 2018, Figure 2-1 Plan Area Components, Placer County Conservation Program – EIS/EIR. Specific activities included in this Order within the Foothills PFG include those Covered Activities identified in chapter 2.6, section 2.6.3 of the HCP/NCCP.
5. **Foothills Conservation and Rural Development**: Discharges of dredged and/or fill material into waters of the state associated with rural and urban land uses within the Foothills Conservation and Rural Development area in Plan Area A4, as shown on the 2018, Figure 2-1 Plan Area Components, Placer County Conservation Program – EIS/EIR. Specific activities included in this Order within the Foothills PFG include those Covered Activities identified in chapter 2.6, section 2.6.4 of the HCP/NCCP.
6. **Regional Public Programs:** Discharges of dredged and/or fill material into

waters of the state associated with rural and urban land uses within Plan Area A or B, as shown on the 2018, Figure 2-1 Plan Area Components, Placer County Conservation Program – EIS/EIR. Specific activities included in this Order for Regional Public Programs include those Covered Activities identified in chapter 2, section 2.6.5 of the HCP/NCCP.

7. **In-Stream Activities:** Activities resulting in the discharge of dredged and/or fill material into waters of the state for activities within streams, reservoirs, or on-stream ponds in Plan Area A or B, as shown on the 2018, Figure 2-1 Plan Area Components, Placer County Conservation Program – EIS/EIR, and as described in chapter 2, section 2.6.6 of the HCP/NCCP, including, but not limited to, maintenance activities in the stream channel, along the streambank, and adjacent waters of the state within the riparian corridor. These activities may include those described in 1 through 5 above.

8. **Conservation Programs:** Activities resulting in the discharge of dredged and/or fill material into waters of the state associated with implementing the conservation strategy identified in chapter 5 of the HCP/NCCP in Plan Area A or B, as shown on the 2018, Figure 2-1 Plan Area Components, Placer County Conservation Program – EIS/EIR, including, but not limited to, habitat enhancement, restoration, creation, translocation, and reserve management, and other activities, as described in chapter 2, section 2.6.7 of the HCP/NCCP.

G. General Prohibitions

1. This Order may not be used to authorize discharges of dredged and/or fill material into waters of the state for activities that do not require authorization from Placer County or the City of Lincoln under the CARP or implementing ordinances.

2. This Order may not be used to authorize activities not covered by the HCP/NCCP unless such activities receive coverage pursuant to section 8.9.6 of the HCP/NCCP.

3. This Order may not be used to authorize activities that resulted in the discharge of dredged or fill material into waters of the United States without Department of the Army (DA) authorization.

4. This Order may not be used to authorize activities that require authorization under 33 USC 408 (section 408) to alter or temporarily or permanently occupy or use a Corps' federally authorized Civil Works projects.

H. Administrative

1. Signatory requirements for all document submittals required by this Order are presented in Attachment D of this Order.

2. This Order does not authorize any act which results in the taking of a threatened, endangered or candidate species or any act, which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & Wildlife Code, sections 2050-2097) or the federal Endangered Species Act (16 U.S.C. sections 1531-1544). If a “take” will result from any act authorized under this Order held by the Enrollee, the Enrollee must obtain authorization for the take prior to any construction or

operation of the portion of the individual project that may result in a take. The Enrollee is responsible for meeting all requirements of the applicable endangered species act for the individual project authorized under this Order.

3. The Enrollee shall grant Central Valley Water Board staff or an authorized representative (including an authorized contractor acting as a Central Valley Water Board representative), upon presentation of credentials and other documents as may be required by law, permission to:
   a. Enter upon the individual project or compensatory mitigation site(s) premises where a regulated facility or activity is located or conducted, or where records are kept.
   b. Have access to and copy any records that are kept and are relevant to the individual project or the requirements of this Order.
   c. Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order.
   d. Sample or monitor for the purposes of assuring Order compliance.
4. A copy of this Order shall be provided to any consultants, contractors, and subcontractors working on the individual project. Copies of this Order shall remain at the individual project site for the duration of this Order. The Enrollee shall be responsible for work conducted by its consultants, contractors, and any subcontractors.
5. A copy of this Order must be available at the individual project site(s) during construction for review by site personnel and agencies. All personnel performing work on the individual project shall be familiar with the content of this Order and its posted location at the individual project site.
6. Lake and Streambed Alteration Agreement – If issued, the Enrollee shall submit a signed copy of the Department of Fish and Wildlife's lake and streambed alteration agreement to the Central Valley Water Board prior to any discharge to waters of the state.

I. **Construction:** Best management practices shall be followed to protect water quality from fill and/or excavation impacts as much as possible. If applicable, the following conditions apply to each individual project authorized by this Order:

1. **Dewatering**
   a. The Enrollee shall develop and maintain on-site a Surface Water Diversion and/or Dewatering Plan(s). The Plan(s) must be developed prior to initiation of any water diversions. A dewatering plan must be included in the NOI to fulfill this requirement. The Plan(s) shall include the proposed method and duration of diversion activities and include water quality monitoring conducted, as described in section XIV.B.3, during the entire duration of dewatering and diversion activities. The Plan(s) must be consistent with this Order and must be made available to the Central Valley Water Board staff upon request.
   b. Sufficient water shall, at all times, be allowed to pass downstream to maintain beneficial uses of waters of the state.

c. For any temporary dam or other artificial obstruction being constructed, maintained, or placed in operation, such diversions shall not diminish quantity or degrade quality of the discharged water, and shall maintain ambient stream flows below the diversion. When the work is completed, all de-watering materials placed in the channel shall be removed and normal flows shall be restored to the affected stream as soon as is feasible and safe. To the extent feasible, all temporary diversion structures and the supportive material shall be removed no more than 48 hours after work is completed; clean gravel in contact with flowing water shall be left in place and allowed to disperse naturally by high winter flows. Construction, dewatering, and removal of temporary cofferdams shall not violate section XIV.B.3.

d. Cofferdams for isolating in-channel activities shall be installed both upstream and downstream not more than 100 feet from the extent of the work areas to prevent seepage into or from the work area when dewatering of the entire channel is necessary; otherwise, cofferdams shall affect no more of the stream channel than is necessary to support completion of the work. All water shall be discharged in a non-erosive manner (e.g., through gravel or vegetated bars, on hay bales, on plastic, on concrete, or in storm drains when equipped with filtering devices) provided that it first has been properly treated to eliminate contaminants, including raw concrete. Treated water discharged to the channel shall be consistent with ambient conditions, including temperature and pH. Turbid water or water contaminated with other pollutants pumped out of cofferdams shall be discharged to upland areas (e.g., grassy field) providing overland flow and infiltration and not allowed to re-enter the channel, or pumped to containers (e.g., baker tanks) for disposal.

e. In channels with low flows, small in-channel berms constructed of imported, non-erosive materials (e.g., washed, rounded, spawning-sized gravel between 0.4 and 4.0 inches [10 to 100 millimeters] in diameter) or other temporary structures (gravel-filled sandbags, inflatable rubber cofferdams) that deflect water to one side of the channel during project implementation may be built. Following berm removal, the channel shall be restored to its original condition; gravel in contact with flowing water shall be left in place and allowed to disperse naturally by high winter flows.

f. Temporary dam or other artificial obstruction shall only be built from clean materials such as sandbags, gravel bags, water dams, or clean/washed gravel which will cause little or no siltation.

g. Sumps or basins may be used to collect water, where appropriate (e.g., in channels with low flows). If pumps are used, a fish screen must be installed to prevent entrapment of small fish. To prevent increases in temperature and decreases in dissolved oxygen (DO), properly sized bypass pipes shall be used (i.e., larger diameter pipes to better pass the flows). Creation of a low-flow channel or other methods to isolate the work area may be used to avoid the use of bypass pipes.

h. If water is present, the area must be dewatered prior to start of work. Streamflow may be diverted around the work area by a barrier, except where it has been determined by a qualified biologist that the least environmentally disruptive approach is to work in a flowing stream and fish and amphibian passage is not a concern at that time. Where feasible, water diversion techniques shall allow stream flows to gravity flow around or through the work site.

i. Dewatering will occur within the individual project area.

j. This Order does not allow permanent water diversion of flow from the receiving water. This Order is invalid if any water is permanently diverted as a part of an individual project.

k. The Enrollee shall work with the Central Valley Water Board to obtain coverage under Waste Discharge Requirements (WDRs) for dewatering activities that result in discharges to land

2. Directional Drilling

Because Horizontal Directional Drilling (HDD) and similar drilling operations may affect water quality, the following conditions shall apply to all drilling operations under waters of the state:

a. If installation or relocation of dry and/or wet utility lines is anticipated, the Applicant shall develop and implement a Dry and Wet Utility Work Plan prior to commencement of dry and wet utility construction. The Dry and Wet Utility Plan must cover all phases of the certified individual project that will impact waters of the state and shall be consistent with this Order.

The Dry and Wet Utility Plan shall include the types of dry and wet utilities to be removed and installed, method and duration of activities, structure configuration, construction materials, equipment, erosion and sediment controls, and a map or drawing indicating the location(s) of dry and wet utility work, as related to any water of the state, in the individual project area.

When it is necessary to bury utility lines beneath stream channels, a frac-out plan will be prepared, and will include a plan for response and containment. Utility lines shall be buried below the maximum extent of channel bed scour and aligned as perpendicular as possible to the stream channel. Projects shall avoid siting crossings at meander bends, braided stream segments, alluvial fans, active floodplains, or other inherently unstable reaches, areas of groundwater upwelling or locations with documented spawning habitat. Trenching through stream banks and channels shall be avoided in favor of trenchless construction methods (e.g., jack and bore, directional drilling), to the maximum extent practicable. If trenching is required trench widths should be as narrow as feasible to accommodate the pipeline/utility line. Trench excavation shall be conducted in the dry or in areas isolated from flowing water (e.g., cofferdams, stream diversions) and other

The amount of disturbance shall be kept to the minimum necessary to complete the work. Disturbed areas shall be returned to pre-project conditions prior to returning flow to the stream. If directional drilling is

required drill paths shall be designed at an appropriate depth below the stream channel to minimize the risk of frac-out where drilling mud is released through fractured bedrock. Drill entry and exit points shall be located away from channel banks to minimize impact on the Stream System and channel.

The Directional Drilling Plan must be stamped by a California Registered Geologist or Engineer.

The Utility Work Plan and Direction Drilling Plan must be submitted to the Central Valley Water Board staff upon request.

3. **Dredging – Not Applicable**

4. **Fugitive Dust**
Dust abatement activities can cause discharges of sediment to streams and uplands through application of water or other fluids. Dust abatement chemicals added to water can be hazardous to wildlife and, if allowed to enter streams, detrimental to water quality. Therefore, dust abatement activities shall be conducted so that sediment or dust abatement chemicals are not discharged into waters of the state. Dust abatement products or additives that are known to be detrimental to water quality or wildlife shall not be used, unless specific management needs are documented, and product-specific application plans are approved by Central Valley Water Board staff.

5. **Good Site Management "Housekeeping"**
   a. The Enrollee shall develop and maintain onsite an individual project-specific Spill Prevention, Containment and Cleanup Plan outlining the practices to prevent, minimize, and/or clean up potential spills during construction of the individual project. The Plan must detail the individual project elements, construction equipment types and location, access and staging and construction sequence. The Plan must be made available to the Central Valley Water Board staff upon request.

   b. Refueling of equipment within the floodplain or within 300 feet of the waterway is prohibited. If critical equipment must be refueled within 300 feet of the waterway, spill prevention and countermeasures must be implemented to avoid spills. Refueling areas shall be provided with secondary containment including drip pans and/or placement of absorbent material. No hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, or other construction-related potentially hazardous substances should be stored within a floodplain or within 300 feet of a waterway. The Enrollee must perform frequent inspections of construction equipment prior to utilizing it near surface waters to ensure leaks from the equipment are not occurring and are not a threat to water quality.

   c. All materials resulting from the individual project shall be removed from the site and disposed of properly.

6. **Hazardous Materials**
   a. The discharge of petroleum products, any construction materials, hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, raw cement, concrete or the washing thereof, asphalt, paint, coating material, drilling

fluids, or other substances potentially hazardous to fish and wildlife resulting from or disturbed by individual project-related activities is prohibited and shall be prevented from contaminating the soil and/or entering waters of the state. In the event of a prohibited discharge, the Enrollee shall comply with notification requirements in sections XIV.A.4.a and XIV.A.4.b.

b. Wet concrete will be placed into waters of the stateafter the area has been completely dewatered or when the work area is naturally dry.

c. Concrete must be completely cured before coming into contact with waters of the state. Surface water that contacts wet concrete must be pumped out and disposed of at an appropriate off-site commercial facility, which is authorized to accept concrete wastes.

7. Invasive Species and Soil Borne Pathogens

Prior to arrival at the individual project site and prior to leaving the individual project site, construction equipment that may contain invasive plants and/or seeds shall be cleaned to reduce the spread of noxious weeds.

8. Post-Construction Storm Water Management

a. The Enrollee must minimize the short and long-term impacts on receiving water quality from the individual project by implementing the following post-construction storm water management practices and as required by local agency permitting the individual project, as appropriate:

i. Minimize the amount of impervious surface;

ii. Comply with General Condition 1 of the HCP/NCCP including compliance with the requirements of the West Placer Storm Water Quality Design Manual;

iii. Comply with Community Condition 1.1 (*Avoidance of Vernal Pool Complex Constituent Habitat*) and 1.2 (*Avoidance of Aquatic/Wetland Complex Constituent Habitat*) of the HCP/NCCP;

iv. Comply with Community Condition 1.5 (*Wetlands Restoration*), 2.3 (*Riverine and Riparian Restoration*) and Stream System Condition 2 (*Stream System Mitigation: Restoration*) and Conservation Measure 1 (*Establish Reserve System*); and

v. Identify and avoid development in areas that are particularly susceptible to erosion and sediment loss or establish development guidance that protects areas from erosion/ sediment loss.

b. The Enrollee shall ensure that all development within the individual project provides verification of maintenance provisions for post-construction structural and treatment control BMPs as required by the local agency permitting the individual project. Verification shall include one or more of the following, as applicable:

i. The developer’s signed statement accepting responsibility for maintenance until the maintenance responsibility is legally transferred to another party;

ii. Written conditions in the sales or lease agreement that require the recipient to assume responsibility for maintenance;

iii. Written text in individual project conditions, covenants and restrictions for residential properties assigning maintenance responsibilities to a homeowner's association, or other appropriate group, for maintenance of structural and treatment control BMPs; or

iv. Any other legally enforceable agreement that assigns responsibility for storm water BMPs maintenance.

9. Roads and Bridges

a. The number of access routes, number and size of staging areas, and the total area of the activity must be limited to the minimum necessary to achieve the individual project goal. Routes and work area boundaries must be clearly demarcated.

b. Bridges, culverts, dip crossings, or other structures must be installed so that water and in-stream sediment flow is not impeded. Public structures must comply with Regional Public Projects Condition 1 (*Transportation and Other Infrastructure Projects Design Requirements*) and all projects must comply with Species Condition 7 (*Guidelines for Salmonid Passage at Stream Crossings*) of the HCP/NCCP. Appropriate design criteria, practices and materials must be used in areas where access roads intersect waters of the state.

c. Temporary fill materials placed in any waters of the state, such as for access ramps, diversion structures, or cofferdams, must be completely removed upon construction completion. Any disturbed soils will be revegetated with native plants; non-invasive species; or non-reproductive (i.e., sterile hybrids) plants suitable for the altered soil conditions. All temporary roads must be removed or re-contoured and restored according to approved re-vegetation and restoration plans.

d. Any structure, including but not limited to, culverts, pipes, piers, and coffer dams, placed within a stream where fish (as defined in Fish and Game Code section 45) exist or may exist, must be designed, constructed, and maintained such that it does not constitute a barrier to upstream or downstream movement of aquatic life, or cause an avoidance reaction by fish due to impedance of their upstream or downstream movement. This includes, but is not limited to, maintaining the supply of water and maintaining flows at an appropriate depth, temperature, and velocity to facilitate upstream and downstream fish migration. If any structure results in a long-term reduction in fish movement, the Enrollee shall be responsible for restoration of conditions as necessary (as determined by the Central Valley Water Board) to secure passage of fish across the structure.

e. A method of containment must be used below any temporary bridge, trestle, boardwalk, and/or other stream crossing structure to prevent any debris or spills from falling into the waters of the state. Containment must be maintained and kept clean for the life of the temporary stream crossing structure.

10. Sediment Control

a. Except for activities permitted by the United States Army Corps of

Engineers under section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, as provided in section 6.3.4.2.1 of the HCP/NCCP, no erodible materials will be deposited into surface water or surface water drainage courses. Brush, loose soils, or other debris material will not be stockpiled within stream channels, on adjacent banks, or where it may enter any river, stream or lake.

b. Silt fencing or other sediment trapping methods will be installed below the grade of new road construction or road widening activities to minimize the transport of sediment off the site into the waters of the state through the entire duration of the individual project.

c. Erosion control measures will be of material that will not entrap wildlife (i.e., no plastic monofilament). Erosion control blankets will be used as a last resort because of their tendency to biodegrade slowly and trap reptiles and amphibians.

11. Special Status Species: Special status species are described and included by reference in the HCP/NCCP EIS/EIR chapter 3 in the HCP/NCCP document, which include 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, Central Valley steelhead, Central Valley fall-/late fall-run Chinook salmon, Valley elderberry longhorn beetle, Vernal pool fairy shrimp, Vernal pool tadpole shrimp, and Conservancy fairy shrimp.

12. Stabilization/Erosion Control

a. Comply with General Condition 1 of the HCP/NCCP including compliance with the requirements of the West Placer Storm Water Quality Design Manual.

b. Seed mixtures applied for erosion control will not contain California Invasive Plant Council–designated invasive species (http://www.cal-ipc.org/paf/) but will be composed of native species appropriate for the site or sterile non-native species. If sterile non-native species are used for temporary erosion control, native seed mixtures must be used in subsequent treatments to provide long-term erosion control and slow colonization by invasive non-natives.

13. Storm Water

a. Comply with General Condition 1 of the HCP/NCCP including compliance with the requirements of the West Placer Storm Water Quality Design Manual.

J. Mitigation for Temporary Impacts

1. The Enrollee shall restore all areas of temporary impacts, including individual project site upland areas, which could result in a discharge of waters of the state, to pre-construction contours and conditions upon completion of construction activities as described in a restoration plan. The restoration plan shall be submitted for written acceptance by Central Valley Water Board staff within 90 days of issuance of a Notice of Applicability for this Order. The restoration plan shall provide the following: a schedule; plans for grading of

disturbed areas to pre-project contours; planting palette with plant species native to the individual project area; seed collection location; invasive species management; performance standards; and maintenance requirements (e.g. watering, weeding, and replanting). The Enrollee shall provide annual monitoring reports in accordance with Reporting and Notification Attachment C.

2. The Central Valley Water Board may extend the monitoring period beyond requirements of the restoration plan upon a determination by the Executive Officer that the performance standards have not been met or are not likely to be met within the monitoring period.

3. If restoration of temporary impacts to waters of the state is not completed within 365 days of the impacts, the Enrollee must comply with the CARP and HCP/NCCP mitigation requirements for permanent effects.

K. Compensatory Mitigation for Permanent Impacts

1. **Compensatory Mitigation Plan:** The Enrollee shall provide compensatory mitigation for impacts to waters of the state by submitting payment to the Western Placer County In-Lieu Fee Program, in accordance with the HCP/NCCP and the CARP, incorporated herein by reference. Any deviations from the compensatory mitigation requirements in the HCP/NCCP and CARP must be pre-approved by Central Valley Water Board staff.

2. **Western Placer County In-Lieu Fee Program:** The Enrollee shall pay applicable mitigation fees to the PCA, a joint exercise of power authority formed by the City Lincoln and Placer County, to implement the HCP/NCCP.

   The Enrollee shall provide evidence of purchase of In-Lieu Fee Program credits purchased in association with the mitigation requirements of the individual project to the Central Valley Water Board prior to proceeding with the activity authorized by this Order. Evidence of In-Lieu Fee Program credits shall be demonstrated by a copy of a notice or certificate from the PCA. The notice or certificate should include the individual project name, individual project phase, amount of the mitigation fee, date of purchase, USACE file number, and detail the credits purchased, including, but not limited to, the mitigation ratios and other pertinent information.

2. **Enrollee-Responsible Compensatory Mitigation Responsibility – Not Applicable**

3. **Purchase of Mitigation Credits by Enrollee for Compensatory Mitigation – Not Applicable**

XV. Water Quality Certification

The Central Valley Water Board hereby issues the Order for the Central Valley Water Board Certified Western Placer County Habitat Conservation Program/Natural Communities Conservation Plan (HCP/NCCP) Programmatic General Permit (PGP) Project, WDID#5A31CR00534, certifying that as long as all of the conditions listed in this Order are met, any discharge from the referenced Project will comply with the applicable provisions of Clean Water Act sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards).

The Central Valley Water Board will file a Notice of Determination (NOD) at the SCH within five (5) working days of issuance of this Order.

Except insofar as may be modified by any preceding conditions, all Order actions are contingent on: (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the conditions of this Order and the attachments to this Order; and, (b) compliance with all applicable requirements of Statewide Water Quality Control Plans and Policies, the Regional Water Boards' Water Quality Control Plans and Policies.

CERTIFICATION

I, Patrick Pulupa, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of the Order with all attachments adopted by the Central Valley Regional Water Quality Control Board, Central Valley Region, on 16 October 2020.

_____

PATRICK PULUPA, Executive Officer

Attachment A Western Placer County HCP/NCCP Map
Attachment B CEQA Findings of Facts
Attachment C Reporting and Notification Requirements
Attachment D Signatory Requirements
Attachment E Notice of Intent Form

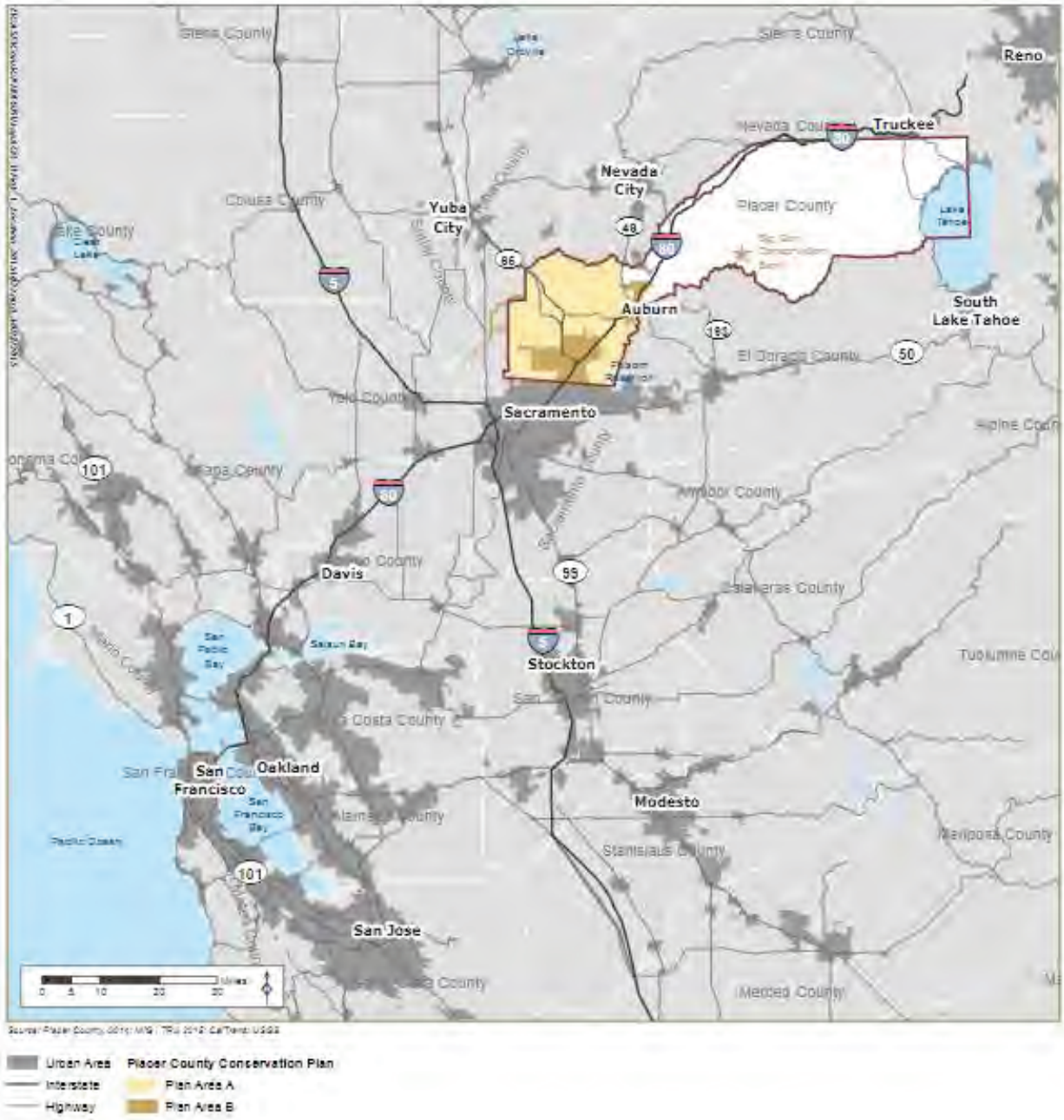


Figure 1 – Western Placer County HCP/NCCP Plan Map

A. Environmental Review

On 1 September 2020, the County of Placer, as lead agency, certified a Final Environmental Impact Report (FEIR) (State Clearinghouse (SCH) No. 2005032050) for the Project and filed a Notice of Determination (NOD) at the SCH on 2 September 2020. The Central Valley Water Board is a responsible agency under CEQA (Public Resources Code, section 21069) and in making its determinations and findings, must presume that the County of Placer's certified environmental document comports with the requirements of CEQA and is valid. (Public Resources Code, section 21167.3.) The Central Valley Water Board has reviewed and considered the environmental document and finds that the environmental document prepared by the County of Placer addresses the Project's water quality impacts. (California Code of Regulations, title 14, section 15096, subd. (f).) The environmental document includes the Impact Avoidance and Minimization Measures (AMMs) developed by the County of Placer for all measures that have been adopted for the Project to eliminate or reduce potential significant impacts. (Public Resources Code, section 21081.6, subd. (a)(1); California Code of Regulations, title 14, section 15091, subd. (d).)

B. Incorporation by Reference

Pursuant to CEQA, these Findings of Facts (Findings) support the issuance of this Order based on the Project FEIR, the application for this Order, and other supplemental documentation.

All CEQA project impacts, including those discussed in subsection C below, are analyzed in detail in the Project FEIR which is incorporated herein by reference. The Project FEIR is available at: Placer County Planning Department 3091 County Center Drive, Suite 190 Auburn, CA 95603.

Requirements under the purview of the Central Valley Water Board in the MMRP are incorporated herein by reference.

The Permittee's application for this Order, including all supplemental information provided, is incorporated herein by reference.

C. Findings

The FEIR describes the potential significant environmental effects to water resources. Having considered the whole of the record, the Central Valley Water Board makes the following findings:

(1) Findings regarding impacts that will be avoided or mitigated to a less than significant level. (Public Resources Code, section 21081, subd. (a)(1); California Code of Regulations, title 14, section 15091, subd. (a)(1).)

Changes or alterations have been required in, or incorporated into, the Project which avoid or substantially lessen the significant environmental effect as identified in the FEIR.

a.i. Potential Significant Impact: The Project may result in potentially

significant impacts to land use planning, population and housing, geological problems, water, transportation, utilities and service systems and recreation.

a.ii. Facts in Support of Finding: In addition to the Avoidance and Minimization Measures listed below, from Appendix C of the CARP and chapter 6 of the HCP/NCCP document.

HYDROLOGY AND WATER QUALITY BMPs

Project Planning and Design BMPs

DESIGN-1: All Covered Activities shall minimize the area of disturbance in Stream System to the maximum extent practicable

DESIGN-2: Prior to final project design, site characteristics will be evaluated to determine if non-traditional designs, such as bioengineered bank treatments that incorporate live vegetation, or other engineered habitat improvements, can be successfully utilized while meeting the requirements of the project.

DESIGN-3: If structural changes to the channel bed are necessary as part of project design, provisions for fish passage will be incorporated into the project design

DESIGN-4: To minimize impact of new construction, existing access routes and levee roads shall be used.

DESIGN-5: Removal of riparian vegetation shall be minimized so the amount cleared will only be the amount necessary to accomplish the required activity and comply with public health and safety directives. Where riparian vegetation requires removal, removal will first be targeted in areas dominated by invasive vegetation.

DESIGN-6: Maintenance of natural stream characteristics, such as riffle-pool sequences, riparian canopy, sinuosity, floodplain, woody debris, and a natural channel bed, will be incorporated into the project design.

DESIGN-7: Stream bank repair design will first consider only use of compacted soil and will be re-seeded with native grasses or sterile non-native hybrids and stabilized with natural erosion control fabric. If compacted soil is not sufficient to stabilize the slope, bioengineering techniques must be used. No hardscape (e.g., concrete or any sort of bare riprap) or rock gabions may be utilized in streams not managed for flood control (i.e., streams where channel clearing, vegetation and debris removal, and conveyance maintenance activities are conducted) except in cases where infrastructure or human safety is threatened (e.g., undercutting of existing roads).

DESIGN-8: Rock riprap may only be used to stabilize channels experiencing extreme erosion or posing a threat to public safety. When used, rock riprap must be large enough and installed to withstand a 100-year flow event and planted with native riparian species suitable for

planting in such a manner.

DESIGN-9: Limit removal of instream woody material (IWM) and vegetation in channels, on stream banks, and along levees and maintenance roads to only that necessary to meet the objective of the Covered Activity, or to meet regulatory requirements or guidelines.

DESIGN-10: In streams not managed for flood control purposes (i.e., streams where channel clearing, vegetation and debris removal, and conveyance maintenance activities are conducted) woody material (including live leaning trees, dead trees, tree trunks, large limbs, and stumps) will be retained unless it is threatening a structure, impedes reasonable access, or is causing bank failure and sediment loading to the stream

DESIGN-11: If debris blockages threaten bank stability and may increase sedimentation of downstream reaches, debris will be removed. When clearing natural debris blockages (e.g., branches, fallen trees, soil from landslides) from the channel, only remove the minimum amount of debris necessary to maintain flow conveyance (i.e., prevent significant backwatering or pooling). Non-natural debris (e.g., trash, shopping carts) will be fully removed from the channel

DESIGN-12: To minimize the effect of increased local erosion due to in-channel vegetation removal, the top of the bank shall be protected by leaving vegetation in place to the maximum extent possible.

DESIGN-13: Avoid access routes on slopes of greater than 20 percent used to access upland areas adjacent to streams and riparian areas. Any upland access across sloped areas shall be examined for evidence of instability and either revegetated or filled to prevent future landslide or erosion

DESIGN-14: Avoid activities in the active (i.e., flowing) channel to the maximum extent practicable, especially during the migration, spawning, and egg incubation season for listed fish species, or before amphibians have undergone metamorphosis. If activities must be conducted in the active channel, limit the use of equipment for in-water work to hand tools to the extent practicable

DESIGN-15: Bank stabilization site design shall evaluate hydraulic effects immediately upstream and downstream of the work area to minimize downstream erosion caused by changes in water velocity. Design of bank stabilization projects shall incorporate similar roughness and characteristics of the bank surrounding the project area.

DESIGN-16: Trails will be sited and designed with the smallest footprint necessary to cross through the Stream System. Trail crossings of streams will be aligned perpendicular to the channel and be designed to avoid any potential for future erosion.

DESIGN-17: Trail crossings of freshwater streams and drainages will adhere to the BMP above regarding the preference of bridges, or other over water structures, to minimize disturbance. Culverts may also be used if that is the least environmentally damaging design.

DESIGN-18: Trail design shall minimize need for drainage structures. At the outfalls of drainage structures, erosion control measures shall be taken to prevent erosion.

DESIGN-19: Whenever possible, the span of bridges will also allow for upland habitat beneath the bridge to provide undercrossing areas for wildlife species that will not enter the creek. Native plantings, natural debris, or scattered rocks will be installed under bridges to provide wildlife cover and encourage the use of crossings.

Dewatering BMPs

DEWATER-1: While in-stream work is performed, the entire streamflow shall be diverted around the work area by a barrier, except where it has been determined by a qualified biologist that the least environmentally disruptive approach is to work in a flowing stream and fish and amphibian passage is not a concern at that time. Where feasible, water diversion techniques shall allow stream flows to gravity flow around or through the work site.

DEWATER-2: Cofferdams for isolating in-channel activities shall be installed both upstream and downstream not more than 100 feet from the extent of the work areas to prevent seepage into or from the work area when dewatering of the entire channel is necessary; otherwise, cofferdams shall affect no more of the stream channel than is necessary to support completion of the work. All water shall be discharged in a non-erosive manner (e.g., through gravel or vegetated bars, on hay bales, on plastic, on concrete, or in storm drains when equipped with filtering devices) provided that it first has been properly treated to eliminate contaminants, including raw concrete. Treated water discharged to the channel shall be consistent with ambient conditions, including temperature and pH. Turbid water or water contaminated with other pollutants pumped out of cofferdams shall be discharged to upland areas (e.g., grassy field) providing overland flow and infiltration and not allowed to re-enter the channel, or pumped to containers (e.g., baker tanks) for disposal.

DEWATER-3: In channels with low flows, small in-channel berms constructed of imported, non-erosive materials (e.g., washed, rounded, spawning-sized gravel between 0.4 and 4.0 inches [10 to 100 millimeters] in diameter) or other temporary structures (gravel-filled sandbags, inflatable rubber cofferdams) that deflect water to one side of the channel during project implementation may be built. Following berm removal, the channel shall be restored to its original condition; gravel in

contact with flowing water shall be left in place and allowed to disperse naturally by high winter flows.

DEWATER-4: Sumps or basins may be used to collect water, where appropriate (e.g., in channels with low flows). If pumps are used, a fish screen must be installed to prevent entrapment of small fish.

DEWATER-5: To prevent increases in temperature and decreases in dissolved oxygen (DO), properly sized bypass pipes shall be used (i.e., larger diameter pipes to better pass the flows). Creation of a low-flow channel or other methods to isolate the work area may be used to avoid the use of bypass pipes.

DEWATER-6: Diversions shall not diminish quantity or degrade quality of the discharged water and shall maintain ambient stream flows below the diversion. When the work is completed, all de-watering materials placed in the channel shall be removed and normal flows shall be restored to the affected stream as soon as is feasible and safe. To the extent feasible, all temporary diversion structures and the supportive material shall be removed no more than 48 hours after work is completed; clean gravel in contact with flowing water shall be left in place and allowed to disperse naturally by high winter flows.

Construction BMPs

CON-1: The applicant shall maintain a copy of project conditions—as determined by the local jurisdiction and/or PCA—at the site. Site supervisors shall be familiar with all permit conditions.

CON-2: A qualified biologist will train all personnel working within or adjacent to the Stream System (i.e., those people operating ground-disturbing equipment) regarding these avoidance and minimization measures and the permit obligations of project applicants working under this Plan.

CON-3: Personnel shall utilize equipment that minimizes the area and degree of disturbance, such as appropriately tired vehicles (either tracked or wheeled, depending on the situation), or avoidance of vehicles if possible.

CON-4: No vehicles other than necessary construction equipment shall be allowed within the Stream System.

CON-5: All wetlands, other waters, and Stream Systems that are adjacent to a Covered Activity project site and that will be avoided shall be marked with bright construction fencing. Temporary fencing shall be removed upon completion of the project.

CON-6: Deep pools located outside and adjacent to the construction footprint shall be fenced or blocked with barriers to prevent encroachment of equipment and personnel from affecting deep-pool habitats, which are used as refuge for fish and wildlife.

CON-8: When practicable, avoid maintenance and construction activities at night. When night work cannot be avoided:

- Minimize use of temporary lighting.
- Shield and focus lights on work areas.
- Use the lowest intensity lighting necessary to complete the work.

CON-9: Wildlife entering the construction site shall be allowed to leave the area unharmed or shall be flushed or herded humanely in a safe direction from the site.

CON-10: All utility pipe sections shall be capped or inspected for wildlife before being placed in a trench. Pipes within a trench shall be capped at the end of each day to prevent entry by wildlife.

CON-11: At the end of each workday all open trenches will be provided with a ramp of dirt or wood to allow trapped animals to escape.

CON-12: Staging and storage areas for equipment, stockpiled materials, fuels, lubricants, and solvents shall be located outside of the Stream System. If site conditions prevent locating staging areas outside the Stream System, at a minimum they shall be located outside the top of the bank, ideally on an existing disturbed area (e.g., access road) or other area that can be readily returned to pre-project conditions at the conclusion of the activity.

CON-13: Handle and dispose of invasive plant species removed during Covered Activity implementation in such a manner as to prevent further spread of the invasive species.

CON-14: To minimize the spread of pathogens all staff working in aquatic systems (i.e., streams, ponds, and wetlands), including site monitors, construction crews, and surveyors, will adhere to the most current guidance for equipment decontamination provided by the Wildlife Agencies at the time of activity implementation

CON-15: Only herbicides registered with the California Department of Pesticide Regulation shall be used in streams, ponds, and lakes, and shall be applied in accordance with label instructions. A list of all pesticides that may be used in the project area shall be submitted to the PCA before use. The USFWS and National Marine Fisheries Service (NMFS) do not issue incidental take permits for pesticide and rodenticide use; pesticide and rodenticide use, and resultant “take” of ESA-listed species, are not covered under this Plan for the federal permits.

CON-16: Avoid or minimize the amount of fertilizer used during hydro seeding to minimize introducing these materials into waterways.

Post Construction BMPs

POST-CON-1: Temporary fills, such as for access ramps, diversion structures, or cofferdams, shall be completely removed upon finishing

the work.

POST-CON-2: The stream bed will be returned to as close to pre-project condition— considering such characteristics as elevations, profile, and gradient—as appropriate. Ecologically improved conditions shall be incorporated into project design when appropriate.

POST-CON-3: Any disturbed soils will be revegetated with native plants; non-invasive species; or non-reproductive (i.e., sterile hybrids) plants suitable for the altered soil conditions.

POST-CON-4: Projects that cross beneath streams must provide a post-construction summary of any unanticipated effects (e.g., stream channel disturbance due to a frac-out) resulting from implementation of the project. Additional fees may be owed (as required by General Conditions 3 and 4, *Land Conversion and Temporary Effects*, respectively), based on the actual effects of the project.

Operations and Maintenance BMPs

OPS-1: For stream maintenance activities, only in-stream work that is necessary to maintain the channel consistent with designated management purposes (e.g., flood control, groundwater recharge) will be conducted.

OPS-2: When conducting vegetation management, retain as much understory brush and as many trees as feasible, emphasizing shade producing and bank stabilizing vegetation.

OPS-3: Vegetation thinning and removal in streams managed for flood control will be phased to ensure that some riparian habitat remains at all times. Projects will be planned so that the least amount of riparian vegetation will be removed while still meeting the desired flood control needs.

OPS-4: If a project alters the stream bed during stream maintenance, the stream low flow channel shall be returned to its approximate prior location with appropriate depth for fish passage without creating a potential future bank erosion problem.

OPS-5: Sediment removal in the stream channel shall use the approach with the least impact, such as phasing of removal activities or only removing sediment along one half of the channel bed, allowing the other half to remain relatively undisturbed.

OPS-6: Maintenance and operation of pumps and generators placed in stream will minimize impacts to water quality and aquatic species.

OPS-7: Temporary crossings shall be installed no earlier than April 15 and shall be removed no later than October 15. This work window could be modified at the discretion of the County, City, and Wildlife Agencies.

OPS-8: Work in Stream Systems shall not disturb active bird nests until

young birds have fledged. To avoid effects to nesting birds in Stream Systems, trees and shrubs shall be removed outside of the nesting season approximately between August 15 and February 1. Tree and shrub removal at other times is at the PCA's discretion and will require surveys by a qualified biologist to determine the absence of nesting birds.

OPS-9: The following will be implemented to minimize noise effects on fish and wildlife during pile driving:

- Vibratory pile drivers, or other Wildlife Agency-approved methods, shall be used to drive piles, to the maximum extent practicable.
- Where feasible, the use of impact hammers to drive piles will be limited to areas outside of the stream channel or in dry cofferdams.
- Bubble curtains will be used to attenuate sound when it is necessary to drive piles with an impact hammer in water.
- Where feasible, metal-to-metal contact of the driver hammer and metal piles will be avoided.
- The smallest pile driver and the minimum force necessary to complete the work will be used.
- All types of pile driving will be limited to daylight hours only to provide fish and wildlife with extended quiet periods.
- Prior to initiating pile driving with an impact hammer, an acoustic analysis using the most recent interagency standards and guidelines will be conducted to predict impacts of pile driving noise on listed fish species.
  A hydroacoustic monitoring plan will be developed and implemented and underwater noise levels will be monitored during all impact pile driving on land, in dry cofferdams and in water (using bubble curtains) to ensure that the peak and cumulative sound exposure levels do not exceed predicted values.

OPS-10: Wood treated with oil-type preservatives (e.g., creosote, pentachlorophenol) shall not be used in waterways. Wood treated with waterborne preservative chemicals shall be used instead, provided that the preservative being used has been approved by the Western Wood Preservers Institute (WWPI), and WWPI guidelines and BMPs to minimize effects on aquatic environments during implementation are followed (www.wwpinstitute.org).

Utility Line Installation BMPs

UTIL-1: Utility lines that cross waterways shall be attached to bridges, when feasible

UTIL-2: When it is necessary to bury utility lines beneath stream channels, a frac-out plan will be prepared, and will include a plan for response and containment. In addition, the following factors shall be considered as part of project design:

- Utility lines shall be buried below the maximum extent of channel bed scour and aligned as perpendicular as possible to the stream channel.
- Avoid siting crossings at meander bends, braided stream segments, alluvial fans, active floodplains, or other inherently unstable reaches, areas of groundwater upwelling or locations with documented spawning habitat.
- Trenching through stream banks and channels shall be avoided in favor of trenchless construction methods (e.g., jack and bore, directional drilling), to the maximum extent practicable.
- If trenching is required:
  - Trench widths should be as narrow as feasible to accommodate the pipeline/utility line
  - Trench excavation shall be conducted in the dry or in areas isolated from flowing water (e.g., cofferdams, stream diversions) and other Avoidance and Minimization Measures associated with cofferdams and water diversions described in this table shall be implemented.
- The amount of disturbance shall be kept to the minimum necessary to complete the work.
- Disturbed areas shall be returned to pre-project conditions prior to returning flow to the stream.
- If directional drilling is required:
  - Drill paths shall be designed at an appropriate depth below the stream channel to minimize the risk of frac-out where drilling mud is released through fractured bedrock.
  - Drill entry and exit points shall be located away from channel banks to minimize impact on the Stream System and channel.

UTIL-3: Overland trenches shall be required to be backfilled with the native soils originally excavated from that area (as opposed to imported engineered fills) to the maximum extent feasible. Additionally, where technically feasible, topsoil shall be required to be stripped, stockpiled, and reapplied to original depth in all areas disturbed by construction over and adjacent to overland trenches. (2)

Findings regarding mitigation measures which are the responsibility of another agency. (Public Resources Code, section 21081, subd. (a)(2); California Code of Regulations, title 14, section 15091, subd.(a)(2).)

There are changes or alterations that are within the responsibility and jurisdiction of another public agency and not the jurisdiction of the Central Valley Water Board. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

a.i. Potential Significant Impact: The Project may result in potentially significant impacts to biological resources.

a.ii. Facts in Support of Finding: In addition to the Avoidance and Minimization Measures listed below, from Appendix C of the CARP and chapter

6 of the HCP/NCCP document.

BIOLOGICAL RESOURCES BMPs

Species Conditions BMPs

SWAINSON'S HAWK-1: Swainson's hawk surveys and CNDDB record searches are required well in advance of project construction to determine whether Swainson's hawk is nesting on or within 1,320 feet of the project site. If the project cannot be designed to avoid active Swainson's hawk nest trees and the construction must occur during the nesting season (approximately February 1 to September 15), a preconstruction survey must be conducted no more than 15 days prior to ground disturbance. Surveys will be conducted consistent with current guidelines (Swainson's Hawk Technical Advisory Committee 2000), with the following exceptions:

- Surveys will be required within a 1,320-foot radius around the project site. In instances where an adjacent parcel is not accessible to survey because the qualified biologist was not granted permission to enter, the qualified biologist will scan all potential nest tree(s) from the adjacent property, road sides, or other safe, publicly accessible viewpoints, without trespassing, using binoculars and/or a spotting scope to look for Swainson's hawk nesting activity;
- Surveys will be required from February 1 to September 15 (or sooner if it is found that birds are nesting earlier in the year); and
- If a Swainson's hawk nest is located and presence confirmed, only one follow-up visit is required (to avoid disturbance of the nest due to repeated visits).

SWAINSON'S HAWK-2: During the nesting season (approximately February 1 to September 15 or sooner if it is found that birds are nesting earlier in the year), ground-disturbing activities within 1,320 feet of occupied nests or nests under construction will be prohibited to minimize the potential for nest abandonment. While the nest is occupied, activities outside the buffer can take place provided that they do not stress the breeding pair. If the active nest site is shielded from view and noise from the project site by other development, topography, or other features, the project applicant can apply to the PCA for a reduction in the buffer distance or waiver of this avoidance measure. A qualified biologist would be required to monitor the nest and determine that the reduced buffer does not cause nest abandonment. If a qualified biologist determines nestlings have fledged, Covered Activities can proceed normally.

SWAINSON'S HAWK-3: Active (within the last 5 years) nest trees on a project site will not be removed during the nesting season. If a nest tree must be removed (as determined by the PCA), tree removal shall occur only between September 15 and February 1, after any young have fledged and are no longer dependent on the nest and before breeding

activity begins.

SWAINSON'S HAWK-4: Construction monitoring will be conducted by a qualified biologist and will focus on ensuring that activities do not occur within the buffer zone. The qualified biologist performing the construction monitoring will ensure that effects on Swainson's hawks are minimized. If monitoring indicates that construction outside of the buffer is affecting nesting, the buffer will be increased if space allows (e.g., move staging areas farther away). If space does not allow, construction will cease until the young have fledged from the nest (as confirmed by a qualified biologist). The frequency of monitoring will be approved by the PCA and based on the frequency and intensity of construction activities and the likelihood of disturbance of the active nest. In most cases, monitoring will occur at least every other day, but in some cases, daily monitoring may be appropriate to ensure that direct effects on Swainson's hawks are minimized. The qualified biologist will train construction personnel on the avoidance procedures and buffer zones.

CALIFORNIA BLACK RAIL-1: Surveys will be initiated sometime between March 15 and May 31, preferably before May 15. A minimum of four surveys will be conducted. The survey dates will be spaced at least 10 days apart and will cover the time period from the date of the first survey through the end of June to early July. This will allow the surveys to encompass the time period when the highest frequency of calls is likely to occur. Projects must conduct surveys during this time period, regardless of when the project is scheduled to begin, and shall be conducted the year in which ground disturbance activities commence. This survey requirement also applies to Covered Activities that will alter the supply of water feeding potential breeding habitat for California black rails (e.g., fixing a leak in an irrigation canal). Some wetlands supported by leaks from water conveyance structures such as irrigation canals may also be supported hydrologically by other sources of water. Fixing a leak in an irrigation canal may therefore not substantially alter the extent and/or quality of the wetland habitat for California black rail. In such cases, the project proponent may provide the results of a hydrological study of the affected wetland to the PCA and Wildlife Agencies to determine whether altering the source of water would result in take of a wetland occupied by California black rail. Surveys must be conducted using survey protocol based on the methods used in Richmond et al. (2008) or guidance agreed upon by the Permittees and Wildlife Agencies. Surveys will be conducted if a fresh emergent wetland greater than 0.2 acre in size occurs on an adjacent parcel that is within 500 feet of the project site (as determined by aerial photographs), using survey methods that rely on call playback to elicit response from California black rails (e.g., those used by Richmond et al. 2008). Calls will be played from edge of the adjacent parcel, or where most appropriate to elicit a response, without trespassing. If a California black rail is determined to

be present, no project activities are permitted within 500 feet of the outside perimeter of the occupied wetland. Project proponents may conduct activities within 500 feet of an occupied wetland based on site-specific conditions (e.g., noise barriers) and if approved by the PCA and the Wildlife Agencies and an qualified biologist monitors construction activities within 500 feet to ensure that California black rail nests are not disturbed.

CALIFORNIA BLACK RAIL-2: If the PCA does not grant take coverage, a buffer around the avoided wetland will be demarcated 500 feet from the outside perimeter of the occupied wetland with an exclusion fence to prevent construction activities from encroaching into the buffer zone and to identify the occupied wetland and buffer zone as a no-work area within the covered project. If the work would dewater occupied habitat and the PCA does not grant coverage, the activity could not take place under the Plan.

CALIFORNIA BLACK RAIL-3: If the PCA grants take coverage, clearing of the habitat (or dewatering) will occur between September 15 and February 1 (outside the breeding season). For ground disturbing activities, if the project will not convert all of the wetland habitat present, a buffer around the avoided wetland will be demarcated with exclusion fencing to prevent construction activities from encroaching into California black rail habitat and to identify the occupied wetland and buffer zone as a no-work area.

CALIFORNIA BLACK RAIL-4: A qualified biologist will monitor on-site during construction to ensure that no Covered Activities occur within the buffer zone established around the occupied wetland, or if take allowance is granted outside of the breeding season, to ensure that adverse effects are minimized. The frequency of monitoring will be approved by the PCA based on the frequency and intensity of construction activities and the likelihood of disturbance of the active nest. In most cases, monitoring will occur at least every other day, but in some cases daily monitoring may be appropriate to ensure that direct effects on California black rail are minimized. The qualified biologist may increase the buffer size if s/he determines that activities are particularly disruptive (e.g., use of dynamite, or other explosives). Prior to the start of construction, the qualified biologist will train construction personnel on the avoidance procedures and buffer zones.

WESTERN BURROWING OWL-1: Two surveys will be conducted within 15 days prior to ground disturbance to establish the presence or absence of burrowing owls. The surveys will be conducted at least 7 days apart (if burrowing owls are detected on the first survey, a second survey is not needed) for both breeding and non-breeding season surveys. All burrowing owls observed will be counted and mapped. During the breeding season (February 1 to August 31), surveys will

document whether burrowing owls are nesting in or within 250 feet of the project area. During the non-breeding season (September 1 to January 31), surveys will document whether burrowing owls are using habitat in or directly adjacent to any area to be disturbed. Survey results will be valid only for the season (breeding or non-breeding) during which the survey was conducted. The Qualified Biologist will survey the proposed footprint of disturbance and a 250-foot radius from the perimeter of the proposed footprint to determine the presence or absence of burrowing owls. The site will be surveyed by walking line transects, spaced 20 to 60 feet apart, adjusting for vegetation height and density. At the start of each transect and, at least, every 300 feet, the surveyor, with use of binoculars, shall scan the entire visible project area for burrowing owls. During walking surveys, the surveyor will record all potential burrows used by burrowing owls, as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration. Some burrowing owls may be detected by their calls; therefore, observers will also listen for burrowing owls while conducting the survey. Adjacent parcels under different land ownership will be surveyed only if access is granted. If portions of the survey area are on adjacent sites for which access has not been granted, the qualified biologist will get as close to the non-accessible are as possible, and use binoculars to look for burrowing owls. The presence of burrowing owl or their sign anywhere on the site or within the 250-foot accessible radius around the site will be recorded and mapped. Surveys will map all burrows and occurrence of sign of burrowing owl on the project site. Surveys must begin 1 hour before sunrise and continue until 2 hours after sunrise (3 hours total) or begin 2 hours before sunset and continue until 1 hour after sunset. Additional time may be required for large project sites.

WESTERN BURROWING OWL-2: If burrowing owls are found during the breeding season (approximately February 1 to August 31), the project applicant will:

- Avoid all nest sites that could be disturbed by project construction during the remainder of the breeding season or while the nest is occupied by adults or young (occupation includes individuals or family groups foraging on or near the site following fledging).
- Establish a 250-foot non-disturbance buffer zone around nests. The buffer zone will be flagged or otherwise clearly marked. Should construction activities cause the nesting bird to vocalize, make defensive flights at intruders, or otherwise display agitated behavior, then the exclusionary buffer will be increased such that activities are far enough from the nest so that the bird(s) no longer display this agitated behavior. The exclusionary buffer will remain in place until the chicks have fledged or as otherwise determined by a qualified biologist. Construction may only occur within the 250-foot buffer zone during the breeding season only if a qualified raptor biologist monitors the nest and determines that the

activities do not disturb nesting behavior, or the birds have not begun egg-laying and incubation, or that the juveniles from the occupied burrows have fledged and moved off site. Measures such as visual screens may be used to further reduce the buffer with Wildlife Agency approval and provided a biological monitor confirms that such measures do not cause agitated behavior.

WESTERN BURROWING OWL-3: If burrowing owls are found during the non-breeding season (approximately September 1 to January 31), the project applicant will establish a 160-foot buffer zone around active burrows. The buffer zone will be flagged or otherwise clearly marked. Measures such as visual screens may be used to further reduce the buffer with Wildlife Agency approval and provided a biological monitor confirms that such measures do not cause agitated behavior.

WESTERN BURROWING OWL-4: During the non-breeding season only, if a project cannot avoid occupied burrows after all alternative avoidance and minimization measures are exhausted, as confirmed by the Wildlife Agencies, a qualified biologist may passively exclude birds from those burrows. A burrowing owl exclusion plan must be developed by a qualified biologist consistent with the most recent guidelines from the Wildlife Agencies (e.g., California Department of Fish and Game 2012) and submitted to and approved by the PCA and the Wildlife Agencies. Burrow exclusion will be conducted for burrows located in the project footprint and within a 160-foot buffer zone as necessary.

WESTERN BURROWING OWL-5: A biological monitor will be present on site daily to ensure that no Covered Activities occur within the buffer zone. The qualified biologist performing the construction monitoring will ensure that effects on burrowing owls are minimized. If monitoring indicates that construction outside of the buffer is affecting nesting, the buffer will be increased if space allows (e.g., move staging areas farther away). If space does not allow, construction will cease until the young have fledged from all the nests in the colony (as confirmed by a qualified biologist) or until the end of the breeding season, whichever occurs first.

TRICOLORED BLACKBIRD-1: *Preconstruction Surveys – Nest Colony Sites*. Prior to initiation of Covered Activities in all project work areas and within 1,300 feet of project work areas, the qualified biologist(s) shall conduct preconstruction surveys to evaluate the presence of tricolored blackbird nesting colonies. In instances where an adjacent parcel is not accessible to survey because the qualified biologist was not granted permission to enter, the qualified biologist will scan all potential nest colony site(s) from the adjacent property, road sides, or other safe, publicly accessible viewpoints, without trespassing, using binoculars and/or a spotting scope to look for tricolored blackbird nesting activity. Surveys should be conducted at least twice with at least one month between surveys during the nesting season 1 year prior to initial ground

disturbing for the Covered Activity if feasible, and the year of ground disturbing for the Covered Activity (required). If Covered Activities will occur in the project work area during the nesting season, three surveys shall be conducted within 15 days prior to the Covered Activity, with one of the surveys occurring within 5 days prior to the start of the Covered Activity. The survey methods will be based on Kelsey (2008) or a similar protocol approved by the PCA and the Wildlife Agencies based on site-specific conditions. If the first survey indicates that suitable nesting habitat is not present on the project site or within 1,300 feet of the project work area, additional surveys for nest colonies are not required. Preconstruction surveys are still required, however, as described below in Tricolored Blackbird 2.

TRICOLORED BLACKBIRD-2: *Preconstruction Surveys – Foraging Habitat.* If an active colony is known to occur within 3 miles of the project site, a qualified biologist will conduct two surveys of foraging habitat within the project site and within a 1,300-foot radius around the project site to determine whether foraging habitat is being actively used by foraging tricolored blackbirds. The qualified biologist will map foraging habitat, as defined by the land cover types listed above, within a 1,300-foot radius around the project site to delineate foraging habitat that will be surveyed. The surveys will be conducted approximately one week apart, with the second survey occurring no more than 5 calendar days prior to ground-disturbing activities. Two surveys are required because tricolored blackbirds may not visit a site during a single survey period, as they may be foraging elsewhere. Each survey shall last 4 hours, and begin no later than 8:00 a.m. The qualified biologist will survey the entire project site and a 1,300-foot radius around the project site by observing and listening from accessible vantage points that provide views of the entire survey area. If such vantage points are not available, the qualified biologist will survey from multiple vantage points to ensure that the entire survey area is surveyed. In instances where an adjacent parcel is not accessible to survey because the qualified biologist was not granted permission to enter, the qualified biologist will scan all foraging habitat from the adjacent property, road sides, or other safe, publicly accessible viewpoints, without trespassing, using binoculars and/or a spotting scope to look for tricolored blackbird foraging activity. The qualified biologist will map the locations on the site and within a 1,300-foot radius around the project site where tricolored blackbirds are observed and record an estimate of the numbers of tricolored blackbirds observed (estimated by 10s, 100s, or 1,000s), the frequency of visits (e.g., if individuals or a flock makes repeated foraging visits to the site during the survey period), whether tricolored blackbirds are leaving the site with food in their bills, and the direction they fly to/from.

TRICOLORED BLACKBIRD-3: *Nesting Colony – Avoidance and Minimization.* Construction activity or other covered activities that may

disturb an occupied nest colony site, as determined by a qualified biologist, will be prohibited during the nesting season (March 15 through July 31 or until the chicks have fledged or the colony has been abandoned on its own) within a 1,300-foot buffer zone around the nest colony, to the extent practicable. The intent of this condition is to prevent disturbance to occupied nest colony sites on or near project sites so they can complete their nesting cycle. This condition is not intended to preserve suitable breeding habitat on project sites but to ensure impacts to active colony sites only take place once the site is no longer occupied by the nesting colony. The buffer will be applied to extend beyond the nest colony site as follows.

- If the colony is nesting in a wetland, the buffer must be established from the outer edge of all hydric vegetation associated with the colony.
- If the colony is nesting in non-wetland vegetation (e.g., Himalayan blackberry), the buffer must be established from the edge of the colony substrate.

This buffer may be modified to a minimum of 300 feet, with written approval from the Wildlife Agencies, in areas with dense forest, buildings, or other features between the Covered Activities and the occupied active nest colony; where there is sufficient topographic relief to protect the colony from excessive noise or visual disturbance; where sound curtains have been installed; or other methods developed in consultation with the Wildlife Agencies where conditions warrant reduction of the buffer distance. If tricolored blackbirds colonize habitat adjacent to Covered Activities after the activities have been initiated, the project applicant shall reduce disturbance through establishment of buffers or noise reduction techniques or visual screens, as determined in consultation with the Wildlife Agencies and PCA. The buffer must be clearly marked to prevent project-related activities from occurring within the buffer zone.

TRICOLORED BLACKBIRD-4: *Actively used Foraging Habitat – Avoidance and Minimization.* Construction activity or other covered activities that may disturb foraging tricolored blackbirds, as determined by a qualified biologist, will be prohibited within 1,300-feet of the foraging site to the extent feasible during the nesting season (March 15 through July 31 or until the chicks have fledged or the colony has been abandoned on its own) if the foraging habitat was found to be actively used by foraging tricolored blackbirds during at least one of the two foraging habitat surveys conducted under Tricolored Blackbird 2. If survey results indicate that the area provides marginal foraging habitat (e.g., tricolored blackbirds were observed foraging, but only briefly, and most were not successfully capturing prey), or site specific conditions may warrant a reduced buffer, the PCA technical staff will consult with the Wildlife Agencies to evaluate whether the project needs to avoid the

foraging habitat or whether a reduced buffer may be appropriate. In such cases, additional surveys may be needed to assess site conditions and the value of the foraging habitat. The buffer must be clearly marked to prevent project-related activities from occurring within the buffer zone. This buffer may be modified to a minimum of 300 feet, with written approval from the Wildlife Agencies, in areas with dense forest, buildings, or other features between the Covered Activities and the actively used foraging habitat; where there is sufficient topographic relief to protect foraging birds from excessive noise or visual disturbance; or in consultation with the Wildlife Agencies if other conditions warrant reduction of the buffer distance. If tricolored blackbird begins using foraging habitat adjacent to Covered Activities after the activities have been initiated, the project applicant shall reduce disturbance through establishment of buffers or noise reduction techniques or visual screens, as determined in consultation with the Wildlife Agencies and PCA. Similar to Tricolored Blackbird 3, the intent of this condition is to allow actively nesting colonies on or near project sites to complete their nesting cycle prior to the loss of the foraging habitat on site. Protecting actively used-foraging habitat during the nesting season will help to enable the tricolored blackbird nesting colony to complete its nesting cycle, as loss of valuable foraging habitat could cause the nesting colony to fail. This condition is not intended to preserve suitable foraging habitat on project sites in the long term.)

TRICOLORED BLACKBIRD-5: *Nesting Colony – Construction Monitoring*. Active nesting colonies that occur within the no-disturbance buffer shall be monitored by the qualified biologist(s) to verify the Covered Activity is not disrupting the nesting behavior of the colony. The frequency of monitoring will be approved by the PCA and based on the frequency and intensity of construction activities and the likelihood of disturbance of the active nest. In most cases, monitoring will occur at least every other day, but in some cases, daily monitoring may be appropriate to ensure that direct effects on tricolored blackbird are minimized. The biologist will train construction personnel on the avoidance procedures and buffer zones. If the qualified biologist(s) determines that the Covered Activity is disrupting nesting and/or foraging behavior, the qualified biologist(s) shall notify the project applicant immediately, and the project applicant shall notify the PCA within 24 hours to determine additional protective measures that can be implemented. The qualified biologist(s) shall have the authority to stop Covered Activities until additional protective measures are implemented. Additional protective measures shall remain in place until the qualified biologist(s) determine(s) tricolored blackbird behavior has normalized. If additional protective measures are ineffective, the qualified biologist(s) shall have the authority to stop Covered Activities as needed until the additional protective measures are modified and nesting behavior of tricolored blackbird returns to normal. Additional protective measures

may include increasing the size of the buffer (within the constraints of the project site), delaying Covered Activities (or the portion of Covered Activities causing the disruption) until the colony is finished breeding and chicks have left the nest site, temporarily relocating staging areas, or temporarily rerouting access to the project work area. The project proponent shall notify the PCA and Wildlife Agencies within 24 hours if nests or nestlings are abandoned. If the nestlings are still alive, the qualified biologist(s) shall work with the Wildlife Agencies to determine appropriate actions for salvaging the eggs or nestlings. Notification to PCA and Wildlife Agencies shall be via telephone or email, followed by a written incident report. Notification shall include the date, time, location, and circumstances of the incident.

TRICOLORED BLACKBIRD-6*: Actively used Foraging Habitat – Construction Monitoring.* Foraging habitat within the buffer shall be monitored by the qualified biologist(s) to verify that the Covered Activity is not disrupting tricolored blackbird foraging behavior. The frequency of monitoring will be approved by the PCA and based on the frequency and intensity of construction activities and the likelihood of disturbance of foraging tricolored blackbirds. In most cases, monitoring will occur at least every other day, but in some cases, daily monitoring may be appropriate to ensure that effects on tricolored blackbird are minimized. The biologist will train construction personnel on the avoidance procedures and buffer zones. If the qualified biologist(s) determines that the Covered Activity is disrupting foraging behavior, the qualified biologist(s) shall notify project applicant immediately, and the project applicant shall notify the PCA within 24 hours to determine additional protective measures that can be implemented. The qualified biologist(s) shall have the authority to stop Covered Activities until additional protective measures are implemented. Additional protective measures shall remain in place until the qualified biologist(s) determine(s) tricolored blackbird behavior has normalized. If additional protective measures are ineffective, the qualified biologist(s) shall have the authority to stop Covered Activities as needed until the additional protective measures are modified and foraging behavior of tricolored blackbird returns to normal. Additional protective measures may include increasing the size of the buffer (within the constraints of the project site), temporarily relocating staging areas, or temporarily rerouting access to the project work area.

GIANT GARTER SNAKE-1: To avoid effects on giant garter snake aquatic habitat, the project proponent will conduct no in-water/in-channel activity and will maintain a permanent 200-foot non-disturbance buffer from the outer edge of suitable habitat. If the project proponent cannot avoid effects of construction activities, the project proponent will implement the following measures to minimize effects of construction projects.

- Conduct preconstruction clearance surveys using United States Fish and Wildlife Service (USFS) and California Department of Fish and Wildlife (CDFW)-approved methods within 24 hours prior to construction activities within identified giant garter snake aquatic and adjacent upland habitat. If construction activities stop for a period of 2 weeks or more, conduct another preconstruction clearance survey within 24 hours of resuming construction activity.
- Restrict all construction activity involving disturbance of giant garter snake habitat to the snake's active season, May 1 through October 1. During this period, the potential for direct mortality is reduced, because snakes are expected to actively move and avoid danger.
- In areas where construction is to take place, encourage giant garter snakes to leave the site on their own by dewatering all irrigation ditches, canals, or other aquatic habitat (i.e., removing giant garter snake aquatic habitat) between April 15 and September 30. Dewatered habitat must remain dry, with no water puddles remaining, for at least 15 consecutive days prior to excavating or filling of the habitat. If a site cannot be completely dewatered, netting and salvage of giant garter snake prey items may be necessary to discourage use by snakes.
- Provide environmental awareness training for construction personnel. Training may be implemented through the distribution of approved brochures and other materials that describe resources protected under the Plan and methods for avoiding effects. If a live giant garter snake is encountered during construction activities, immediately notify the project's biological monitor and USFWS and CDFW. The monitor will stop construction in the vicinity of the snake, monitor the snake, and allow the snake to leave on its own. The monitor will remain in the area for the remainder of the workday to ensure the snake is not harmed or, if it leaves the site, does not return. The qualified biologist will work with the PCA, USFWS, and CDFW to redirect the snake away from the disturbance area within 3 days of reporting the snake's presence at the construction site to USFWS and CDFW.
- Employ the following management practices to minimize disturbances to habitat.
    - Install temporary fencing to identify and protect adjacent marshes, wetlands, and ditches from encroachment from construction equipment and personnel.
    - Maintain water quality and limit construction runoff into wetland areas using hay bales, filter fences, vegetative buffer strips, or other accepted practices. No plastic,

monofilament, jute, or similar erosion control matting that could entangle snakes or other wildlife will be permitted.

CALIFORNIA RED-LEGGED FROG, FOOTHILL YELLOW-LEGGED FROG AND WESTERN POND TURTLE-1: California red-legged frog, foothill yellow-legged frog, and western pond turtle are all species that rely on aquatic habitats for a portion of their life cycles. Many of the avoidance measures in this chapter focus on the avoidance and minimization of impacts on these aquatic habitats, addressing minimizing converted land as well as degradation of habitat (water quality and other indirect effects). Conditions on Covered Activities that provide avoidance and minimization for California red-legged frog, foothill yellow-legged frog, and western pond turtle include:

- General Condition 1, Watershed Hydrology and Water Quality
- Community Condition 1.1, Avoidance of Vernal Pool Complex Constituent Habitat
- Community Condition 1.2, Avoidance of Aquatic/Wetland Complex Constituent Habitat
- Community Condition 2, Riverine and Riparian Avoidance and Minimization
- Community Condition 3, Valley Oak Woodland Avoidance, Minimization, and Mitigation
- Stream System Condition 1, Stream System Avoidance and Minimization
- Regional Public Projects Condition 1, Transportation and Other Infrastructure Projects Design Requirements
- Regional Public Projects Condition 2, Transportation and Other Infrastructure Projects Construction BMPs
- Regional Public Projects Condition 3, Operation and Maintenance BMPs
- Species Condition 4, Tricolored Blackbird
- Species Condition 7, Central Valley Steelhead and Central Valley Fall-/Late Fall-Run Chinook Salmon (Salmonids)

In addition to these avoidance and minimization measures, General Condition 3, Land Conversion, provides a process for accounting for loss of natural and semi-natural that is more encompassing than standard practice. This approach better addresses the piecemeal loss of high-quality, contiguous habitat that would occur without a plan such as that HCP/NCCP. Finally, Chapter 5, *Conservation Strategy*, provides guidance on how impacts that cannot be avoided and minimized are mitigated. Mitigation not only includes addressing loss of aquatic resources, but surrounding uplands and loss of habitat connectivity as well. Because the effects on California red-legged frog, foothill yellow-legged frog, and western pond turtle are addressed through the approach to assessing impact and applying extensive avoidance and minimization measures, no additional avoidance and minimization

measures specific to these species are required.

CENTRAL VALLEY STEELHEAD AND CENTRAL VALLEY FALL-/LATE FALL-RUN CHINOOK SALMOND-1: Streamflow through new and replacement culverts, bridges, and over stream gradient control structures must meet the velocity, depth, and other passage criteria for salmonid streams as described by NMFS and CDFW guidelines or as developed in cooperation with NMFS and CDFW to accommodate site-specific conditions (*Guidelines for Salmonid Passage at Stream Crossings* [National Marine Fisheries Service 2001]).

CENTRAL VALLEY STEELHEAD AND CENTRAL VALLEY FALL-/LATE FALL-RUN CHINOOK SALMOND-2: Fish passage through dewatered channel sections shall be maintained at all times during the adult and juvenile migration season on streams with Covered Species to allow for unimpeded passage of migrating adults and juveniles (smolts). In addition, fish passage shall be maintained during summer on streams supporting summer rearing of Covered Species to allow for seasonal movement of resident (over-summering) fish when the natural channel segment within the vicinity of work areas also supports the movement of resident fish.

To allow for fish passage, the diversion shall:

- Maintain continuous flows through a low flow channel in the channel bed or an adjacent artificial open channel
- Present no vertical drops exceeding six inches and follow the natural grade of the site
- Maintain water velocities that shall not exceed 1.5 feet per second and provide velocity refugia, as necessary
- Maintain adequate water depths consistent with normal conditions in the project reach
- Be lined with cobble/gravel to simulate stream bottom conditions
- Be checked daily to prevent accumulation of debris at diversion inlet and outlet

A closed conduit pipe shall not be used for fish passage. Pipes may be used to divert flow through dewatered channel segments on streams that do not support migratory species, or during low flow conditions when the channel segment within the vicinity of work areas at the time of construction does not support movement of fish.

CENTRAL VALLEY STEELHEAD AND CENTRAL VALLEY FALL-/LATE FALL-RUN CHINOOK SALMOND-3: Prior to the start of work or during the installation of water diversion structures, if fish Covered Species are present and it is determined that they could be injured or killed by construction activities, a qualified biologist will first attempt to gently herd fish Covered Species away from work areas and exclude them from work areas with nets, if practicable. If herding is not practicable or ineffective, a qualified biologist shall capture fish Covered

Species and transfer them to another appropriate reach. In considering the relocation, the qualified biologist will determine whether relocation is ecologically appropriate using several factors, including site conditions, system carrying capacity for potential relocated fish, and flow regimes (e.g., if flows are managed). If fish Covered Species are to be relocated, the following factors will be considered when selecting release site(s):

- Similar (within 3.6°F [2 degrees Celsius (°C)]) water temperature as capture location. In addition, fish must be held in water that is at the same temperature as release sites at time of release. If raising or lowering of water temperature in holding apparatus is required, water temperatures in holding apparatus containing fish should not be changed at a rate that exceeds 1.8°F (1°C) every 2 minutes, and should not exceed 41°F (5°C) per hour.
- Ample habitat availability prior to release of captured individuals.
- Presence of others of the same species so that relocation of new individuals will not upset the existing prey/predation function.
- Carrying capacity of the relocation location.
- Potential for relocated individual to transport disease.
- Low likelihood of fish reentering work site or becoming impinged on exclusion net or screen.

Capture and relocation of fish Covered Species is not required at individual project sites when site conditions preclude reasonably effective operation of capture gear and equipment, or when the safety of the biologist conducting the capture may be compromised.

CENTRAL VALLEY STEELHEAD AND CENTRAL VALLEY FALL-/LATE FALL-RUN CHINOOK SALMOND-4: Spawning gravel cleaning and replacement activities should be timed to occur during the dry season and after fry have emerged from the gravel (generally July 1 through October 1). Applicants may submit requests for extension of this work window to the PCA for review by CDFW and NMFS. In streams that receive summer irrigation flows, spawning gravel cleaning and replacement activities should be timed to occur after the irrigation season has ended and stream flows are at a minimum to minimize the need for site dewatering (if needed) and to minimize the potential for downstream turbidity and sedimentation effects. If dewatering is needed, other applicable Avoidance and Minimization Measures shall be implemented prior to commencing spawning gravel cleaning and replacement activities. Gravel to be placed in streams shall be washed (to remove fines), rounded (i.e., non-angular) and spawning-sized (between 0.4 and 4.0 inches [10 to 100 millimeters] in diameter). For gravel augmentation projects, gravels should be placed such that high flows naturally sort and distribute the material.

CENTRAL VALLEY STEELHEAD AND CENTRAL VALLEY FALL-/LATE FALL-RUN CHINOOK SALMOND-5: When riprap is required to be placed below the OHWM, it shall have a cleanliness value of no less

than 85 percent and shall be covered with clean, uncrushed rock consistent with NMFS spawning gravel size requirements (currently 98 to 100 percent of the clean, uncrushed rock must pass through a 4-inch sieve, and 60 to 80 percent must pass through a 2-inch sieve). Of the total volume of rock placed, 50 percent shall consist of clean, uncrushed rock. This measure may be updated with more current standards.

VALLEY ELDERBERRY LONGHORN BEETLE-1: Surveys for valley elderberry longhorn beetle are required for Covered Activities within the following habitat features when below 650 feet elevation (above mean sea level):

a. Riparian constituent habitat
b. Valley oak woodland community
c. Stream System (excluding frequently disked or flooded agricultural lands such as rice that would not likely support elderberry shrubs)

The project applicant will apply avoidance and minimization measures as specified in the USFWS's Conservation Guidelines for the Valley Elderberry Longhorn Beetle (U.S. Fish and Wildlife Service 1999b) or the current Wildlife Agency–approved avoidance and minimization protocol. When take is authorized the project applicant must coordinate with the PCA to provide transplants and seedlings/cuttings for planting in suitable habitat on the Reserve System consistent with the USFWS Guidelines/Framework. Project-by-project mitigation requirements for valley elderberry longhorn beetle cannot be applied to the restoration requirements of 6.3.2.2.3 (Community Condition 2.3, Riverine and Riparian Restoration) for a project's associated riparian native trees/shrubs impacts to be planted as replacement habitat (i.e., mitigation for impacts to valley elderberry longhorn beetle [transplants and plantings of seedlings/cuttings] does not count as mitigation for impacts to riverine and riparian [restoration of riverine and riparian]). The distinction between valley elderberry longhorn beetle impacts and riverine/riparian impacts will be addressed through project-specific mitigation requirements that provide for restoration of natural communities, including riverine/riparian complex (i.e., restoration dependent on effects; see Table 5-4).

CONSERVANCY FAIRY SHRIMP-1: Surveys will be conducted for Conservancy fairy shrimp in vernal pools, vernal swales, and other seasonal wetlands. The qualified biologist will conduct protocol-level surveys using the Survey Guidelines for the Listed Large Branchiopods (Guidelines) (U.S. Fish and Wildlife Service 2015). Among other requirements, this protocol states that a complete survey consists of one wet season survey and one dry season survey within a 3-year period. As such, applicants must plan to allow sufficient time to complete these surveys. The results of the protocol-level survey will be valid for 5 years after completion, which means no more than 5 years may lapse between

the survey and PCA approval of the Covered Activity. If another occurrence is found in the Plan Area but outside of the survey requirement area, a similar requirement will be established in consultation with the Wildlife Agencies.

CONSERVANCY FAIRY SHRIMP-2: Maintain a 250-foot upland buffer from the outer edge of all hydric vegetation associated with occupied wetlands. At the request of the project applicant, representatives of the PCA and the Wildlife Agencies may conduct site visits to inspect the characteristics of specific project sites and may approve reductions of the buffer. Buffer reductions may be approved for all or portions of the site whenever reduced buffers will maintain the hydrology of the seasonal wetland and achieve the same or greater habitat values as would be achieved by the original buffer. Avoidance and minimization measures will be incorporated into the project design and other portions of the application package prior to submission for coverage under the Plan. An avoided occurrence can count toward the project's mitigation requirements if it is incorporated into the Reserve System and managed according to the Plan's conservation strategy. In the event that complying with this condition to avoid an occurrence of Conservancy fairy shrimp would severely affect a property owner's use or economic interest in private property, the PCA and the Wildlife Agencies shall promptly consult with the property owner to consider whether any modifications to this condition are appropriate to reduce the impact on the property owner or whether the PCA may instead purchase the property as part of the Reserve System.

CONSERVANCY FAIRY SHRIMP-3: Activities inconsistent with the maintenance of seasonal wetlands within the buffers and disturbance of the on-site watershed will be prohibited, including:

- Altering existing topography
- Placing new structures within the buffers
- Dumping, burning, and/or burying garbage or any other wastes or fill materials
- Building new roads or trails
- Removing or disturbing existing native vegetation
- Installing storm drains
- Using pesticides or other toxic chemicals

CONSERVANCY FAIRY SHRIMP-4: To avoid or minimize effects on Conservancy fairy shrimp being retained on site, the 250-foot upland buffer will be marked by brightly colored fencing throughout the construction process. Activities will be prohibited within this buffer.

CONSERVANCY FAIRY SHRIMP-5: If occupied habitat is retained on site, a qualified biological monitor will be present to ensure compliance with the buffer zone restrictions. A qualified biologist will inform all construction personnel about the life history of Conservancy fairy shrimp,

the importance of avoiding its habitat, and the terms and conditions of the Plan related to avoiding and minimizing effects on Conservancy fairy shrimp. The frequency of monitoring will be approved by the PCA and based on the frequency and intensity of construction activities and the likelihood of disturbance of the occupied pool(s). In most cases, monitoring will occur at least every third day.

VERNAL POOL FAIRY SHRIMP AND VERNAL POOL TADPOLE SHRIMP-1: Wet season surveys will be conducted for vernal pool fairy shrimp and vernal pool tadpole shrimp in vernal pools, as determined by wetland delineation (See Section 6.2.4.4, *Item 4: Mapping HCP/NCCP Aquatic Features* for details). The qualified biologist will conduct protocol-level wet season surveys, using modified Guidelines, as approved by USFWS (see below). Modifications include requiring that all vernal pools at a site be surveyed, rather than allowing for the survey to be terminated when presence on a project site is confirmed. This modification is necessary to obtain data on presence and absence in all of the available vernal pools, to facilitate the determination of the Occupancy Rate Standards. This, and other exceptions and additions to the Guidelines, as follows. If presence is confirmed for vernal pool fairy shrimp and vernal pool tadpole shrimp in an individual vernal pool, surveys may be stopped for that vernal pool.

- All vernal pools on the project site must be surveyed. Surveys cannot be suspended prior to completion, as allowed by the Guidelines, if one or more of the six listed large branchiopods, identified in the Guidelines is determined to be present.
- The Guidelines define a complete survey as consisting of one wet-season and one dry-season survey conducted and completed in accordance with the Guidelines within a 3-year period. For the purposes of the Plan, only one wet-season survey is required; dry-season surveys are not required. Applicants must plan to allow sufficient time to complete these surveys.
- Data that will be collected at each vernal pool surveyed during the wet season survey will include the presence or absence of vernal pool fairy shrimp and vernal pool tadpole shrimp, species identity and the estimated abundance (10s, 100s, 1,000s) of immature and mature vernal pool fairy shrimp and vernal pool tadpole shrimp present, and estimated maximum surface area of the vernal pool. Other information on the USFWS data sheet are not required to be collected (i.e., air and water temperature, average and estimated maximum depth of the vernal pool, presence of non-target crustaceans, insects, and platyhelminths, and habitat condition). This will allow surveys to be conducted more efficiently, while providing the essential information necessary to calculate the Pool-based Occupancy Rate Standard9 and the Area-based Occupancy Rate Standard10. Because these vernal

pools will be affected by Covered Activities, collection of additional information is not necessary.

- Information will be recorded on the PCA-provided data sheet, which will be the USFWS data sheet (included as Appendix A to the Guidelines), modified to include the above information.
- Voucher specimens will not be collected during wet season surveys unless the identity of the mature shrimp is uncertain and cannot be identified in the field. The Guidelines allow for a limited number of voucher specimens to be collected for each vernal pool. For the purpose of the Plan, the modified survey protocol further limits the collection of voucher specimens to instances where identity is uncertain.

The biologist conducting a survey for vernal pool fairy shrimp and vernal pool tadpole shrimp should participate in the wetland delineation to map the area of each vernal pool. If the biologist cannot participate in the wetland delineation, and the wetland delineation does not provide area for each vernal pool, the biologist will conduct follow-up surveys to map the perimeter of each vernal pool with a global positioning system (GPS). Each vernal pool will be given a unique identification number that will be used to track survey data collected during wet- season surveys.

D. Determination

The Central Valley Water Board has determined that the Project, when implemented in accordance with the MMRP and the conditions in this Order, will not result in any significant adverse water quality or supply impacts. (California Code of Regulations, title 14, section 15096, subd. (h).) The Central Valley Water Board will file a NOD with the SCH within five (5) working days from the issuance of this Order. (California Code of Regulations, title 14, section 15096, subd. (i).)

Copies of this Form

In order to identify your individual project, it is necessary to include a copy of the individual Project specific Cover Sheet below with your report: please retain for your records. If you need to obtain a copy of the Cover Sheet you may download a copy of this Order as follows:

1. Go to: (http://www.waterboards.ca.gov/water_issues/programs/cwa401/certifications.shtml)
2. Find your Order in the table based on Applicant, Date, and Subject headers.

Report Submittal Instructions

1. Check the box on the Report and Notification Cover Sheet next to the report or notification you are submitting
   - **Part A (Project Reporting):** Used to notify the Central Valley Water Board of the status of the individual project schedule from both Enrollee and the PCA. Enrollees will submit Monthly and Annual Reports, if applicable, to the Central Valley Water Board and the PCA will submit Annual Impact Reports to the Central Valley Water Board.
   - **Part B (Project Status Notifications):** Used to notify the Central Valley Water Board of the status of the individual Project schedule that may affect individual project billing.
   - **Part C (Conditional Notifications and Reports):** Required on a case by case basis for accidental discharges of hazardous materials, violation of compliance with water quality standards, notification of in-water work, or other reports.
2. Sign the Report and Notification Cover Sheet and attach all information requested for the Report Type.
3. **Electronic Report Submittal Instructions:**
   - Submit signed Report and Notification Cover Sheet and required information via email to: centralvalleysacramento@waterboards.ca.gov and cc: Greg.Hendricks@waterboards.ca.gov
   - Include in the subject line of the email:
     Subject: ATTN: Greg Hendricks; Reg. Measure ID: 437728_Report, WDID#5A31CR00534-XXX

Definition of Reporting Terms

1. **Active Discharge Period:** The active discharge period begins with the effective date of the NOA and ends on the date that the Enrollee receives a Notice of Completion of Discharges Letter or, if no post-construction monitoring is required, a Notice of Project Complete Letter. The Active Discharge Period includes all elements of the individual project including site construction and restoration.

2. **Request for Notice of Completion of Discharges Letter:** This request by the Enrollee to the Central Valley Water Board staff pertains to individual projects that have post construction monitoring requirements, e.g. if site restoration was required to be monitored for 5 years following construction. Central Valley Water Board staff will review the request and send a Completion of Discharges Letter to the Enrollee upon approval. This letter will initiate the post-discharge monitoring period and a change in fees from the annual active discharge fee to the annual post-discharge monitoring fee.

3. **Request for Notice of Project Complete Letter:** This request by the Enrollee to the Central Valley Water Board staff pertains to individual projects that either have completed post-construction monitoring and achieved performance standards or have no post-construction monitoring requirements, and no further individual project activities are planned. Central Valley Water Board staff will review the request and send a Project Complete Letter to the Enrollee upon approval. Termination of annual invoicing of fees will correspond with the date of this letter.

4. **Post-Discharge Monitoring Period:** The post-discharge monitoring period begins on the date of the Notice of Completion of Discharges Letter and ends on the date of the Notice of Project Complete Letter issued by the Central Valley Water Board staff. The Post-Discharge Monitoring Period includes continued water quality monitoring or compensatory mitigation monitoring.

Effective Date: 16 October 2020

Map/Photo Documentation Information

When submitting maps or photos, please use the following formats.

1. Map Format Information:

Preferred map formats of at least 1:24000 (1" = 2000') detail (listed in order of preference):

- **GIS shapefiles:** The shapefiles must depict the boundaries of all individual project areas and extent of aquatic resources impacted. Each shape should be attributed with the extent/type of aquatic resources impacted. Features and boundaries should be accurate to within 33 feet (10 meters). Identify datum/projection used and if possible, provide map with a North American Datum of 1983 (NAD38) in the California Teale Albers projection in feet.
- **Google KML files** saved from Google Maps: My Maps or Google Earth Pro. Maps must show the boundaries of all individual project areas and extent/type of aquatic resources impacted. Include URL(s) of maps. If this format is used include a spreadsheet with the object ID and attributed with the extent/type of aquatic resources impacted.
- **Other electronic format** (CAD or illustration format) that provides a context for location (inclusion of landmarks, known structures, geographic coordinates, or USGS DRG or DOQQ). Maps must show the boundaries of all individual project areas and extent/type of aquatic resources impacted. If this format is used include a spreadsheet with the object ID and attributed with the extent/type of aquatic resources impacted.
- Aquatic resource maps marked on paper **USGS 7.5-minute topographic maps** or **Digital Orthophoto Quarter Quads (DOQQ)** printouts. Maps must show the boundaries of all individual project areas and extent/type of aquatic resources impacted. If this format is used include a spreadsheet with the object ID and attributed with the extent/type of aquatic resources impacted.

2. Photo-Documentation: Include a unique identifier, date stamp, written description of photo details, and latitude/longitude (in decimal degrees) or map indicating location of photo. Successive photos should be taken from the same vantage point to compare pre/post construction conditions.

REPORT AND NOTIFICATION COVER SHEET

Project:	TBD		
Enrollee:	TBD		
Reg. Meas. ID:	TBD	**Place ID:**	TBD
WDID:	5A31CR00534-XXX		
Order Effective Date:	16 October 2020		
Order Expiration Date:	16 October 2025		

Report Type Submitted		
Part A - Project Reporting		
Report Type 1	☐	**Enrollee Monthly Report # _____**
Report Type 2	☐	**Enrollee Annual Report # _____**
Report Type 3	☐	**PCA Annual Impact Report # _____**
Part B - Project Status Notifications		
Report Type 4	☐	**Commencement of Construction**
Report Type 5	☐	**Request for Notice of Completion of Discharges Letter**
Report Type 6	☐	**Request for Notice of Project Complete Letter**
Part C - Conditional Notifications and Reports		
Report Type 7	☐	**Accidental Discharge of Hazardous Material Report**
Report Type 8	☐	**Violation of Compliance with Water Quality Standards Report**
Report Type 9	☐	**In-Water Work/Diversions Water Quality Monitoring Report**
Report Type 10	☐	**Modifications to Project Report**
Report Type 11	☐	**Transfer of Property Ownership Report**
Report Type 12	☐	**Transfer of Long-Term BMP Maintenance Report**

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Print Name [1]	**Affiliation and Job Title**
Signature	**Date**

[1]STATEMENT OF AUTHORIZATION (include if authorization has changed since application was submitted)

I hereby authorize _____ to act in my behalf as my representative in the submittal of this report, and to furnish upon request, supplemental information in support of this submittal.

_____ _____
Permittee's Signature Date

***This Report and Notification Cover Sheet must be signed by the Permittee or a duly authorized representative and included with all written submittals.**

Part A – Project Reporting

Report Type 1	Enrollee Monthly Report
Report Purpose	Notifies Central Valley Water Board staff of the individual project status and environmental compliance activities on a monthly basis.
When to Submit	On the 1st day of each month beginning the month after the submittal of the Commencement of Construction Notification until a Notice of Project Complete Letter is issued to the Enrollee.
Report Contents	**1. Construction Summary** Describe individual project progress and schedule including initial ground disturbance, site clearing and grubbing, road construction, site construction, and the implementation status of construction storm water BMPs[5]. If construction has not started, provide estimated start date. **2. Event Summary** Describe distinct individual project activities and occurrences, including environmental monitoring, surveys, and inspections. **3. Photo Summary** Provide photos of individual project activities. For each photo, include a unique site identifier, date stamp, written description of photo details, and latitude/longitude (in decimal degrees) or map indicating location of photo. Successive photos should be taken from the same vantage point to compare pre/post construction conditions. **4. Compliance Summary** **a)** List name and organization of environmental surveyors, monitors, and inspectors involved with monitoring environmental compliance for the reporting period. **b)** List associated monitoring reports for the reporting period. Include sampling reports. If no sampling was required, a monitoring report must be submitted stated, "No sampling was required".

[5] Best Management Practices (BMPs) is a term used to describe a type of water pollution or environmental control.

	c) Summarize observed incidences of non-compliance, compliance issues, minor problems, or occurrences. **d)** Describe each observed incidence in detail. List monitor name and organization, date, location, type of incident, corrective action taken (if any), status, and resolution.

Report Type 2	**Enrollee Annual Report**
Report Purpose	Notify the Central Valley Water Board staff of individual project status during both the active discharge and post-discharge monitoring periods.
When to Submit	Annual reports shall be submitted each year starting on the 1st day of the following month of the Notice of Applicability. Annual reports shall continue until a Notice of Project Complete Letter is issued to the Enrollee.
Report Contents	The contents of the annual report shall include the topics indicated below for each individual project period. Report contents are outlined in Annual Report Topics below. **During the Active Discharge Period** • **Topic 1: Construction Summary** • **Topic 2: Mitigation for Temporary Impacts Status** **During the Post-Discharge Monitoring Period** • **Topic 2: Mitigation for Temporary Impacts Status**

Annual Report Topics (1-3)	
Annual Report Topic 1	**Construction Summary**
When to Submit	With the annual report during the Active Discharge Period.
Report Contents	**1.** Individual project progress and schedule including initial ground disturbance, site clearing and grubbing, road construction, site construction, and the implementation status of construction storm water BMPs. If construction has not started, provide estimated start date and reasons for delay. **2.** Map showing general individual project progress. **3.** If applicable: **a.** Summary of Conditional Notification and Report Types 6 and 7 (Part C below).
Annual Report Topic 2	**Mitigation for Temporary Impacts Status**

When to Submit	With the annual report during both the Active Discharge Period and Post-Discharge Monitoring Period.
Report Contents 1.	**1.** Planned date of initiation and map showing locations of mitigation for temporary impacts to waters of the state and all upland areas of temporary disturbance which could result in a discharge to waters of the state. **2.** If mitigation for temporary impacts has already commenced, provide a map and information concerning attainment of performance standards contained in the restoration plan.
Annual Report Topic 3	**Compensatory Mitigation for Permanent Impacts Status – Not Applicable**
When to Submit	With the annual report during both the Active Discharge Period and Post-Discharge Monitoring Period.
Report Contents	***If not applicable report N/A.** **Part A. In-Lieu Fee** **1.** Status or proof of purchase of credit types and quantities.

Report Type 3	**PCA Annual Impact Report**
Report Purpose	Notify the Central Valley Water Board staff of individual project permanent impact statuses.
When to Submit	Annual impact reports shall be submitted each year starting on the 1st day of the month one year after the effective date of this Order. Annual reports shall continue until the Order expiration date.
Report Contents	The contents of the annual impact report shall include the annual and total permanent impact statuses of HCP/NCCP individual projects covered under the USACE PGP, LOP, ASP, and RGP. Permanent impacts shall be quantified in acreage, cubic yards, and linear feet as applicable, to aquatic resource types: lake, riparian zone, stream channel, wetland, vernal pool, and bay/estuary. Permanent impacts are categorized as those resulting in a physical loss in area and also those degrading ecological condition.

Part B – Project Status Notifications

Report Type 4	**Commencement of Construction**
Report Purpose	Notify Central Valley Water Board staff prior to the start of construction.

When to Submit	Must be received at least seven (7) days prior to start of initial ground disturbance activities.
Report Contents	**1.** Date of commencement of construction. **2.** Anticipated date when discharges to waters of the state will occur. **3.** Individual project schedule milestones including a schedule for on-site compensatory mitigation, if applicable. **4.** Construction Storm Water General Permit WDID No.

Report Type 5	**Request for Notice of Completion of Discharges Letter**
Report Purpose	Notify Central Valley Water Board staff that post-construction monitoring is required and that active individual project construction, including any mitigation is complete.
When to Submit	Must be received by Central Valley Water Board staff within thirty (30) days following completion of all individual project construction activities.
Report Contents	**1.** Status of storm water Notice of Termination(s), if applicable. **2.** Status of post-construction storm water BMP installation. **3.** Pre- and post-photo documentation of all individual project activity sites where the discharge of dredge and/or fill/excavation was authorized. **4.** An updated monitoring schedule for mitigation for temporary impacts to waters of the state during the post-discharge monitoring period, if applicable.

Report Type 6	**Request for Notice of Project Complete Letter**
Report Purpose	Notify Central Valley Water Board staff that construction and/or any post-construction monitoring is complete, or is not required, and no further individual project activity is planned.
When to Submit	Must be received by Central Valley Water Board staff within thirty (30) days following completion of all individual project activities.
Report Contents	**Part A: Mitigation for Temporary Impacts** **1.** A report establishing that the performance standards outlined in the restoration plan have been met for Project site upland areas of temporary disturbance which could result in a discharge to waters of the state. **2.** A report establishing that the performance standards outlined in the restoration plan have been met for restored areas of temporary impacts to waters of the state. Pre- and post-photo documentation of all restoration sites.

	Part B: Post-Construction Storm Water BMPs **3.** Date of storm water Notice of Termination(s), if applicable. **4.** Report status and functionality of all post-construction BMPs.

Part C – Conditional Notifications and Reports

Report Type 7	**Accidental Discharge of Hazardous Material Report**
Report Purpose	Notifies Central Valley Water Board staff that an accidental discharge of hazardous material has occurred.
When to Submit	Within five (5) working days following the date of an accidental discharge. Continue reporting as required by Central Valley Water Board staff.
Report Contents	**1.** The report shall include the OES Incident/Assessment Form, a full description and map of the accidental discharge incident (i.e. location, time and date, source, discharge constituent and quantity, aerial extent, and photo documentation). If applicable, the OES Written Follow-Up Report may be substituted. **2.** If applicable, any required sampling data, a full description of the sampling methods including frequency/dates and times of sampling, equipment, locations of sampling sites. **3.** Locations and construction specifications of any barriers, including silt curtains or diverting structures, and any associated trenching or anchoring.

Report Type 8	**Violation of Compliance with Water Quality Standards Report**
Report Purpose	Notifies Central Valley Water Board staff that a violation of compliance with water quality standards has occurred.
When to Submit	The Enrollee shall report any event that causes a violation of water quality standards within three (3) working days of the noncompliance event notification to Central Valley Water Board staff.

Report Contents	The report shall include: the cause; the location shown on a map; and the period of the noncompliance including exact dates and times. If the noncompliance has not been corrected, include: the anticipated time it is expected to continue; the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and any monitoring results if required by Central Valley Water Board staff.

Report Type 9	**In-Water Work and Diversions Water Quality Monitoring Report**
Report Purpose	Notifies Central Valley Water Board staff of the start and completion of in-water work. Reports the sampling results during in-water work and during the entire duration of temporary surface water diversions.
When to Submit	Forty-eight (48) hours prior to the start of in-water work. Within three (3) working days following the completion of in-water work. Surface water monitoring reports to be submitted two (2) weeks on initiation of in-water construction and during entire duration of temporary surface water diversions. Continue reporting in accordance with the approved water quality monitoring plan or as indicated in XIV.C.3.
Report Contents	As required by the approved water quality monitoring plan or as indicated in XIV.C.3.

Report Type 10	**Modifications to Project Report**
Report Purpose	Notifies Central Valley Water Board staff if the Project, as described in the application materials, is altered in any way or by the imposition of subsequent permit conditions by any local, state or federal regulatory authority.
When to Submit	If Project implementation as described in the application materials is altered in any way or by the imposition of subsequent permit conditions by any local, state or federal regulatory authority.
Report Contents	A description and location of any alterations to Project implementation. Identification of any Project modifications that will interfere with the Enrollee's compliance with the Order.

Report Type 11	**Transfer of Property Ownership Report**
Report Purpose	Notifies Central Valley Water Board staff of change in ownership of the Project.
When to Submit	At least 10 working days prior to the transfer of ownership.
Report Contents	**1.** A statement that the Enrollee has provided the purchaser with a copy of this Order and that the purchaser understands and accepts:

	a. the Order's requirements and the obligation to implement them or be subject to administrative and/or civil liability for failure to do so; and **b.** responsibility for compliance with any long-term BMP maintenance plan requirements in this Order. **2.** A statement that the Enrollee has informed the purchaser to submit a written request to the Central Valley Water Board to be named as the enrollee in a revised order.

Report Type 12	**Transfer of Long-Term BMP Maintenance Report**
Report Purpose	Notifies Central Valley Water Board staff of transfer of long-term BMP maintenance responsibility.
When to Submit	At least 10 working days prior to the transfer of BMP maintenance responsibility.
Report Contents	A copy of the legal document transferring maintenance responsibility of post-construction BMPs.

SIGNATORY REQUIREMENTS

All Documents Submitted In Compliance With This Order Shall Meet The Following Signatory Requirements:

1. All applications, reports, or information submitted to the Water Board must be signed and certified as follows:

    a) For a corporation, by a responsible corporate officer of at least the level of vice-president.
    b) For a partnership or sole proprietorship, by a general partner or proprietor, respectively.
    c) For a municipality, or a state, federal, or other public agency, by either a principal executive officer or ranking elected official.

2. A duly authorized representative of a person designated in items 1.a through 1.c above may sign documents if:

    a) The authorization is made in writing by a person described in items 1.a through 1.c above.
    b) The authorization specifies either an individual or position having responsibility for the overall operation of the regulated activity.
    c) The written authorization is submitted to the Regional Water Board Staff Contact prior to submitting any documents listed in item 1 above.

3. Any person signing a document under this Section shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

Central Valley Water Board
Western Placer County Habitat Conservation Program/Natural Communities Conservation Plan
Programmatic General Permit – Notice of Intent

Section 1: Enrollee and Agent Information		
	Enrollee:	**Agent:**
Company/ Agency Name:		
Name of Contact:		
Title:		
Address:		
City, State, Zip:		
Phone Number:		
Email Address:		

Section 2: Other Agency Permits/ Licenses/ Agreements/ Plans/ Email correspondence (attach application if final action not yet taken):				
Agency:	**Have you applied?:**	**If yes, have you received the permit?:**	**Permit type:**	**ID number:**
□ **HCP/NCCP**	**Y☐ N☐**	**N/A**		
□ **CDFW**	**Y☐ N☐**	**Y☐ N☐**		
□ **Other Permits**	**Y☐ N☐**	**Y☐ N☐**		
□ **SWPPP**	**Y☐ N☐**	**Y☐ N☐**		

Section 3: Project Information				
Project Name:				
Latitude:	**Longitude:**	**Section(s):**	**Township(s):**	**Range(s):**
Project Address: Street:				
City:	**Zip Code:**	**County:**	**APN:**	
Construction Timeframe (Provide approximate start and end dates):				

Section 3: Project Information

Project Description/Purpose: (cont.)

Section 4: Avoidance, Minimization and Cumulative Impacts

☐ **Western Placer County HCP/NCCP AMM Compliance Document attached**

Avoidance and Minimization:

Cumulative Impacts:

Section 5: Temporary and Permanent Impact Information

Temporary Impacts: Yes ☐ No ☐
If yes, describe activities resulting in temporary impacts and attach the restoration plan.

Total temporary impacts:_____acre(s) linear feet

Permanent Impacts: Yes ☐ No☐
If yes, describe activities resulting in permanent impacts.

Total permanent impacts: acre(s) linear feet

Table 1: Receiving Water(s) Information					
Impact Site ID	Waterbody Name	Impacted Aquatic Resource Type[1]	Receiving Waters	Beneficial Uses	303d Listing Pollutant(s)

Table 2: Individual Direct Impact Information									
Impact Site ID	Latitude	Longitude	Direct Impact Dimensions	Fill			Excavation		
				Acres	Cubic Yards	Linear Feet	Acres	Cubic Yards	Linear Feet
			Temporary						
			Permanent						
			Temporary						
			Permanent						
			Temporary						
			Permanent						
			Temporary						
			Permanent						
			Temporary						
			Permanent						

[1] List impacted aquatic resource type as either wetland, vernal pool, lake, bay/estuary, stream channel, or riparian zone if possible.

Table 2: Individual Direct Impact Information							
Total Temporary							
Total Permanent							

Table 3: Fill and Excavation Quantities					
Fill: Indicate the amount (cubic yards) and type of fill material to be discharged/installed in waters of the state:			**Excavation:** Indicate the amount (cubic yards) and type of fill material to be removed from waters of the state:		
Impact Site ID	**Type of Material** (soil, concrete, steel, rock, etc)	**Amount** (cubic yards)	**Impact Site ID**	**Type of Material** (soil, concrete, steel, rock, etc)	**Amount** (cubic yards)

Section 6: Documentation		
Check any of the following documents that are applicable to your Project and attach copies to your NOI:		
☑ **Pre-project photographs**	□ **Other agency applications and correspondence listed**	□ **Aquatic Resource Delineation report submitted to the USACE**
□ **Additional pages and/or supplemental information**	□ **Temporary impact restoration plan**	□ **Map of at least 1:24000 (1" = 2000') detail of proposed discharge site**

Section 7: Enrollee and Agent Signature			
I hereby designate and authorize the agent/consultant identified in Section 1 to act on my behalf in the processing of this Notice of Intent, and to furnish, upon request, supplemental information in support of this notice:			
Enrollee Name		**Enrollee Signature**	
I certify that the information provided on this form and all attachments related to this project are true and accurate to the best of my knowledge:			
Enrollee Name		**Enrollee Signature**	
Agent Name		**Agent Signature**	

Submit the completed Notice of Intent, attachment and fees to the Central Valley Water Quality Control Board, Sacramento Region.

For Internal Water Board Use	
Reviewer	
Date Received	
Reg. Measure ID	
WDID	
Check #	

Notice of Intent Instructions

The Enrollee seeking authorization under this Order is required to submit a complete Notice of Intent (NOI) form to the Central Valley Water Quality Control Board (Central Valley Water Board), Sacramento Region. A map showing the Western Placer County Habitat Conservation Plan/Natural Communities Conservation Plan jurisdictional boundaries is located in Attachment A of this Order.

To avoid project delays, submit the NOI concurrently with the CARP application. Within 30 days of NOI receipt, the Central Valley Water Board shall determine if the application is complete. If the application is complete, within 45 days of NOI receipt, the Central Valley Water Board will issue a Notice of Applicability (NOA), informing the Permittee that the proposed activity qualifies for authorization. **If an NOA is not issued by Central Valley Water Board staff within 45 days from NOI receipt, the Permittee may proceed with the project according to all applicable Order conditions.**

Definitions

Consider the following definitions while completing the NOI:

Permanent aquatic resource impacts means permanent loss of aquatic resource area or resource function resulting from a discharge of dredged, excavated, or fill material that changes an aquatic area to dry land or changes the bottom elevation or dimensions of a waterbody, or changes the surface elevation or dimensions of a wetland.

Temporary aquatic resource impacts means temporary impacts to aquatic resources (e.g., waters temporarily filled, excavated, or drained) where the area, contours, and uses of the impacted aquatic resource is typically restored to pre-project conditions within one year of disturbance. However, the Water Board may determine on a project specific basis that specific time frames for restoration must be imposed to avoid temporal loss which would otherwise be included in permanent loss.

Form Instructions

The information below is required pursuant to California Water Code section 3861(c)(3):

Section 1: Enrollee and Agent Information

Enrollee Company, Contact Name and Title: Provide the full, legal company name of the Enrollee or responsible party. Most commonly, the Enrollee is the property and/or facility owner. If the Enrollee is an individual and not a company, indicate that a company name is not applicable. If the Enrollee is an agency, company, corporation or other organization, a contact name (First, Middle Initial, Last) of the main representative of the company and their title must be provided. The Enrollee will be the entity or individual responsible for compliance with the Clean Water Act, California Water Code, applicable Water Quality Control Plans and Order Conditions.

Enrollee Contact Information: Telephone number, email address, and the company's mailing address (not the project address) including the street, city, state

and zip code must be provided.

Consultant/Agent Company, Contact Name and Title: The agent's role is to oversee the processing of the NOI and to make the day-to-day decisions regarding the NOI. It is not a requirement to have an agent. If you choose to be represented by an agent, provide the agent's information in Section 1 of the form. If you choose to not be represented by an agent leave this Section blank.

Consultant/Agency Contact Information: Telephone number, email address, and the company's mailing address (not the project address) including the street, city, state and zip code must be provided.

Section 2: Other Agency Permits/ Licenses/ Agreements/ Plans/ Email Correspondence

Agency: Check boxes of other agencies requiring consultation for this project

Have you applied?:

Check Yes (Y): If you have already applied to this agency. If so, include a signed copy of the application with this NOI.
Check No (N): If you have not yet sent in an application to this agency. You must send the Central Valley Water Board the application to the agency for this project within 14 days of applying to this agency.

If yes, have you received the permit?:

Check Yes (Y): If you have received the permit, attached the permit to this NOI.
Check No (N): If you have not yet received the permit, you must send the Central Valley Water Board the permit from the agency for this project within 14 days of issuance.

Permit Type: List which permit applying to.

ID Number: Include any ID Numbers provided by agency or leave blank if the project has not yet been assigned an ID Number.

Section 3: Project Information

Project Name: Give the project a name. The Project Name will be used in all correspondence referencing the project. Be sure this Project Name is consistent with other agency applications for the same project, and is consistent on all maps, drawings and reports. Project Name should be clearly relevant to the Project (e.g., Blue Creek Bridge Project; Jones Subdivision Road Widening Project).

Project Location: List the coordinates (latitude and longitude) for the center point of your project in degrees, minutes, seconds (approximate location is acceptable). Assistance in determining a project's coordinates is widely available through various

free online services or your local library. Also include the section(s), township(s), and range(s) that the project is located within.

Project Address: Provide the street address of the project location. If the proposed project does not have a physical street address, be as descriptive as possible in the street address line. For example, “Leisure Town Rd., 5.5 miles south of the intersection of I-80 and Leisure Town Rd”.

APN: Provide the Assessor’s Parcel Number.

Project Construction Timeframe: Provide the estimated start and end dates for the proposed project.

Project Description/ Purpose: Provide a detailed, technically accurate narrative description of the proposed project purpose, project design, all activities planned to complete the design, and total impacts, including area of ground disturbance and areas of impact to all aquatic resources on the site (i.e., any and all streams, wetlands, lakes, ponds, beaches, shorelines, etc.). Discuss plans to dewater project areas, pour of wet concrete, hydroseed, remove riparian trees, and disposal methods for excavated material.

Section 4: Avoidance, Minimization and Cumulative Impacts

Avoidance and Minimization: Describe steps taken to avoid impacts to waters and measures incorporated into the project design to minimize loss of, or significant adverse impacts to, beneficial uses of waters of the state, including on-site restoration of the project area. If the effects of impervious surfaces will be minimized through implementation of Low Impact Development treatments, describe those minimization treatments. List the applicable HCP/NCCP avoidance and minimization measures to the project.

Cumulative Impacts: Include a discussion of any potential cumulative impacts. Provide a brief description, including estimated adverse impacts of any projects implemented by the project Enrollee within the last five years or planned for implementation by the Enrollee within the next five years that are in any way related to the proposed activity or that may impact the same receiving water body(ies) as the proposed activity. For the purpose of this item, the waterbody extends to a named source or stream segment identified in the relevant Regional Water Quality Control Plan (Basin Plan).

Section 5: Temporary and Permanent Impact Information

Temporary Impacts: Check yes if your project results in temporary impacts to waters of the state. Provide the total temporarily impacted area in acres, to the nearest thousandths of an acre. Also state linear feet of impacts, to the nearest whole foot; this quantity must match the sum of temporary impact quantities listed in Table 2. Attach a restoration plan meeting all Order conditions with your NOI.

Permanent Impacts: Check yes if your project results in permanent impacts and provide the total permanently impacted area in acres, to the nearest thousandths of an acre; and linear feet, to the nearest whole foot; this quantity must match the sum of permanent impact quantities listed in Table 2.

Table 1: Receiving Water(s) Information: List each aquatic resource impact site.

Impact Site ID: Identify the impact site with a Site ID; Site IDs should correspond to those used in project maps and other agency application materials.

Waterbody Name: List the waterbody name found in the basin plan. If the impact Site ID occurs in an unnamed waterbody state "unnamed tributary" to either the next unnamed tributary or the named receiving waters. Contact Central Valley Water Board staff for basin plan maps or general assistance completing this Section, if needed.

Impacted Aquatic Resource Type: For each impact Site ID, identify the impacted aquatic resource type from the following list: Lake, Bay/Estuary, Riparian Zone, Stream Channel, Vernal Pool or Wetland. (More refined or precise resource classifications may be used in Project plans and related documents.)

Receiving waters: List the first downstream waterbody with beneficial use designation in the Water Board basin plan. For more information see the Central Valley website:
(https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/#basinplans)
If unknown, indicate UNK and this information will be completed by Water Board staff.

Receiving Waters Beneficial Uses: List the beneficial use designation. Beneficial uses are listed in the Water Board basin plan. For more information see the Central Valley website:
(https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/#basinplans).
If unknown, indicate UNK and this information will be completed by Water Board staff.

303d Listing Pollutant: List pollutants for receiving waters that have a 303d impairment designation, if the water is not listed indicate NA. For more information see the State Water Board website:
(https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml). If unknown, indicate UNK and this information will be completed by Water Board staff.

Table 2: Individual Direct Impact Information: List the following information for each Impact Side ID listed in Table 1.

Impact Site ID: Identify the impact site with a Site ID; Site IDs should correspond to those used in Table 1.

Latitude and Longitude: Provide the center coordinate of the impact site.

Direct Impact Dimensions: Provide the acreage and linear feet of each Impact Site ID impacted by the fill and/or excavation of material, include the volume of material filled and/or excavated to the nearest cubic yard. When the project impacts a shoreline, record the length of shoreline impacted in linear feet. When a project impacts a channel, bed, banks, or adjacent riparian area, record the length of channel impacted in the direction of flow. For polygonal projects that do not have a clear linear aspect (such as transmission line tower foundations), record the distance of the longest line that can be drawn across or through the site. For activities that don't include excavation or filling (such as road grading), enter N/A for cubic yards.

Table 3: Fill and Excavation Quantities: List the type and amount of fill and/or excavation material being placed and/or removed from each Impact Site ID.

Section 6: Documentation

Attach the following documents to your NOI: Use this checklist to confirm the necessary documentation is attached to your NOI. If you determine one of the listed items does not pertain to your project write NA in the corresponding box:

a. **Pre-project photographs:** Include a unique identifier, date stamp, written description of photo details, and latitude/longitude (in decimal degrees) or map indicating location of photo. Successive photos should be taken from the same vantage point to compare pre/post construction conditions.

b. **Other agency correspondence (see NOI Section 3).**

c. **Aquatic Resource Delineation report submitted to the USACE.**

d. **Attach additional pages as needed:** For example, if the requested information does not fit in the space provided on the form, or if you would like to provide supplemental information not requested on the NOI.

e. **Temporary impact restoration and monitoring plan.**

f. **Dewatering Plan.**

g. **Map(s).** Submit maps of sufficient detail to clearly illustrate all project elements, site characteristics, and impacts, with a scale of at least 1:24000 (1" = 2000'). Acceptable map formats, listed in order of preference, are:
   i. **GIS shapefiles:** Shapefiles must depict the boundaries of all project areas, site characteristics, and extent of aquatic resources impacted or avoided. Each shape should be attributed with the extent/type of aquatic resources

impacted. Features and boundaries should be accurate to within 33 feet (10 meters). Identify datum/projection used and if possible, provide map with a North American Datum of 1983 (NAD 83) in the California Teale Albers projection in feet.

ii. **KML files:** Saved from on-line mapping services. Maps must show the boundaries of all project areas and extent/type of aquatic resources impacted. Include URL(s) of maps. If this format is used include a spreadsheet with the object ID and attributed with the extent/type of aquatic resources impacted.

iii. **Other electronic format:** (CAD or illustration format) that provides a context for location (inclusion of landmarks, known structures, geographic coordinates, or USGS DRG or DOQQ). Maps must show the boundaries of all project areas and extent/type of aquatic resources impacted. If this format is used include a table with the object ID and attributed with the extent/type of aquatic resources impacted.

iv. **Physical format:** Aquatic resource maps marked on paper, USGS 7.5-minute topographic maps or Digital Orthophoto Quarter Quads (DOQQ); Original or legible copies are acceptable. Maps must show the boundaries of all project areas and extent/type of aquatic resources impacted. If this format is used include a spreadsheet with the object ID and attributed with the extent/type of aquatic resources impacted.

Section 7: Agent and Enrollee Signature

Please sign and submit to the Central Valley Water Board. An original signature or verified electronic signature is required.

Central Valley Regional Water Quality Control Board

28 August 2025

Michael S. Jewell
Chief, Regulatory Division
United States Army Corps of Engineers
1325 J Street
Sacramento, CA 95814-2922
Michael.S.Jewell@usace.army.mil

ORDER AMENDING GENERAL ORDER NO. R5-2020-0048, WASTE DISCHARGE REQUIREMENTS AND CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION OF THE WESTERN PLACER COUNTY HABITAT CONSERVATION PROGRAM/NATURAL COMMUNITIES CONSERVATION PLAN PROGRAMMATIC GENERAL PERMIT 18; UNITED STATES DEPARTMENT OF THE ARMY CORPS OF ENGINEERS, (WDID#5A31CR00534A1), PLACER COUNTY

This Order responds to the 11 June 2025 request for an amendment of General Order No. R5-2020-0048, Waste Discharge Requirements and Clean Water Act Section 401 Water Quality Certification of the Western Placer County Habitat Conservation Program/Natural Communities Conservation Plan (HCP/NCCP) Programmatic General Permit 18 (WDID#5A31CR00534). The original General Order was issued on 16 October 2020. The requested amendment is hereby approved. The original General Order is therefore amended as described below. Please attach this document to the original General Order.

AMENDMENT:
The United States Department of the Army, Corps of Engineers (USACE) is requesting a time extension of the General Order to coincide with the reissuance of USACE's Programmatic General Permit 18 (PGP 18): Minimal Impact Covered Activities Under the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan.

The General Order is amended to be valid for the term authorized under USACE's PGP 18. The General Order is not valid if coverage under PGP 18 has expired or has been terminated by USACE.

APPLICATION FEE RECEIVED:
No fee was required for this amendment.

CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD CONTACT:
Nicholas Savino, Environmental Scientist
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670-6114
Nicholas.Savino@waterboards.ca.gov

PUBLIC NOTICE:
The Central Valley Water Board provided public notice of the amendment to the General Order pursuant to California Code of Regulations, title 23, section 3858 and Water Code section 13167.5 from 20 June 2025 to 11 July 2025. The Central Valley Water Board did not receive any comments during the comment period.

WATER QUALITY CERTIFICATION:
I hereby issue an Order amending the existing General Order No. R5-2020-0048, Waste Discharge Requirements and Clean Water Act Section 401 Water Quality Certification of the Western Placer County Habitat Conservation Program/Natural Communities Conservation Plan (HCP/NCCP) Programmatic General Permit 18 (WDID#5A31CR00534A1). All other conditions and provisions of the original General Order and any previously approved amendments remain in full force and effect, except as modified based on the conditions of this Order. Failure to comply with the terms and conditions of the original General Order, previously approved amendments, or of this Order may result in suspension or revocation of the General Order.

Anne Walters
Digitally signed by Anne Walters
Date: 2025.08.28 14:04:13 -07'00'
Water Boards

Patrick Pulupa
Executive Officer

cc: [Via email only]

Maya Bickner (SPK-2005-00485)
United States Army Corps of Engineers
Sacramento District Office
Regulatory Division
maya.a.bickner@usace.army.mil

Joseph Morgan
U.S. Environmental Protection Agency, Region 9
morgan.joseph@epamail.epa.gov

United States Environmental Protection Agency
R9CWA401@epa.gov

Gregg McKenzie
Placer County Conservation Program
GAMckenz@placer.ca.gov

Theresa Johnson
Placer County Conservation Program
tjohnson@placer.ca.gov

CWA Section 401 WQC Program
Division of Water Quality
State Water Resources Control Board
StateBoard401@waterboards.ca.gov

Richard McHenry
CA Sportfishing Protection Alliance
RMcHenry@calsport.org