Appendix J. Existing Conservation Objectives from Other Plans

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

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1.0 Introduction

The Conservation Strategy, in conjunction with the Central Valley Flood Protection Plan (CVFPP), geographically overlaps with multiple regional and collaborative conservation plans that have been implemented or are planned for the Sacramento and San Joaquin Valleys. Regional planning efforts such as the Conservation Strategy are most effective when coordinated with similar programs and plans, in terms of both cost efficiency and ecological benefit. For example, knowledge gained through implementation of existing plans has refined the Conservation Strategy's objectives and approaches. Additionally, during strategy implementation, collaboration with other planning efforts will provide greater opportunities for effective, integrated, landscape-level conservation. This could support achievement of individual plans' important ecological objectives, such as improving habitat connectivity and increasing the size of habitat preserves. In other words, the collaborative approach will allow the Conservation Strategy to contribute to the shared objectives of the other plans while meeting its own objectives.

The purpose of this appendix is to describe completed and ongoing planning efforts that have regional, geographically based, or quantifiable conservation measures that may be relevant to the Conservation Strategy. All of the plans and programs described overlap at least partially with the Systemwide Planning Area (SPA). The list presented herein is not comprehensive, but provides examples of efforts that were considered in developing the Conservation Strategy. In this appendix, completed planning efforts are summarized first, followed by those that are in progress. Potential relationships between these plans or programs and the Conservation Strategy are summarized in Table 1-1. Some programs, such as efforts to identify total maximum daily loads or implement Integrated Regional Water Management Plans, may support conservation work, but their objectives are dissimilar to those of the Conservation Strategy (i.e., focused on meeting water quality standards), so were not included.

This appendix is not intended to present an analysis of each plan in detail. Rather, the intent is to identify areas of potential overlap between relevant plans and the Conservation Strategy. As the Conservation Strategy is implemented, potentially synergistic areas and areas of possible conflict between the Conservation Strategy and individual plans can continue to be identified.

This appendix supports and recognizes considerations that will be essential as the Conservation Strategy is implemented. Specifically, this appendix:

- efficiently uses current information to inform the Conservation Strategy regarding potential conservation goals;

- recognizes that multiple conservation plans and collaborative planning efforts have been completed, are in development, or are being implemented:
    - in whole or in part, the plans address many of the targeted species and habitats that occur in the SPA, and
    - the plans help identify conservation needs and priorities in the flood risk management system;
- highlights potential conservation partnerships for the California Department of Water Resources (DWR) in implementing the Conservation Strategy, by:
    - describing opportunities to share costs on conservation projects and
    - describing opportunities for DWR to simultaneously meet its own conservation goals and contribute to plans or programs through specific projects; and
- identifies completed conservation planning efforts, from which "lessons learned" can be applied to Conservation Strategy implementation

Table 1-1. Summary of Relationships of Conservation Strategy to Conservation Objectives from Other Plans[1]

Plan Name	Selected Habitat Targets from Other Conservation Plans				Selected Species Targets from Other Conservation Plans													Geographic Overlap
	Riparian/SRA	Wetland	Seasonal floodplain	Riverine aquatic	Delta button - celery	Slough thistle	Salmonids	Green sturgeon	Giant garter snake	VELB	Western yellow-billed cuckoo	Bank swallow	Swainson's hawk	Least Bell's vireo	Greater sandhill crane	California black rail	Riparian brush rabbit	Riparian woodrat	Systemwide Planning Area
Natomas Basin HCP		+							+	+		+	+						++
San Joaquin County Multi-Species HCP and Open Space Plan	+	+			+	+		+	+	+	+	+	+		+	+	+	+	+
PG&E O&M HCP	+	+	+	+	+	+			+	+		+	+				+	+	++
East Contra Costa County HCP/NCCP	+	+							+				+						+
San Joaquin River Restoration Program	+		++	++			++												++
Central Valley Project-State Water Project OCAP and Associated BOs	+		+	++			++	+											++
Ecosystem Restoration Program	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++

Table 1-1. Summary of Relationships of Conservation Strategy to Conservation Objectives from Other Plans[1]

Plan Name	Selected Habitat Targets from Other Conservation Plans				Selected Species Targets from Other Conservation Plans													Geographic Overlap
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Central Valley Project Improvement Act Programs	++		+	++			++		+	+	+	+	+	+			+	+	++
Central Valley Joint Venture	++	++									++	++	++	++	++	++			++
Cosumnes River Preserve Management Plan	+	+	++	+			++		+	+			+	+	+				+
Sacramento River NWR CCP	++	+	+	+			+		+	+	+	+	+	+					+
Sacramento, Delevan, Colusa, and Sutter NWR CCP/EA	+	+	++	+			+		+		+		+		+				+
Regional Conservation Planning Efforts in Progress																			
California EcoRestore	++	++	++	++	++	+	++	+	++	+	++	+	++	+	+	+	+	+	++
Solano Multi-Species HCP	+	+		+			+	+	+	+			+			+			+

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South Sacramento HCP	+	+	+	+					+	+			+		+				+
Butte Regional Conservation Plan	+	+	+	+			+	+	+	+	+	+	+		+	+			+
Yuba-Sutter Regional Conservation Plan	+	+					+		+	+	+	+	+		+	+			+
Yolo HCP/NCCP	++	++							+	+	+	+	+	+					+
Placer County Conservation Plan	+	+		+			+		+	+	+	+	+			+			+
Butte Sink, Willow Creek-Lurline, and North Central Valley WMA CCP	+	+		+															+

Table 1-1. Summary of Relationships of Conservation Strategy to Conservation Objectives from Other Plans[1]

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Recovery Plan for Sacramento River Winter-Run Chinook Salmon and Central Valley Spring-Run Chinook Salmon ESUs and Central Valley Steelhead DPS	++		++	++			++												++
DWR's Oroville FERC license	+	+	+	++			++		+	+									+
Plans Identifying Specific Geographic Areas without Quantifying Conservation Measures																			
Revised Draft Recovery Plan for the Giant Garter Snake		++							+										++
Draft Recovery Plan for the Least Bell's Vireo	++													+					+

Table 1-1. Summary of Relationships of Conservation Strategy to Conservation Objectives from Other Plans[1]

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VELB Recovery Plan	++									++									++
Bank Swallow Recovery Plan	+	+	+	+								++							++
Bank Swallow Conservation Strategy for California	+	+	+	+								++							++
California Red-Legged Frog Recovery Plan	+	+	+	+															+
Recovery Plan for Upland Species of the San Joaquin Valley, California	+																++	++	+
The Nature Conservancy Sacramento River Project	++	+	+	++			++			++	++	++	+	++					++
Sacramento River Conservation Area Forum	++	+	+	+			++			++	++	++	+	++					++

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CMP for the Sacramento River Wildlife Area	++	++	++	++			+	+	+	+	+	+							++
Yolo Bypass Wildlife Area LMP	++	++	++	+			++		++		+		++						+
California Water Plan	+	+	+	+															++
State Water Resources Control Board Plans				+															+

Key:
BO = biological opinion
CBDP = CALFED Bay-Delta Program
CCP = Comprehensive Conservation Plan
CMP = Comprehensive Management Plan
CVFPP = Central Valley Flood Protection Plan
DPS = Distinct Population Segment
DWR = California Department of Water Resources
EA = Environmental Assessment
ESU = Evolutionarily Significant Unit
FERC = Federal Energy Regulatory Commission
HCP = Habitat Conservation Plan
LMP = land management plan
NCCP = Natural Communities Conservation Plan
NWR= National Wildlife Refuge
OCAP = operations criteria and plan
O&M = operations and maintenance
PG&E = Pacific Gas and Electric Company
SRA = shaded riverine aquatic
VELB = valley elderberry longhorn beetle
WMA= Wildlife Management Area

Notes:
[1] Magnitude of relationship between CVFPP and other conservation plan or program specified as follows:
+ A probable or potential relationship exists. The Conservation Strategy is not likely to significantly contribute to the other conservation plan's conservation objectives, or the conservation target is a secondary focus of the conservation plan. For geographic overlap, there is a minor spatial overlap between the conservation plan area and one of the CVFPP planning boundaries.
++ A significant relationship exists. The Conservation Strategy could significantly contribute to the other conservation plan's conservation objectives. For geographic overlap, there is a large spatial overlap between the conservation plan and one of the CVFPP planning boundaries.

2.0 Review of Plans

This section summarizes various regional conservation planning efforts, including the following:

- Completed regional conservation planning efforts
- Regional conservation planning efforts in progress
- Plans that identify specific geographic areas but do not provide quantifiable conservation measures

2.1 Completed Regional Conservation Planning Efforts

Completed regional conservation planning efforts include several Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs), large-scale conservation programs, and refuge Comprehensive Conservation Plans (CCPs). These efforts, including goals and measurable objectives, are described below.

2.1.1 Natomas Basin Habitat Conservation Plan

The Natomas Basin Conservancy (TNBC), by implementing the Natomas Basin Habitat Conservation Plan (NBHCP), proposes to acquire 8,750 acres of mitigation lands to benefit giant garter snake (*Thamnophis gigas*), bank swallow (*Riparia riparia*), and Swainson's hawk (*Buteo swainsoni*) (City of Sacramento et al. 2003). The NBHCP supports applications for incidental take authorizations under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA). The NBHCP intends to create a system of reserves, with both wetland and upland components, that support viable populations of giant garter snakes, Swainson's hawks, and other species covered by the HCP (covered species). The overall goals of the NBHCP are as follows:

- Establish and manage, in perpetuity, a biologically sound and interconnected habitat-reserve system that mitigates impacts to covered species resulting from covered activities and provides habitat for existing and new viable populations of covered species.
- Implement an adaptive management program that responds to changing circumstances affecting covered species and their habitats.
- Preserve open space and habitat that may also benefit local, nonlisted, and transitory wildlife species not identified within the NBHCP.
- Ensure that direct impacts of authorized development upon covered species are avoided or minimized to the maximum extent practicable.

To achieve the above goals, the NBHCP identified the following objectives:

- Minimize conflicts between wildlife and human activities, including conflicts resulting from airplane traffic, roads and automobile traffic, predation by domestic animals, and harassment by people.

- Maintain and operate flood control, irrigation, and drainage facilities in a manner that minimizes take of covered species and promotes vegetative cover that enhances habitat values for covered species, consistent with relevant water agencies' legal obligations.

- Ensure connectivity between TNBC reserves to minimize habitat fragmentation and species isolation. Connections between reserves will generally take the form of common property boundaries between reserves, waterways (primarily irrigation and drainage channels) passing between reserves, or an interlinking network of water supply channels or canals.

- Within individual TNBC reserves, provide a mosaic of habitats that support both wetland and upland species and are configured to support species that use both types of habitat.

- Implement monitoring programs with qualitative or quantitative monitoring methods to evaluate management objectives and strategies for the reserve system.

- Increase the diversity and abundance of covered species on reserve lands.

- Revise the reserve design and management based on the most current biological data.

For the giant garter snake, approximately 50 percent of acquired lands would be in rice production, 25 percent enhanced as managed marsh, and 25 percent as upland habitat. The proportion of marsh habitat may be increased to as much as 75 percent of mitigation lands if certain conditions are met. Approximately 80 percent of the lands would be preserved in the basin and 20 percent of lands may be preserved outside the basin. The plan identifies the system of agricultural water supply and drainage channels maintained and operated by the U.S. Bureau of Reclamation (USBR) District 1000 and the Natomas Central Mutual Water Company as the primary opportunity for creating giant garter snake habitat connectivity between reserves.

Although there is no suitable bank swallow nesting habitat in the Natomas Basin, migrating bank swallows, as well as bank swallows from nearby nesting colonies, could forage in the basin.

For Swainson's hawk foraging habitat, 3,372 acres of high- and moderate-quality upland habitat would be provided within mitigation land reserves. The NBHCP requires that one habitat block within the reserve system be at least 2,500 acres, and that the balance of reserve lands be in habitat blocks that are at least 400 acres (City of Sacramento et al. 2003).

The entire NBHCP planning area is within the SPFC boundary. Conservation Strategy actions may contribute to NBHCP objectives if they result in preserving, restoring, or enhancing giant garter snake aquatic or upland habitat or Swainson's hawk foraging habitat in the Natomas Basin

or in adjacent areas outside the basin (e.g., Knagg's Ranch in Yolo County, the northern Yolo Bypass, or the southern Sutter Bypass). These actions may not directly contribute to the habitat acreage objectives of the NBHCP, but may increase the regional availability and quality of habitat for the species covered by the NBHCP.

2.1.2 San Joaquin County Multi-Species Habitat Conservation Plan and Open Space Plan

The San Joaquin County Multi-Species Habitat Conservation Plan (SJCMSHCP) and Open Space Plan is a county-wide plan for conserving species and their habitats, consistent with CESA and ESA (San Joaquin County Council of Governments [SJCCG] 2000). The SJCMSHCP is also intended to support applications for incidental take authorizations under CESA and ESA. The SJCMSHCP covers 97 plant, fish, and wildlife species, including several riparian- and wetland-dependent species targeted by Conservation Strategy objectives.

The primary goal of the SJCMSHCP is to preserve a variety of habitat types throughout the county, including grasslands and vernal pools, agricultural lands, riparian areas, perennial wetlands, and other aquatic habitats. It will preserve an estimated 100,841 acres of habitat over the plan's 50-year lifespan. Additionally, the SJCMSHCP calls for establishing a 1,200-foot-wide, undeveloped wildlife corridor along much of the San Joaquin River (from Stewart Tract to the Stanislaus/San Joaquin County border). The measureable biological success criteria of the SJCMSHCP are as follows:

- Habitat acquisition and protection through the establishment of preserve lands precisely balances habitat losses permitted under the SJCMSHCP.

- At a minimum, existing habitat quality on SJCMSHCP preserve lands is maintained, and, where possible, demonstrable increases in habitat quality of preserve lands are achieved.

- Populations of covered species on SJCMSHCP preserve lands are stabilized and improved where possible.

The SJCMSHCP planning area includes portions of the SPA, as well as additional areas outside their boundaries. Conservation Strategy actions may include fee simple land acquisitions or easement acquisitions that could preserve riparian and wetland habitat within San Joaquin County; these actions would directly contribute to the conservation goals of the SJCMSHCP. Additionally, the purchase of flood easements or conservation easements as part of Conservation Strategy actions along the San Joaquin River (e.g., to create transitory storage) could contribute to the SJCMSHCP goal of creating an undeveloped wildlife corridor along this reach.

2.1.3 Pacific Gas and Electric Company San Joaquin Valley Operation & Maintenance Habitat Conservation Plan

The Pacific Gas and Electric Company San Joaquin Valley Operation & Maintenance Habitat Conservation Plan (PG&E O&M HCP) is a multi-species HCP for routine O&M activities in the San Joaquin Valley (Jones & Stokes 2006). The plan supports applications for incidental take

authorizations under CESA and ESA. The biological goal of the plan is to contribute to the conservation of natural communities and their associated covered species in the planning area. The targeted natural communities are wetlands, woodlands, grasslands, woody riparian habitat, and upland scrub.

Three biological objectives were identified by the HCP:

1. Acquire, protect, manage, and maintain lands for the benefit of covered species to achieve compensation for project habitat effects.

2. Locate compensation lands within regions where project effects occur.

3. Purchase or dedicate land near other preserved areas to maximize the conservation values of the land and assist in meeting land protection goals of existing recovery plans.

The PG&E O&M HCP identifies 30 avoidance and minimization measures designed to reduce effects on species, and compensation to offset effects that cannot be avoided or minimized. To compensate for habitat loss in the 276,350-acre plan area, temporary effects will be mitigated at a ratio of 0.5:1 (affected area: mitigation area), and permanent effects will be mitigated at a ratio of 3:1 (see Jones & Stokes 2006). Compensation will occur by means of several mechanisms, including placement of conservation easements on existing PG&E lands, purchase of high-quality natural lands, purchase of credits from existing mitigation banks, and purchase of conservation easements from willing sellers. Total habitat mitigation is expected to require approximately 1,350 acres over the 30-year plan. The PG&E O&M HCP covers 23 wildlife and 42 plant species, including aquatic and riverine species such as the valley elderberry longhorn beetle (VELB; *Desmocerus californicus dimorphus*), giant garter snake, Swainson's hawk, bank swallow, riparian woodrat (*Neotoma fuscipes riparia*), riparian brush rabbit (*Sylvilagus bachmani riparius*), slough thistle (*Cirsium crassicaule)*, and Delta button-celery (*Eryngium racemosum)*. The PG&E O&M HCP identifies specific conservation targets for these covered species.

The PG&E O&M HCP planning area includes portions of the SPFC and the SPA, as well as additional areas outside their boundaries. Conservation Strategy actions that could contribute to PG&E O&M HCP conservation objectives would include efforts that result in preserving, restoring, enhancing, or creating habitat for covered species in the San Joaquin Valley.

2.1.4 East Contra Costa County Habitat Conservation Plan and Natural Communities Conservation Plan

The conservation strategy for the East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan (ECCCHCP/NCCP) includes creating and managing a fully functioning preserve system that will preserve approximately 23,800–30,300 acres of land designated as the urban development area (East Contra Costa County Habitat Conservation Plan Association [ECCCHCPA] 2006). To compensate for habitat loss, the plan also proposes to restore or create approximately 424 to 586 acres (of the initial or maximum urban development areas, respectively) of specific habitats and land cover types. Covered species include the giant

garter snake and Swainson's hawk. Goals of the ECCCHCP/NCCP related to riparian and instream habitats include the following:

- Preserve streams and riparian woodland/scrub in the inventory area.
- Enhance riparian woodland/scrub to promote native biological diversity and habitat heterogeneity.
- Maintain and enhance instream aquatic habitat for covered species and native fish.
- Restore streams and riparian woodland/scrub.

Measureable objectives of the ECCCHCP/NCCP related to riparian and instream habitats include the following:

- Protect a minimum of 5 linear miles of stream to compensate for permanent loss of habitat.
- Acquire riparian/scrub habitat at a ratio of 2:1 (estimated to be 70 acres for maximum urban development area) and protect as part of the preserve system.
- Maintain or increase the cover, width, and connectivity of existing riparian vegetation consistent with current stream and habitat function.
- Promote natural fluvial disturbances (e.g., flooding, sediment deposition, and scour).
- Reduce water temperature and temperature variation.
- Increase inputs of organic matter where appropriate.
- Reduce sediment input and downstream sediment transport and deposition where appropriate.
- Maintain and enhance instream structural diversity, where appropriate.
- Improve stream flow and connectivity for native aquatic wildlife.
- Control or reduce nonnative animals, including bullfrogs and fish.
- Restore at least 20 acres of riparian woodland/scrub in addition to that required above as compensation for habitat loss.
- Replace riparian woodland/scrub at a ratio of 1:1 in the preserve system to compensate for its loss from covered activities (estimated to be 30 acres with maximum urban development area) and restore species richness and diversity, vegetative cover, wildlife habitat function, and hydrologic function.

The ECCCHCP/NCCP contains detailed guidelines for management, enhancement, and restoration techniques for a variety of habitat types, including wetlands, ponds, streams, and riparian woodland. It includes a conservation target of 3,750 acres of habitat for Swainson's hawks.

A portion of the ECCCHCP/NCCP overlaps the SPA in the Sacramento–San Joaquin River Delta (Delta) region of northeastern Contra Costa County. Conservation Strategy actions that could contribute to ECCCHCP/NCCP conservation objectives would include efforts within the western Delta that preserve, restore, enhance, or create habitat for covered species, particularly giant garter snake and Swainson's hawk.

2.1.5 San Joaquin River Restoration Program

The San Joaquin River Restoration Program (SJRRP) emerged from a settlement reached in September 2006 between the U.S. Departments of the Interior and Commerce, the Natural Resources Defense Council, and the Friant Water Users Authority. The settlement ended an 18-year lawsuit that sought sufficient fish habitat in the San Joaquin River below Friant Dam, extending to its confluence with the Merced River. Focal species of the program are fall-run and spring-run Chinook salmon (*Oncorhynchus tshawytscha*) and other native fish species. The main habitat objective of the SJRRP is to restore habitat for Chinook salmon and other species of fish native to the San Joaquin River and its tributaries above the confluence with the Merced River (SJRRP 2009). Specific acreage targets were not included as part of this objective initially, but acreages of rearing habitat required to meet the population target have been identified (SJRRP 2012).

The geographic boundary of the SJRRP is entirely contained within the SPA, from the confluence with the Merced River to approximately Gravelly Ford, and the remainder of the SJRRP area is within the SPA. Conservation Strategy actions that contribute to enhancing, restoring, or creating additional habitat for Chinook salmon and other salmonid species would contribute to the SJRRP objectives. Although the SJRRP focuses on the upper San Joaquin River, Conservation Strategy actions in the lower San Joaquin River and Delta areas may be indirectly beneficial. For example, Conservation Strategy actions may contribute to increased juvenile salmonid production and escapement from the San Joaquin River. Improved passage of spawning adults through lower river reaches would also align with SJRRP objectives. Finally, Conservation Strategy actions that improve seasonal floodplain, shaded riverine aquatic (SRA) habitats, and spawning gravels, or that restore flows and geomorphic processes, could result in the eventual formation of beneficial habitats and support the SJRRP.

2.1.6 Central Valley Project–State Water Project Operations Criteria and Plan and Associated Biological Opinions

USBR's Long-Term Central Valley Operations Criteria and Plan (OCAP) defines the Central Valley Project (CVP) and State Water Project (SWP) and their operations, constraints, and legal requirements (USBR 2004). The National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) developed and published biological opinions (BO) that addressed the potential for OCAP implementation to adversely affect federally listed fish. In response to the jeopardy opinion reached by each BO (i.e., that implementing the OCAP, as proposed, would

jeopardize the continued existence of federally listed species), each agency developed reasonable and prudent alternatives (RPA) to the proposed OCAP that would minimize impacts on federally listed fish (NMFS 2009, 2011; USBR 2004; USFWS 2008). The USFWS BO, which addressed the effects of OCAP implementation on delta smelt (*Hypomesus transpacificus*), was subsequently invalidated in 2011 (USFWS 2011), and a new BO is being written. The NMFS BO and associated RPAs address salmonids, green sturgeon (*Acipenser medirostris)*, and other fish species in the Sacramento and San Joaquin Valleys and Delta.

The NMFS RPAs describe actions that, if implemented, would not jeopardize the continued existence of listed salmonids and green sturgeon. Many of these RPAs focus on maintaining flows in the Sacramento and San Joaquin Rivers and their tributaries to provide suitable habitat conditions for fish (e.g., water temperature and water depth). Several other RPAs focus on restoration of habitat or fluvial-geomorphic processes (e.g., floodplain activation flows, sediment transport, erosion, and deposition) necessary to maintain and regenerate aquatic habitat elements for salmonids and green sturgeon. Specific NMFS RPAs with strong potential links to the Conservation Strategy include the following:

- **Action I.1.3:** Spawning Gravel Augmentation on Clear Creek. This RPA is intended to enhance and maintain previously degraded spawning habitat for spring-run Chinook salmon and steelhead (*Oncorhynchus mykiss*) on Clear Creek below Whiskeytown Reservoir.

- **Action I.6.1:** Restoration of Floodplain Rearing Habitat within the Lower Sacramento River Basin. This RPA requires restoration of at least 17,000–20,000 acres of seasonal floodplain, with appropriate inundation periods and durations to support juvenile salmonid rearing.

- **Action I.6.4:** Improvements to Lisbon Weir. This RPA requires modifications to the Lisbon Weir to improve fish passage.

- **Action I.7:** Reduction of Migratory Delays and Loss of Salmon, Steelhead, and Sturgeon at Fremont Weir and Other Structures in the Yolo Bypass. This RPA requires modifications to the Fremont Weir to reduce fish stranding and improve fish passage.

- **Action III.2.1:** Spawning Habitat Increase and Quality Improvement on the Stanislaus River with Addition of 50,000 Cubic Yards of Gravel by 2014 and with a Minimum Addition of 8,000 Cubic Yards per Year for the Duration of the Project Actions. This RPA requires augmentation of spawning gravel to create suitable redd sites on the Stanislaus River below New Melones Reservoir.

- **Action III.2.3:** Restoration of Freshwater Migratory Habitat for Juvenile Steelhead by Implementing Projects to Increase Floodplain Connectivity and to Reduce Predation Risk during Migration. This RPA requires any one of several potential actions to improve habitat conditions for juvenile steelhead and to reduce predation on juvenile steelhead. Potential actions could include habitat restoration, creation of offstream habitats (e.g., side channels), floodplain restoration, and similar work.

- **Action V:** Fish Passage Program. This RPA describes a series of interrelated near-term and long-term actions, including completion of a feasibility study regarding initiation of salmonid passage around Shasta, Nimbus, Folsom, New Melones, Tulloch, and Goodwin Dams, as well as salmonid spawning and rearing in stream reaches above the reservoirs formed by these dams.

The geographic scope of the NMFS BO includes all current and potential aquatic habitat for salmonids and green sturgeon in the Delta, Sacramento Valley, and San Joaquin Valley—an area that includes and extends beyond the SPA. Because of the significant geographic overlap, Conservation Strategy actions that relate to the aquatic and riparian habitats and restoration of natural river processes (through construction of setback levees, removal of levees and bank revetment, removal of fish passage barriers, and riparian and floodplain habitat restoration, including creation of new flood bypasses) could contribute to the success of several RPA actions. As the Conservation Strategy is implemented, close coordination with the OCAP and the NMFS and USFWS BOs is anticipated.

2.1.7 Ecosystem Restoration Program: Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta, Sacramento Valley and San Joaquin Valley Regions

The Ecosystem Restoration Program (ERP) Implementing Agencies (California Department of Fish and Wildlife [CDFW], USFWS, and NMFS) developed the Conservation Strategy for Restoration of the Sacramento-San Joaquin Valley Regions to guide future environmental restoration in the Sacramento-San Joaquin Delta and the watershed associated with this focus area. This conservation strategy builds upon the lessons learned during Stage 1 of the CALFED Bay-Delta Program (CBDP) Multi-Species Conservation Strategy (MSCS) and identifies ERP goals and conservation priorities and processes for Stage 2 of CALFED and incorporates an adaptive management framework for management decisions.

The approach of ERP is to restore or mimic ecological processes and to increase and improve aquatic terrestrial habitats to support stable, self-sustaining populations of diverse and valuable species. The ERP is guided by six strategic goals with associated conservation priorities that serve as a guide to identify potential restoration actions in the focus area; these include the following:

- Goal 1. Recover endangered and at-risk species and native biotic communities.
- Goal 2. Rehabilitate ecological processes.
- Goal 3. Enhance/maintain harvested species.
- Goal 4. Protect, restore, and/or enhance habitats.
- Goal 5. Prevent/control non-native invasive species. Goal 6. Improve/maintain water and sediment quality. The ERP focus area largely includes both the SPFC and SPA and areas beyond their boundaries, such as San Francisco Bay and Suisun Marsh. As the Conservation

Strategy is implemented, close coordination with the ERP is anticipated. The Conservation Strategy could significantly contribute to the conservation goals of the ERP, given the large overlap in geographic scope and in the conservation goals and targets of the two strategies.

2.1.8 Central Valley Project Improvement Act Programs

The Central Valley Project Improvement Act (CVPIA), signed into law in 1992, mandates changes in CVP management to include fish and wildlife protection, restoration, enhancement, and mitigation. There are a number of programs developed to implement the CVPIA (USBR 2011, 2014), including several interrelated programs whose geographic boundaries overlap the SPA. These programs are:

- Anadromous Fish Restoration Program (AFRP) (Title 34, Section 3406[b][1])
- Habitat Restoration Program (HRP) (Title 34, Section 3406[b][1] "other")
- Program to manage CVP Waters (Title 34, Section 3406[b][2])
- Instream Water Acquisition Program (WAP) (Title 34, Section 3406[b][3])
- Red Bluff Fish Passage Improvement Project (Title 34, Section 3406([b][10])
- Clear Creek Restoration Program (Title 34, Section 3406[b][12])
- Spawning and Rearing Habitat Restoration Program (Title 34, Section 3406[b][13])
- Anadromous Fish Screen Program (AFSP) (Title 34, Section 3406) [b][21])

These programs are described in more detail below.

The goal of the AFRP is to double the natural production of anadromous fish in Central Valley streams. The AFRP covers all species of anadromous fish in the Sacramento and San Joaquin Valleys, including Chinook salmon and steelhead. The AFRP Restoration Plan (USFWS 2001) is guiding the long-term development of the AFRP. The plan relies on the authorities and resources provided by the CVPIA to meet its goals, in cooperation with other California and federal resource management agencies, public and private organizations, and landowners.

The goal of the HRP is to protect and restore fish and wildlife habitat, and to mitigate past fish and wildlife impacts of the CVP that were not already addressed in the Fish and Wildlife Restoration Activities section of the CVPIA. The initial focus of the HRP will be on habitats known to show the greatest decline in quantity and quality since construction of the CVP: riparian habitats, aquatic habitats, alkali desert scrub, wetlands, foothill chaparral, valley-foothill hardwood forests, and grasslands. Stabilizing and increasing the populations of listed and nonlisted native species associated with these habitat types is a related goal of the HRP. The program relies on the authorities and resources provided by the CVPIA to meet its goals, in cooperation with other California and federal resource management agencies, public and private

organizations, and landowners. Types of actions addressed by the HRP include acquiring existing habitat for special-status species affected by the CVP; maintaining, restoring, and enhancing priority habitats for priority species; and conducting studies to determine appropriate actions. Projects completed under the HRP have included riparian restoration at the Sacramento River National Wildlife Refuge (NWR) to benefit VELB and wetland restoration at the Colusa NWR to benefit the giant garter snake.

The CVPIA Program annually manages 800,000 acre-feet of CVP water to either augment instream flows in Clear Creek and the Sacramento, American, and Stanislaus Rivers, or to curtail Delta exports to benefit fish, wildlife, and habitat. The program's primary focus is to improve instream conditions for anadromous fish, primarily salmon and steelhead.

The Instream WAP acquires water from willing sellers to increase flows for fish, in support of the AFRP. The main WAP acquisitions for instream flow augmentation have occurred on San Joaquin River tributaries (the Merced, Tuolumne, and Stanislaus Rivers) and Battle Creek.

The goal of the Red Bluff Fish Passage Improvement Project is to improve fish passage for anadromous fish and green sturgeon at the Red Bluff Diversion Dam. Completed in 2012, the screened pumping plant allows the diversion dam gates to be permanently open allowing for free migration of fish while ensuring continued water deliveries to agricultural lands. Goals of the project include allowing passage of 80–100 percent of adult spring-run Chinook salmon and 50–100 percent of adult green sturgeon, and supplying 115,000 acre-feet of water to the Sacramento NWR.

The goals of the Clear Creek Restoration Program include providing flows to allow sufficient spawning, incubation, rearing, and outmigration habitat for salmon and steelhead, and restoring the stream channel and instream habitat on Clear Creek. Project activities include improving fish passage, reducing erosion in the watershed, restoring the channel, augmenting gravel, managing flows, and implementing adaptive management and monitoring strategies to assess and optimize the effects of project activities.

The goals of the Spawning and Rearing Habitat Restoration Program include increasing the availability of spawning gravel and rearing habitat, which was lost through the construction and operation of CVP dams. Through this program, gravel is augmented annually on the American, Sacramento, and Stanislaus Rivers.

The goal of the AFSP is to protect juvenile anadromous fish from entrainment at priority water diversions throughout the Central Valley and Delta. Objectives of the program include providing funding and/or technical assistance for fish screen projects, assessing fish entrainment at unscreened diversions, supporting screen/diversion research to identify critical factors that result in fish losses at diversions and to develop cost-effective improvements of fish screen designs, and monitoring and evaluating fish screen effectiveness. AFSP projects contribute to the AFRP goal of doubling the natural production of anadromous fish in Central Valley waterways.

Most of the listed CVPIA programs have significant geographic overlap with the SPFC and SPA. Conservation Strategy actions that could contribute to the goals of these programs, most of which focus on anadromous fish and instream habitats, would include removing fish passage barriers, restoring habitat (including SRA habitat), enhancing aquatic habitat (e.g., adding spawning gravels), restoring seasonal floodplains (e.g., by lowering floodplains, constructing setback levees, or constructing new flood bypasses), and restoring natural river processes (e.g., by removing bank revetment and levees where they are no longer functional). Also, conservation-oriented floodway O&M practices could contribute to the AFRP's goal and objectives.

The Clear Creek Restoration Program area has little geographic overlap with the SPA. However, Clear Creek flows into the Sacramento River, and provides important spawning habitat for steelhead and spring-run Chinook salmon. Clear Creek is also the conduit for water delivered to the Sacramento River from the Trinity River and, thus, is strongly linked to the operation of the CVP.

2.1.9 Central Valley Joint Venture

The Central Valley Joint Venture (CVJV) is one of six original joint ventures formed under the North American Waterfowl Management Plan to coordinate regional waterfowl conservation efforts. The venture is a collaborative planning group comprising 21 member agencies (primarily California and federal natural resources management and regulatory agencies), nongovernmental organizations, and one corporation (PG&E). The CVJV Implementation Plan broadened conservation activities to include numerical objectives for habitats that support shorebirds, waterbirds, and riparian songbirds in the Central Valley (CVJV 2006).

CVJV objectives have been developed for bird habitat restoration needs in specific geographic areas, including the American, Butte, Colusa, Delta, San Joaquin, Sutter, and Yolo Basins and Suisun Marsh. These objectives include restoring 10,000 acres of riparian habitat, 12,500 acres of semipermanent wetlands, and 108,527 acres of seasonal wetlands, the majority of which would be located in the SPA. The CVJV focuses on all migratory birds found in the Central Valley, including western yellow-billed cuckoo (*Coccyzus americanus*), bank swallow, least Bell's vireo (*Vireo bellii pusillus*), California black rail (*Laterallus jamaicensis*), Swainson's hawk, and greater sandhill crane (*Grus canadensis tabida*).

The CVJV planning area covers the entire Central Valley, and overlaps the SPFC and SPA as well as areas outside their boundaries (e.g., Tulare Basin) (CVJV 2006). Conservation Strategy actions that result in the expansion of riparian and wetland habitat would make significant contributions to the objectives of the CVJV. Such expansion may result from active habitat restoration, construction of new flood bypasses, construction of setback levees, removal of levees and bank revetment, refinement of O&M practices, and similar actions that would either directly restore bird habitat or restore the fluvial and geomorphic processes that contribute to riparian and wetland habitat formation.

2.1.10 Cosumnes River Preserve Management Plan

The Cosumnes River Preserve Management Plan (CRPMP) describes how the Cosumnes River Preserve will be managed through 2017. The 45,859-acre preserve includes the Cosumnes River and its floodplains and riparian habitat. The plan was developed by several partners, including The Nature Conservancy (TNC), the U.S. Bureau of Land Management, CDFW, Sacramento County, DWR, Ducks Unlimited, and the California State Lands Commission (Kleinschmidt Associates 2008). The CRPMP identifies two overarching goals and numerous subgoals, summarized below.

The overarching goals of the CRPMP are that (1) native biological communities and the resident and migratory species dependent on them are restored and maintained to sustainable conditions and population levels, and (2) compatible uses improve stewardship of the lands in the Cosumnes River watershed. Of the numerous subgoals established by the CRPMP, those relevant to the Conservation Strategy include the following:

- Actively manage the preserve, including implementing the flow augmentation project, collecting physical process data, regularly updating infrastructure databases, and collaborating with regional planning processes.
- Protect the free-flowing Cosumnes River within an ecologically functional landscape.
- Protect, maintain, and restore riparian and floodplain communities, the natural hydrologic processes that sustain the habitat, and the native species that depend on the habitat.
- Maintain and restore a mosaic of freshwater wetland habitats (seasonal and permanent) that support native species.
- Maintain and enhance the population of the giant garter snake in the Badger Creek watershed.
- Restore and maintain a population of fall-run Chinook salmon in the Cosumnes River, with an average annual spawning run of 2,000 adults (10-year average range of 1,000–5,000 adults).

Conservation targets identified by the CRPMP consist of riparian forests, vernal pool grasslands, freshwater emergent wetlands, giant garter snakes, blue oak woodlands, and fall-run Chinook salmon. Quantitative objectives were developed for the subgoals and conservation targets, including the following subset:

- Maintain a landscape that supports natural processes and habitat for the preserve's focal conservation targets consisting of natural lands and suitable agriculture at and surrounding the preserve (100-year floodplain up to Sacramento County's Urban Services Boundary).

- Permanently protect the entire 13,200-acre mapped riparian core area (existing habitat and restorable lands) by securing the remaining 7,450 acres of unprotected land up to Wilton Road.

- Restore an additional 1,000 acres of existing preserve lands to riparian and floodplain habitats by 2018.

- Maintain a minimum of 1,000 acres of seasonal managed ponds and evaluate the need for more managed wetland ponds on a case-by-case basis.

- Create and maintain at least 2,750 acres of flooded agriculture as seasonal wetland habitat for target species (sandhill cranes [*Grus canadensis*] and waterfowl).

- Restore and maintain at least 300 acres of seasonal floodplain habitat for juvenile salmonid rearing.

Conservation Strategy actions related to riparian habitat, as well as restoration of natural fluvial and geomorphic processes that would lead to the recruitment and sustainability of riparian communities, seasonal wetlands, and floodplain habitat, may contribute to the goals of the CRPMP. Additionally, Conservation Strategy actions may contribute to the plan's specific conservation objectives if they help to preserve, restore, or enhance giant garter snake aquatic or upland habitat or salmonid habitat in the Cosumnes River watershed.

2.1.11 Sacramento River National Wildlife Refuge Comprehensive Conservation Plan

The Sacramento River National Wildlife Refuge Comprehensive Conservation Plan (CCP) describes management of the 11,585-acre Sacramento River NWR (USFWS 2005). The NWR consists of 26 units located along both sides of the Sacramento River, stretching 77 miles between Red Bluff and Princeton and contained within the SPA. The refuge supports riparian and agricultural habitats and was established to preserve, restore, and enhance riparian habitat for threatened and endangered species, migratory birds, anadromous fish, and resident species. Riparian forests are being restored in the NWR by converting flood-prone agricultural lands along the Sacramento River in cooperation with TNC, River Partners, and local farmers.

The CCP's goal for habitat restoration and species conservation is to contribute to the recovery of endangered and threatened species and provide a natural diversity and abundance of migratory birds and anadromous fish, through the restoration and management of viable riparian habitats along the Sacramento River. The applicable measureable objectives of the CCP are as follows:

- Prepare and implement site assessment and restoration plans to restore an additional 3,255 acres of riparian vegetation and habitats, as well as maintain existing and newly restored riparian habitat for riparian-dependent species by 2015.

- Promote recruitment of fish and wildlife habitat by investigating riverbank stabilization, Sacramento River NWR levees, and floodplain topography for best management options.

During this investigation, the Sacramento River NWR will consider impacts on public safety, agriculture, and water conveyance. This investigation will be conducted on 11 Sacramento River NWR units, and a written report will be created by 2015.

- Evaluate the response of federally and California-listed threatened and endangered species to habitat restoration projects. Implement eight surveys by 2005 (of least Bell's vireo, VELB, bald eagle [*Haliaeetus leucocephalus*], giant garter snake, bank swallow, western yellow-billed cuckoo, willow flycatcher [*Empidonax traillii*], and Swainson's hawk) and four additional surveys by 2015 (winter-run Chinook salmon, spring-run Chinook salmon, fall-run and late–fall run Chinook salmon, and the Central Valley Evolutionarily Significant Unit [ESU] of steelhead).

- Enhance, restore, and monitor breeding migratory and resident landbird populations to source population levels (40 percent recruitment) through habitat restoration on 3,255 acres by 2015. Source populations are those where recruitment (annual increase) is high enough to replace the local breeding population with a surplus, which can repopulate other areas. Source populations recruit at levels above 35 percent for most species.

- Provide high-quality habitat for native anadromous fish by enhancing and restoring 33.5 miles of SRA habitat for temperature control and future sources of large woody debris by 2015. Where appropriate, enhance or restore floodplain topography and connectivity with the river at 11 units of the Sacramento River NWR by 2015.

The Sacramento River NWR is located within the SPFC and SPA. Conservation Strategy actions could contribute to the conservation goals of the CCP by providing additional habitat for the riparian species managed in the Sacramento River NWR. Such actions may include fee simple land acquisitions or easement acquisitions that could preserve riparian habitat in Sacramento County.

2.1.12 Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment

The Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges Final Comprehensive Conservation Plan and Environmental Assessment (CCP EA) describes management of the 10,819-acre Sacramento NWR, 5,877-acre Delevan NWR, 4,686-acre Colusa NWR, and the 2,591-acre Sutter NWR for the next 15 years (USFWS 2009). The refuges provide and manage habitat for a number of species, including salmonids, giant garter snake, western yellow-billed cuckoo, Swainson's hawk, and greater sandhill crane. The following are goals of the CCP EA that are related to habitat restoration and species conservation:

- Wildlife and Habitat Goal: Conserve, manage, restore, and enhance habitats and associated plant and wildlife species, with an emphasis on supporting an abundance and natural diversity of wintering and migrating waterfowl, shorebirds, birds of prey, and songbirds.

- Threatened and Endangered Species Goal: Conserve, manage, restore, and enhance threatened and endangered species and their habitats, including vernal pool plants and invertebrates, and giant garter snakes.

The following are measureable objectives of the CCP EA related to riparian habitat restoration and species conservation:

- Collectively on the four refuges, 16,914 wetland habitat acres have been actively managed since 2009 to provide 80 to 90 percent seasonally flooded wetlands and 10 to 20 percent summer wetlands. Seasonally flooded wetlands will contain 5 to 50 percent tall emergent cover, more than 50 percent desirable forage plant species cover, and an average water depth of 12 inches (range of 1 to 36 inches). Summer wetlands units will contain 20 to 70 percent cover of desirable submergent or floating-leaved emergent species. At least 50 percent of summer wetland units will have 30 to 80 percent tall emergent cover and average water depths of 24 inches (range of 12–36 inches) during May to October and less than 18 inches during November to April.

- Protect and enhance 581 acres of riparian habitat comprising more than 80 percent native woody vegetation and herbaceous cover by 2014.

- By 2009, actively manage 1,500 acres within the Sutter Bypass portion of Sutter NWR to help prevent excessive accumulation of woody vegetation that may impact floodwater conveyance capabilities.

- By 2014, annually implement best management practices and water management strategies to provide for native fish life cycle needs on the NWRs.

- Provide 11,152 acres (47 percent of the NWRs' total acres) of wetland, vernal pool/alkali meadow, grassland, and riparian habitats as sanctuary (i.e., no public access) for general wildlife use, nesting, sensitive breeding sites, and plant populations by 2009.

The Sacramento, Delevan, Colusa, and Sutter NWRs are located within the SPA. Conservation Strategy actions could contribute to the conservation goals of the CCP EA by providing additional habitat for the species managed in the four refuges. These actions may include fee simple land acquisitions or easement acquisitions that could preserve riparian and wetland habitat in Sacramento County.

2.2 Regional Conservation Planning Efforts in Progress

Regional conservation planning efforts in progress include HCPs and HCP/NCCPs, large-scale conservation programs, and recovery plans. These efforts, and any defined goals and measureable objectives, are described below.

2.2.1 California EcoRestore

California EcoRestore (EcoRestore) will accelerate and implement a comprehensive suite of habitat restoration actions to support the long-term health of the Sacramento–San Joaquin Delta's native fish and wildlife species (EcoRestore 2015). Over the next five years, a broad range of habitat restoration projects will be pursued, including projects to address aquatic, sub-tidal, tidal, riparian, floodplain, and upland ecosystem needs.

California EcoRestore goals related to habitat restoration include more than 30,000 acres of delta habitat restoration and protection, including:

- 3,500 acres of managed wetland created for subsidence reversal and carbon management.
- 9,000 acres of tidal and sub-tidal habitat restoration
- 17,500 acres of floodplain restoration, with more than 500 acres completed.
- 1,000 acres of multi-benefit flood management projects funded with Proposition 1 and 1E grants.

Additional priority restoration projects will be identified through regional and locally-led planning processes facilitated by the Delta Conservancy. Plans will be completed for the Cache Slough, West Delta, Cosumnes, and South Delta. Planning for the Suisun Marsh region is already complete and a process for integrated planning in the Yolo Bypass is underway. The Delta Conservancy will lead the implementation of identified restoration projects.

2.2.2 Solano Multi-Species Habitat Conservation Plan

Like other HCPs, the Solano Multi-Species Habitat Conservation Plan (SMSHCP) establishes a framework for complying with State and federal endangered species regulations while accommodating future urban growth, infrastructure development, and ongoing O&M activities. The plan has a 30-year lifespan and covers approximately 585,000 acres, nearly all of which (577,000 acres) are in Solano County. The SMSHCP planning area extends into Yolo County to encompass facilities maintained by Reclamation District 2068, the Dixon Resource Conservation District, and the Dixon Regional Watershed Joint Powers Agency (JPA). The plan also covers restoration activities along Putah Creek (Solano County Water Agency [SCWA] 2012). The SMSHCP addresses 37 covered species, including some targeted by the Conservation Strategy: salmonids, green sturgeon, VELB, giant garter snake, California black rail, and Swainson's hawk. Covered habitats include riparian habitats, streams, and freshwater marshes.

Implementation of the SMSHCP goals and objectives (SCWA 2012) will result in the establishment of a reserve system that will:

- preserve and manage 13,000 to 15,000 acres of valley floor grassland and vernal pool habitat;

- preserve and manage approximately 59,700 acres of agricultural foraging habitat, 1,000 acres of nesting and associated foraging habitat, and 2,240 acres of grassland/oak savanna habitat for Swainson's hawks and other covered species;

- preserve and manage 50 acres of riparian and 36 acres of freshwater marsh, pond, and seasonal wetland habitat within Priority Watersheds and Drainages;

- restore and manage 75 to 100 acres of coastal salt and/or brackish marsh habitat; and

- restore and manage an additional 175 acres of aquatic habitat and approximately 120 acres of associated upland habitat for giant garter snakes.

The easternmost portions of the SMSHCP planning area, along the Sacramento River and upper portions of the Delta, overlap with the SPA. Given the limited geographic overlap between the two planning efforts, the Conservation Strategy is unlikely to make a significant contribution to the conservation objectives of the SMSHCP; however, it may benefit some of the covered species that would be found in riparian and aquatic habitats in the SCMSHCP planning area and adjacent parts of the SPFC or SPA (e.g., in the Lindsey Slough–Barker Slough–Cache Slough region).

2.2.3 South Sacramento Habitat Conservation Plan

The South Sacramento Habitat Conservation Plan (SSHCP) planning area will encompass approximately 374,000 acres in southern Sacramento County and include the cities of Elk Grove, Galt, and Rancho Cordova (County of Sacramento et al. 2010). Covered habitats will include vernal pools, oak woodlands, grasslands, riparian habitats, wetlands, and aquatic habitats. The plan also proposes to cover 30 species (10 of which are listed as threatened or endangered under ESA or CESA), including the giant garter snake, VELB, Swainson's hawk, and greater sandhill crane. The SSHCP will serve as an NCCP under California's Natural Community Conservation Planning Act, and as an HCP under ESA Section 10.

The strategy for the SSHCP includes requirements to:

- create a reserve system over the permit term that will preserve a minimum of 41,923 acres and restore 1,786 acres of land that will benefit covered species, other native biota, and natural and naturalized land cover types;

- configure the reserve system to protect landscape-level ecological processes necessary for covered species and other native biota;

- integrate the reserve system into the existing network of open space (previously conserved lands) to create a contiguous network of 9,500 acres of natural or naturalized habitats in the urban development area;

- establish preserve linkages within the reserve system that maintain connectivity between preserves in the planning area to sustain and enhance opportunities for genetic exchange and movement of native biota in the planning area;

- guide preservation to primary conservation areas;

- protect streams and creeks in the urban development area through the establishment of stream setbacks; and

- establish a framework for long-term management of the reserve system for the benefit of covered species and other native biota.

The SSHCP planning area has some overlap with the SPA. The focus of the SSHCP is to protect and enhance wetlands (primarily vernal pools) and upland habitats; thus, the Conservation Strategy may not contribute directly to the goals of the SSHCP. However, Conservation Strategy actions would contribute to the overall SSHCP conservation objectives if they result in preserving or restoring aquatic or riparian habitat for covered species, such as giant garter snake, VELB, sandhill crane, and Swainson's hawk.

2.2.4 Butte Regional Conservation Plan

The Butte Regional Conservation Plan (BRCP) will serve as an HCP/NCCP. The plan area will cover 564,203 acres of lowland and foothill oak woodlands in Butte County and all portions of the SPFC and SPA in Butte County (Butte County Association of Governments [BCAG] 2015). Covered habitats include riparian areas, wetlands, and aquatic habitats. The 38 proposed covered species include fishes (e.g., salmonids and green sturgeon), riparian-associated wildlife (e.g., western yellow-billed cuckoo, VELB, bank swallow, and Swainson's hawk), and wetland-associated species (e.g., giant garter snake, greater sandhill crane, and California black rail) that are also Conservation Strategy targets.

The draft plan identifies conservation objectives such as preserving covered species and their natural communities and ecosystems; contributing to the recovery of fish, wildlife, plant, and animal communities and species; and identifying and designating biologically sensitive areas. Measureable objectives in the draft plan include the following:

- Protect 5,650 acres of existing unprotected cottonwood-willow riparian forest and valley oak riparian forest and 720 acres willow scrub in minimum patch sizes of 25 acres along rivers and streams distributed within the planning area.

- Restore 179 acres of cottonwood/willow riparian forest, 140 acres of valley oak riparian forest, and 11 acres of willow scrub along rivers and streams distributed within the planning area.

- To the extent consistent with flood control requirements, protect 20 linear miles of channel banks that support dynamic bank formation and erosion processes that create bank swallow nesting habitat along Big Chico Creek and Butte Creek.

However, the BRCP notes the following (BCAG 2012):

> *…although the Sacramento River and Feather River support habitat for several of the covered species in the Plan Area, BRCP goals, objectives, and conservation actions are not proposed for these rivers because the channels, banks, and flow of these rivers are controlled and managed predominately by state and federal agencies (e.g., California Department of Water Resources, U.S. Army Corps of Engineers, and Bureau of Reclamation).*

Thus, riparian areas that are a major focus of the Conservation Strategy are not of central importance to meeting the conservation objectives of the BRCP. As an example, the plan targets just 11 acres of riparian restoration along the Sacramento River. However, the BRCP also calls for salmonid aquatic habitat improvements, which are targeted by the Conservation Strategy. These improvements would include protecting and improving 10 linear miles of steelhead habitat by removing passage barriers.

Any Conservation Strategy actions that involve restoration of riparian and wetland habitat, particularly along tributaries of the Sacramento River in Butte County (e.g., Butte Creek, Big Chico Creek, Sycamore Creek, and Mud Creek), or that focus on removing fish passage barriers along these tributaries, may significantly contribute to the BRCP's conservation objectives. Restoration of riparian and wetland habitats and natural river processes along the Sacramento and Feather Rivers, although not a major focus of the BRCP, would also contribute to the plan's conservation objectives by increasing the regional availability and quality of habitat for the plan's target species.

2.2.5 Yuba-Sutter Regional Conservation Plan

The Yuba-Sutter Regional Conservation Plan (YSRCP) is in progress. To date, only the Report of the Independent Science Advisors (Spencer et al. 2006) and the Planning Agreement (Yuba-Sutter NCCP/HCP 2011) is readily available. The proposed planning area comprises 200,100 acres and includes most of Sutter County and significant portions of western Yuba County, as well as small portions of southern Butte County and northwestern Placer County (California Department of Fish and Game [CDFG] 2011). Seventeen species are proposed (13 animals and four plants) for coverage under the plan, including the VELB, giant garter snake, Swainson's hawk, western yellow-billed cuckoo, California black rail, greater sandhill crane, and bank swallow, which are targeted by the Conservation Strategy. The YSRCP would also cover riverine, riparian, and wetland habitats.

This YSRCP planning area significantly overlaps with the SPA. The plan has not yet been formally developed, and conservation objectives are unknown. However, covered activities identified by the plan have been developed and include flood control projects, road improvements, irrigation improvements, and development. The Conservation Strategy could contribute significantly to the objectives of the YSRCP, given the overlap in activities, targeted species and habitats, and geographic scope. Specifically, Conservation Strategy actions that preserve and restore riparian and wetland habitats, or that support the recovery of plants and animals found in these habitats, would likely contribute to the YSRCP objectives.

2.2.6 Yolo Habitat Conservation Plan/Natural Community Conservation Plan

The Yolo Habitat Conservation Plan/Natural Community Conservation Plan (Yolo HCP/NCCP) is a county-wide plan designed to provide for long-term conservation and management of sensitive and at-risk species and the habitats upon which they depend, while accommodating other important land uses. The plan, which is currently in the second administrative draft phase, will serve as an HCP and NCCP and will cover 653,817 acres (Yolo County HCP/NCCP Joint Powers Agency 2015).

The Yolo HCP/NCCP's goals and objectives are organized by landscape-level, natural community–level, and species-level goals and objectives. Although no fish species are covered by the Yolo HCP/NCCP, the plan will cover 12 species associated with riverine-lacustrine, emergent wetland, and riparian forest-scrub habitats. Seven of these species are currently State- or federally listed, including VELB, giant garter snake, Swainson's hawk, western yellow-billed cuckoo, least Bell's vireo, and bank swallow, which are targeted by the Conservation Strategy. The Yolo HCP/NCCP will also cover riparian and wetland habitats. The implementing entity will restore up to 981 acres of riparian woodland and scrub, fresh emergent wetlands, and lacustrine and riverine natural communities at a ratio of one acre restored for every acre lost as a result of covered activities.

Eastern sections of the county, comprising seven Yolo HCP/NCCP conservation planning units in the Colusa Basin, Yolo Basin, and West Sacramento, are within the SPFC. Three additional conservation planning units along Putah and Cache Creeks are in the SPA. Given the extensive overlap of geographic scope, targeted species, and habitat coverage between the Yolo HCP/NCCP and the Conservation Strategy, the strategy will likely contribute to the goals of the Yolo HCP/NCCP. In particular, the strategy could contribute significantly to the Yolo HCP/NCCP's riparian goals, especially near the Yolo Bypass, through various actions such as habitat restoration, habitat acquisition, and restoration of natural fluvial geomorphic processes.

2.2.7 Placer County Conservation Plan

The Placer County Conservation Plan (PCCP) will provide a framework to protect, enhance, and restore natural resources in western Placer County (Placer County Community Development Resources Agency 2011). The PCCP will achieve conservation goals while complying with State and federal regulations and accommodating urban and rural growth. The PCCP includes a joint NCCP/HCP and a County Aquatic Resources Program that will protect streams, wetlands, and other water resources and fulfill the requirements of the Clean Water Act and analogous State laws and regulations.

PCCP covered activities include instream projects, infrastructure projects, O&M, and conservation actions. The initial permit term is proposed to be 50 years. Thirty-one species are proposed to be covered (26 animals and five plants). These include several species targeted by the Conservation Strategy: VELB, salmonids, giant garter snake, Swainson's hawk, western yellow-billed cuckoo, California black rail, and bank swallow. The PCCP will create a reserve system comprising 30,000 to 50,000 acres of land for the benefit of natural communities,

covered species, biological diversity, and ecosystem function. The PCCP will also protect and restore riparian woodlands, valley oak woodlands, vernal pools and vernal pool complexes, and other wetlands.

The PCCP planning area includes approximately 212,000 acres in western Placer County, the vast majority of which lies outside the SPA. Small areas of overlap occur along the Bear River in westernmost Placer County and around Folsom Lake. Although geographic overlap is limited between the two planning efforts, Conservation Strategy actions may contribute to PCCP conservation objectives. Potentially relevant actions would be those that contribute to the goals of the reserve system or that preserve, restore, or enhance areas adjacent to PCCP reserves and those that benefit covered riparian and aquatic species such as VELB, salmonids, giant garter snake, Swainson's hawk, and bank swallow.

2.2.8 Butte Sink, Willow Creek–Lurline, and North Central Valley Wildlife Management Areas Comprehensive Conservation Plan

USFWS is preparing a CCP for the Butte Sink, Willow Creek–Lurline, and North Central Valley Wildlife Management Areas (WMAs), located in the Central Valley (USFWS 2010a). The 10,260-acre Butte Sink WMA, 5,795-acre Willow Creek–Lurline WMA, and the 14,740-acre North Central Valley WMA include both USFWS-owned lands and private lands protected with conservation easements. These WMAs were established primarily to preserve existing and restored wetlands for waterfowl and other wetland-dependent wildlife.

The CCP planning area is located in the SPFC and SPA. The CCP's goals and objectives are still under development, so it is not known exactly how the Conservation Strategy would contribute to the goals and objectives of the CCP. Preliminary goals were recently developed for the CCP, including conserving, managing, restoring, protecting, and enhancing habitats and associated wildlife and plant species. Conservation Strategy actions may therefore contribute to achieving the goals of the CCP, however, further development of the CCP is needed.

2.2.9 Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-Run Chinook Salmon and Central Valley Spring-Run Chinook Salmon and Distinct Population Segment of Central Valley Steelhead

NMFS's *Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-Run and Central Valley Spring-Run Chinook Salmon, and the Distinct Population Segment of Central Valley Steelhead* was released in 2014. Its primary goal is to improve the viability of these species and remove them from federal protection under ESA. The recovery plan identifies recovery objectives and criteria based on attaining viable populations of each of the ESUs and Distinct Population Segments (DPSs) in specific geographic areas. Priority recovery actions include phased reintroduction of fish into primary candidate watersheds, restoration of ecological flows throughout the Sacramento and San Joaquin River Basins and the Delta, large-scale Delta ecosystem restoration, restoration of ecological habitat function and decrease in nonnative fish predation, implementation of all phases of the Battle Creek Restoration Program and the SJRRP, and incentives for statewide water conservation, among other priorities. In addition, it specifies a

recovery criterion of restoring and maintaining a continuous 100-mile stretch of riparian habitat and functioning floodplains of an "appropriate science-based width to maintain ecologically viable flood-prone lands along both banks of the Sacramento River between Colusa and Verona" (NMFS 2014).

The recovery plan area overlaps the SPA, but the recovery plan area is larger and includes many more miles of rivers and tributary creeks that provide rearing, migration, or spawning habitat for these species. Conservation Strategy actions may contribute significantly to the objectives of the recovery plan, for example by restoring floodplain habitat to support juvenile Chinook salmon and steelhead rearing (e.g., constructing new flood bypasses, expanding existing bypasses, and setting back levees), increasing instream habitat suitability and complexity (e.g., removing bank revetment and refining O&M practices), and increasing the availability of SRA habitat.

2.2.10 DWR's Oroville Facility Federal Energy Regulatory Commission License Protection, Mitigation and Enhancement Measures

The Settlement Agreement for the relicensing of the Federal Energy Regulatory Commission (FERC) license for DWR's Oroville Facility contains Protection, Mitigation, and Enhancement Measures (PMEs) that will address the impacts of implementing the Oroville Facility under the license's 50-year term (2006–2056) (DWR 2006). The proposed FERC license is subject to ESA consultation with NMFS and USFWS, as well as possibly CESA consultation with CDFW.

The proposed PMEs include the Lower Feather River Habitat Improvement Plan, which describes programs for gravel supplementation and improvement; channel improvement; structural habitat supplementation and improvement; fish weir, riparian habitat, and floodplain improvement; and other programs that support Chinook salmon and steelhead in the lower Feather River. Habitat improvements are also identified to protect giant garter snakes and red-legged frogs and to conserve vernal pools. The lower Feather River Habitat Improvement Plan will facilitate efficient application of the proposed measures in the lower Feather River.

The Lower Feather River Habitat Improvement Plan area overlaps with the SPA. The Conservation Strategy is unlikely to make a significant contribution to the PMEs; however, it may benefit some of the covered species found within riparian and aquatic habitats in the lower Feather River, and may provide additional benefits above and beyond the goals of the proposed license.

2.3 Plans Identifying Specific Geographic Areas without Quantifying Conservation Measures

This section describes recovery plans and other geographically based planning efforts that are spatially defined but that lack quantitative objectives.

2.3.1 Draft Recovery Plan for the Giant Garter Snake

The *Revised Draft Recovery Plan for the Giant Garter Snake* and the 5-year review describes conservation actions that, if implemented, could contribute to federal delisting of the threatened giant garter snake (USFWS 2012, 2015). These actions include protection of existing giant garter snake populations and habitat and restoration of populations to former habitat. The revised draft recovery plan estimates that delisting of the giant garter snake could be initiated by 2045 if recovery criteria are met.

The revised draft recovery plan defines nine population and recovery units in the Sacramento and San Joaquin Valleys: Butte Basin, Colusa Basin, Sutter Basin, American Basin, Yolo Basin, Cosumnes-Mokelumne Basin, Delta Basin, San Joaquin Basin, and Tulare Basin. These population and recovery units are partially or entirely within the SPA.

The giant garter snake and its habitat (i.e., marshes, sloughs, and other perennial waters dominated by emergent, herbaceous vegetation, as well as suitable brumation habitat above floodwaters) are the focus of the revised draft recovery plan. Species that use wetland and marsh habitats in the Sacramento and San Joaquin Valleys, such as tricolored blackbird, white-faced ibis (*Plegadis chihi*), western pond turtle, and various species of waterfowl, would also likely benefit from implementation of the revised draft recovery plan.

Conservation Strategy actions that may contribute to the objectives of the revised draft recovery plan include those that restore or enhance giant garter snake habitat outside the floodways associated with major rivers of the Sacramento and San Joaquin Valleys, and those that create suitable giant garter snake aquatic habitat by creating new flood bypasses or changing the operation of existing bypasses.

2.3.2 Draft Recovery Plan for the Least Bell's Vireo

The *Draft Recovery Plan for the Least Bell's Vireo* describes conservation actions that, if implemented, could contribute to federal reclassification of the least Bell's vireo from endangered to threatened, and ultimately, to delisting (USFWS 1998a). Instrumental to the plan is securing and managing riparian habitat within the historical breeding range of the least Bell's vireo, conducting annual monitoring and range-wide surveys, and performing the research needed to monitor and guide the recovery effort. A delisting target date was not projected in the draft recovery plan.

Historically, least Bell's vireo was widespread throughout riparian woodlands in the Central Valley and low-elevation riverine valleys of California. The breeding distribution of the least Bell's vireo is currently restricted to areas outside the SPA in southern California and Baja California, although singing birds have recently been recorded within the historical breeding range, for example in Yolo County (Yolo County HCP/NCCP Joint Powers Agency 2015). In the SPA, potential least Bell's vireo habitat includes Caswell Memorial State Park (Stanislaus River), Cosumnes River Preserve, Bobelaine Sanctuary (Feather River), Butte Sink, Big Chico Creek to the mouth of Pine Creek, and the Sacramento River (Hanson Island to Parrot Landing,

River Miles [RMs] 170 to 181; Merrill's Landing at RMs 212 to 215; and Woodson Bridge to Kopta Slough at RMs 218 to 220).

The least Bell's vireo typically inhabits structurally diverse riparian areas, including cottonwood-willow forests, oak woodlands, and mule fat (*Baccharis salicifolia*) scrub. Although the draft recovery plan focuses on the least Bell's vireo, implementing actions contained in the plan could benefit other sensitive species found in San Joaquin and Sacramento Valley riparian ecosystems, including VELB, ye1low-billed cuckoo, bank swallow, and riparian brush rabbit.

Conservation Strategy actions that restore or enhance riparian and wetland habitat along major rivers of the Sacramento and San Joaquin Valleys could contribute to the conservation objectives of the draft recovery plan. Conservation Strategy actions may contribute to the availability of suitable least Bell's vireo habitat in the Sacramento and San Joaquin Valleys, if those actions result in (1) restoration of natural fluvial and geomorphic processes, such as meander migration, bank erosion, sediment deposition, and riparian habitat disturbance and succession (e.g., construction of setback levees, removal of levees, or removal of bank revetment); and (2) active restoration of riparian habitat (i.e., planting of trees and shrubs). Successful reintroduction of least Bell's vireo to the SPFC or SPA may be enhanced by an expansion of potentially suitable riparian habitat.

2.3.3 Valley Elderberry Longhorn Beetle Recovery Plan

The *Recovery Plan for the Valley Elderberry Longhorn Beetle* (USFWS 1984) summarizes literature on VELB, prescribes actions necessary to acquire additional biological data, and recommends actions necessary for species preservation, maintenance, and recovery. Primary objectives of the recovery plan are to protect the three known localities that support the species (at the time of plan development), survey riparian vegetation along certain Central Valley rivers for remaining VELB colonies and habitat, provide protection to remaining habitat within its suspected historical range, and determine the number of sites and populations necessary to eventually delist the species. According to the recovery plan, information on VELB life history, distribution, and habitat requirements is insufficient and, therefore, precise recommendations for its recovery are not provided. Additionally, the conditions under which the species can be considered "recovered" are yet to be determined.

Although the entire historical distribution of VELB is unknown, extensive destruction of riparian forests of the Central Valley during the past 150 years strongly suggests that the species' range has decreased and become fragmented. When the recovery plan was prepared, VELB was known to occur in only four locations in the SPA. After the recovery plan was prepared, VELB was located in suitable riparian habitat throughout the SPA and SPFC, and occasionally in oak woodlands and other nonriparian areas supporting the species' host plant, blue elderberry (*Sambucus mexicana*). This prompted USFWS to determine whether delisting is warranted based on additional information collected since the species was originally listed. The proposed delisting was withdrawn on 17 September 2014 (USFWS 2014).

The recovery plan calls for protection of VELB habitat throughout riparian areas within the Sacramento and San Joaquin Valleys, an area that overlaps the entirety of the SPFC and SPA as

well as areas outside their boundaries (e.g., the lower Kern River). Conservation Strategy actions that result in the preservation, protection, restoration, or enhancement of VELB habitat (i.e., elderberry scrub and riparian woodland) associated with the major rivers of the Sacramento and San Joaquin Valleys would significantly contribute to the conservation objectives of the recovery plan.

2.3.4 Bank Swallow Recovery Plan

The *Recovery Plan for the Bank Swallow* (CDFG 1992) describes specific management strategies for recovery of bank swallows. The primary recovery goal is to have a self-sustaining wild population. Objectives are to ensure that the remaining population of this species does not suffer further declines in either range or abundance, and that sufficient habitat is available to ensure that the species will be able to survive as a member of California's native avifauna. Enhancing existing populations and reestablishing populations in target areas are additional objectives. Specific habitat protection objectives include maintaining riparian vegetation on the Sacramento River between Chico Landing and Red Bluff and habitat acquisitions in the Sacramento River NWR and the upper Sacramento River, where there are abundant bank swallow colonies. Setback levees allowing channel meander have also been identified as alternative recovery actions.

Conservation Strategy actions that result in the restoration or enhancement of riparian and wetland habitat associated with major rivers of the Sacramento and San Joaquin Valleys could contribute to the conservation objectives of the recovery plan. Conservation Strategy actions may contribute to the availability of potentially suitable bank swallow nesting habitat in the Sacramento and San Joaquin Valleys if they restore natural fluvial and geomorphic processes, such as meander migration and bank erosion.

2.3.5 Bank Swallow Conservation Strategy for California

In 2013, the Bank Swallow Technical Advisory Committee (BANS-TAC) developed a Bank Swallow Conservation Strategy for California to inform and educate government agencies involved in flood risk management and resource protection and to provide direction for better protection and recovery of the species. The strategy also discusses the research needed to support creation of bank swallow habitat on the Sacramento and Feather Rivers. Specifically, the BANS-TAC's Bank Swallow Conservation Strategy recommends the following conservation actions:

- Avoid impacts on individuals, colonies, current and potential habitat, and river processes.
- Protect individuals, colonies, current and potential habitat, and river processes.
- Restore habitat and river processes.
- Mitigate unavoidable impacts on individuals, colonies, current and potential habitat, and river processes.

Conservation Strategy actions that result in the restoration or enhancement of riparian and wetland habitat associated with major rivers of the Sacramento and San Joaquin Valleys could contribute to the conservation objectives of the BANS-TAC strategy. Conservation Strategy actions may contribute to the availability of potentially suitable bank swallow nesting habitat in the Sacramento and San Joaquin Valleys if they restore natural fluvial and geomorphic processes, such as meander migration and bank erosion.

2.3.6 California Red-Legged Frog Recovery Plan

The *Recovery Plan for the California Red-Legged Frog* (USFWS 2002) describes eight recovery units, so that recovery strategies can be tailored to each unit to best meet the goal of delisting the species. The strategy for recovery consists of protecting existing populations by reducing threats, restoring and creating habitat that will be protected and managed in perpetuity, surveying and monitoring populations and conducting research on the biology of and threats to the species, and reestablishing populations of the subspecies within its historical range.

Two recovery units overlap with the SPA: the "Sierra Nevada Foothills and Central Valley Unit" and the "North Coast Range Foothills and Western Sacramento River Valley Unit." In each recovery unit, core areas were identified where recovery actions are focused. The core areas, when protected and managed for California red-legged frogs (*Rana aurora draytonii*), will allow for the long-term viability of existing populations and reestablishment of populations within the species' historical range. The core areas were selected based on whether they were occupied by California red-legged frogs, contained populations of California red-legged frogs that represent source populations, provided connectivity between source populations, or were ecologically significant.

The Recovery Plan (USFWS 2002) states that channelization and flood control activities (e.g., vegetation maintenance, erosion control activities, management of water flows) can degrade California red-legged frog habitat. The Conservation Strategy would increase and improve the quantity, diversity, quality, and connectivity of riverine habitats, in part by establishing corridor management plans and easements. In areas where recovery unit core areas have been identified (e.g., the Yuba and Feather Rivers), these Conservation Strategy actions could contribute to the objectives of the recovery plan for California red-legged frogs. Conservation Strategy actions may also contribute to the availability of potentially suitable California red-legged frog habitat in tributaries of the Sacramento River, if those actions protect suitable habitats and buffer areas over the long term, using conservation easements, preserves, or mitigation banks.

2.3.7 Recovery Plan for Upland Species of the San Joaquin Valley, California

The riparian brush rabbit and riparian woodrat, which are targeted by the Conservation Strategy, are addressed in the *Recovery Plan for Upland Species of the San Joaquin Valley, California*, released in 1998—a 5-year review was initiated in 2010 (USFWS 1998b, 2010b). Most of the 34 species addressed in the recovery plan occur in arid grasslands and shrublands; however, the riparian woodrat and riparian brush rabbit inhabit forested river corridors along portions of the San Joaquin River and its tributaries on the San Joaquin Valley floor. Conservation actions that

may be taken for the riparian brush rabbit include expansion of Caswell Memorial State Park and establishment of viable populations within the species' historical range (through reintroduction, habitat restoration, and management of habitat). Actions taken for the riparian woodrat include establishment of habitat linkages between remnants of riparian habitat, reintroduction of the species, habitat restoration, and habitat management.

Conservation Strategy actions that restore or enhance riparian habitat in the San Joaquin Valley may contribute to the recovery of the riparian brush rabbit and riparian woodrat by increasing their population sizes and distribution in the San Joaquin Valley.

2.3.8 The Nature Conservancy Sacramento River Project

Through the Sacramento River Project (SRP), TNC and its partners, which include local landowners, nonprofit organizations, the California Department of Parks and Recreation, DWR, USFWS, and the U.S. Army Corps of Engineers, are implementing projects to protect and restore riparian habitat on the Sacramento River between Red Bluff and Colusa (TNC 2011). TNC intends to preserve an additional 6,000 acres of land by 2015 within this reach of the Sacramento River and to restore riparian habitat, where appropriate, on these lands. Focus species include those that use riparian areas and SRA habitat along the Sacramento River, such as VELB, salmonids, bank swallow, least Bell's vireo, western yellow-billed cuckoo, and Swainson's hawk. These species are also targeted by the Conservation Strategy.

The SRP area is wholly contained within the SPA. Conservation Strategy actions that may be implemented along this reach of the Sacramento River, such as construction of setback levees, removal of levees and bank revetment, habitat restoration, floodplain creation (including creation of off-channel habitats), and similar conservation actions, would make a significant contribution to TNC's goals for the SRP.

2.3.9 Sacramento River Conservation Area Forum

The Sacramento River Conservation Area Forum (SRCAF) is a nonprofit organization that emerged in response to California Senate Bill 1086. The senate bill called for creating a management plan to protect, restore, and enhance fisheries and riparian habitat along the Sacramento River. Since passage of Senate Bill 1086 in 1986, SRCAF has published numerous planning documents, including the following:

- The *Upper Sacramento River Fisheries and Riparian Habitat Management Plan* (Upper Sacramento River Fisheries and Riparian Habitat Advisory Council 1989)
- The *SRCAF Handbook* (Sacramento River Advisory Council 2003)
- A draft programmatic Safe Harbor Agreement (SRCAF 2009)
- The *Strategic Plan* covering 2008–2011 (SRCAF 2011)
- The *Strategic Plan* adopted in September 2012 (SRCAF 2012)

The Sacramento River Conservation Area, defined in the 2003 *SRCAF Handbook*, includes the Sacramento River from Verona (the confluence of the Feather and Sacramento Rivers) upstream to Keswick Dam north of Redding. This area overlaps completely with the SPA.The goal of SRCAF is to preserve remaining riparian habitat and reestablish a continuous riparian ecosystem along the Sacramento River between Redding and Chico, and to reestablish riparian vegetation below Chico to Verona wherever possible. In achieving those goals, six principles are to be followed as actions are planned and implemented. The principles are as follows:

- Use an ecosystem approach that contributes to recovery of threatened and endangered species and that is sustainable by natural processes.
- Use effective and least environmentally damaging bank protection measures, and, where appropriate, operate within the parameters of local, State, and federal flood control programs.
- Operate within the parameters of local, State, and federal flood control and bank protection programs.
- Recognize that landowners' participation is voluntary, never mandatory.
- Give full consideration to landowner, public, and local government concerns.
- Provide accurate and accessible information and education.

Conservation Strategy actions that could contribute to the objectives of the SRCAF are those related to riparian habitat acquisition and restoration, especially along the Sacramento River above Verona, as well as restoration of natural fluvial and geomorphic processes that lead to the recruitment and sustainability of riparian communities.

2.3.10 Comprehensive Management Plan for the Sacramento River Wildlife Area

The Sacramento River Wildlife Area (SRWA) encompasses approximately 3,770 acres of important riparian habitat located along a 70-mile reach of the Sacramento River. The SRWA includes 13 physically separate units that extend from RM 145 (just north of the City of Colusa) upstream to RM 215 (3 miles south of Woodson Bridge, near Corning).

Biological goals were developed in the Comprehensive Management Plan for the Sacramento River Wildlife Area to guide management of the area. The goals are based on maintaining natural riverine processes and enhancing or restoring species populations or habitats (CDFG 2004). Biological goals emphasize the following:

- Preserving remaining riparian habitat and reestablishing a continuous riparian ecosystem along the Sacramento River between Red Bluff and Chico and reestablishing riparian vegetation along the river from Chico to Verona.
- Maintaining and enhancing habitat for special-status species.

- Supporting natural processes that result in the creation and enhancement of habitat.
- Maximizing habitat value of the SRWA.
- Supporting scientific research and monitoring.
- Supporting the conservation of wildlife habitat on privately owned land along the Sacramento River.

Specific tasks were also identified to achieve the biological goals. Management coordination goals were also identified; these include supporting the Hamilton City flood damage reduction and ecosystem restoration project.

Conservation Strategy actions would contribute to the goals of the SRWA by restoring riparian habitat and natural fluvial and geomorphic processes. Restoring processes would help to recruit and sustain riparian communities and habitat for special-status species. Hence, Conservation Strategy actions may contribute to the overall goals of preserving remaining riparian habitat, reestablishing a continuous riparian ecosystem along the Sacramento River between Red Bluff and Chico, reestablishing riparian vegetation along the river from Chico to Verona, and supporting natural processes that result in the creation and enhancement of habitat.

2.3.11 Yolo Bypass Wildlife Area Land Management Plan

The Yolo Bypass Wildlife Area (YBWA) is composed of approximately 16,770 acres of managed wildlife habitat and agricultural land in the Yolo Bypass. The Yolo Bypass conveys seasonal high flows from the Sacramento River to help control river stage and protect the cities of Sacramento, West Sacramento, and Davis, as well as other local communities, farms, and lands, from flooding.

Biological goals were developed in the Yolo Bypass Wildlife Area Land Management Plan (LMP) to address specific biological elements, such as:

- including management and maintenance of habitat supporting the following species guilds: waterfowl, shorebird/wading birds, upland game birds, raptors, cavity-nesting birds, Neotropical birds, and waterbird species associated with emergent marsh vegetation; and
- maintaining and enhancing foraging opportunities for breeding colonies of bats (CDFG and Yolo Basin Foundation 2008); and
- preventing the introduction and spread of nonnative invasive species that have no benefit to wildlife or have impacts on special-status plants.

The goals include maintaining and enhancing communities for native species diversity and abundance and restoring and enhancing communities to conditions that provide desired ecological functions. These goals apply to seasonal and permanent wetlands, riparian areas, grasslands and upland vegetative communities, and aquatic ecosystems.

Management goals include coordinating with federal, State, and local agencies regarding plans and projects that may affect habitats or management at the YBWA, and coordinating with flood control agencies regarding flood control and management in the Yolo Bypass.

The LMP planning area is located within the SPA. The Conservation Strategy is likely to contribute to the LMP goals, based on the extensive overlap of geographic areas and targeted species and habitats. Strategy actions may significantly contribute to the wildlife area's riparian goals in the Yolo Bypass through habitat restoration, habitat acquisition, and restoration of natural fluvial geomorphic processes. Conservation Strategy actions may also increase seasonal and permanent wetland habitats that are important to the LMP's biological goals.

2.3.12 California Water Plan

The California Water Plan (CWP), updated in 2013, provides a planning framework for elected officials, agencies, tribes, water and resource managers, businesses, academia, stakeholders, and the public for making informed decisions about California's water future (DWR 2013). The CWP is updated every 5 years and presents the status and trends of California's water-dependent natural resources; water supplies; and agricultural, urban, and environmental water demands for a range of plausible future scenarios. The CWP also evaluates different combinations of regional and statewide resource management strategies to reduce water demand, increase water supply, reduce flood risk, improve water quality, and enhance environmental and resource stewardship. Objectives of the CWP that may be relevant to the Conservation Strategy include the following:

- Strengthen integrated regional water management planning to improve regional self-reliance, and maintain and enhance regional water management partnerships.

- Use water more efficiently with significantly greater water conservation, recycling, and reuse to help meet future water demands and adapt to climate change.

- Advance and expand conjunctive management of multiple water supply sources with existing and new surface and groundwater storage to prepare for future droughts, floods, and climate change.

- Protect and restore surface water and groundwater quality to safeguard public and environmental health and secure California's water supplies for beneficial uses.

- Practice, promote, improve, and expand environmental stewardship to protect biological diversity and sustain natural water and flood management systems in the watersheds, on floodplains, and aquatic habitats.

- Promote and practice integrated flood management that reduces flood risk to people and property and maintains and enhances natural floodplain functions using an Integrated Water Management (IWM) approach. An IWM approach utilizes a systemwide perspective and considers all aspects of water management, including public safety and emergency management, environmental sustainability, and economic stability.

- Manage the Delta as both a critically important hub of the California water system and as California's most valuable estuary and wetland ecosystem. Achieve the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.

- Strengthen the alignment of goals, policies, and programs for improving local land use planning and IWM.

The CWP area comprises the state of California and therefore includes the SPA. The Conservation Strategy would contribute to the objectives of the CWP because the objectives of both plans involve improving flood risk management while promoting floodplain and instream protection and enhancement. The CWP was used as a guide for developing recommended actions within the Conservation Strategy. As the Conservation Strategy is being developed, synergies between it and the CWP will be explored.

2.3.13 State and Regional Water Board Plans

The State and Regional Water Boards are involved in several efforts within the SPA, including the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Hart et al. 2011), the Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary (Kapahi et al. 2006), and the Wetland and Riparian Protection Policy (CDFG and State Water Resources Control Board [SWRCB] 2011).

The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Hart et al. 2011) provides numerical and narrative water quality objectives for fish and wildlife beneficial uses, and for agricultural, silvicultural, recreational, fishing, municipal, and industrial beneficial uses. The plan overlaps spatially with the SPA, but its objectives are based on water quality, rather than habitat.

The Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary (Bay-Delta Plan, Kapahi et al. 2006) provides numerical and narrative water quality objectives for fish and wildlife beneficial uses, and for agriculture, municipal, and industrial beneficial uses. Implementation measures include flow-based objectives: Delta outflows; river flows on the Sacramento River at Rio Vista; river flows on the San Joaquin River at Airport Way Bridge, Vernalis; export limits; Delta Cross Channel gates operation; dissolved oxygen; and salinity objectives. The plan overlaps spatially with the SPA, but its objectives are based on flows and water quality, rather than habitat.

The Wetland and Riparian Protection Policy 5-year coordinated work plan for wetlands conservation (CDFG and SWRCB 2011) describes a statewide approach to wetlands conservation, to be implemented by each agency. As directed by the SWRCB in Resolution No. 2008-0026, the Wetland and Riparian Protection Policy is being implemented in three phases, which will allow for necessary infrastructure and program development:

- The current Phase 1 effort is now called the "Wetland Area Protection and Dredge and Fill Permitting Policy." The purpose of Phase 1 is to protect all waters of the State, including wetlands, from dredge and fill discharges. It includes a wetland definition and associated delineation methods, an assessment framework for collecting and reporting aquatic resource information, and requirements applicable to discharges of dredged or fill material. It also focuses on developing a Draft Program Environmental Impact Report and accompanying draft policy and draft regulation text.

- Phase 2 expands the scope of the policy to protect wetlands from all other activities potentially impacting water quality, and includes identification of water quality objectives to support beneficial uses. Phase 2 is not under consideration at this time.

- Phase 3 will identify, protect, and promote restoration of riparian areas and their functioning to support water quality and beneficial uses, including a definition for riparian areas and identification of water quality objectives to support beneficial uses. Phase 3 is not under consideration at this time.

As the Conservation Strategy is being implemented, synergies between it and the Wetland and Riparian Protection Policy will be explored.

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4.0 Acronyms and Abbreviations

AFRP ..... Anadromous Fish Restoration Program
AFSP ..... Anadromous Fish Screen Program
BANS-TAC ..... Bank Swallow Technical Advisory Committee
Bay-Delta ..... San Francisco Bay/Sacramento-San Joaquin Delta
BO ..... biological opinion
BRCP ..... Butte Regional Conservation Plan
CCP ..... Comprehensive Conservation Plan
CCP EA ..... Comprehensive Conservation Plan Environmental Assessment
CDFG ..... California Department of Fish and Game
CESA ..... California Endangered Species Act
Covered species ..... Species covered by a Habitat Conservation Plan
CRPMP ..... Cosumnes River Preserve Management Plan
CVFPP ..... Central Valley Flood Protection Plan
CVJV ..... Central Valley Joint Venture
CVP ..... Central Valley Project
CVPIA ..... Central Valley Project Improvement Act
CWP ..... California Water Plan
Delta ..... Sacramento–San Joaquin River Delta
DPS ..... distinct population segment
DWR ..... California Department of Water Resources
ECCCHCPA ..... East Contra Costa County Habitat Conservation Plan Association
ECCCHCP/NCCP ..... East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan
ESA ..... federal Endangered Species Act
ESU ..... Evolutionarily Significant Unit
HCP ..... Habitat Conservation Plan
HRP ..... Habitat Restoration Program
JPA ..... Joint Powers Agency
LMP ..... Land Management Plan
MSCS ..... Multi-Species Conservation Strategy

NBHCP	Natomas Basin Habitat Conservation Plan
NCCP	Natural Communities Conservation Plan
NMFS	National Marine Fisheries Service
NWR	National Wildlife Refuge
O&M	operations and maintenance
OCAP	Operations Criteria and Plan
PCCP	Placer County Conservation Plan
PG&E	Pacific Gas and Electric Company
PG&E O&M HCP	Pacific Gas and Electric Company Operations & Maintenance Habitat Conservation Plan
RM	river mile
RPA	reasonable and prudent alternative
SJCCG	San Joaquin County Council of Governments.
SJMSCP	San Joaquin County Multi-Species HCP
SJRRP	San Joaquin River Restoration Program
SMSHCP	Solano Multi-Species Habitat Conservation Plan
SRA	shaded riverine aquatic
SRCAF	Sacramento River Conservation Area Forum
SRP	Sacramento River Project
SRWA	Sacramento River Wildlife Area
SSHCP	South Sacramento Habitat Conservation Plan
SWP	State Water Project
TNBC	The Natomas Basin Conservancy
TNC	The Nature Conservancy
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
VELB	valley elderberry longhorn beetle
WAP	Water Acquisition Program
WMA	Wildlife Management Area
YBWA	Yolo Bypass Wildlife Area
Yolo HCP/NCCP	Yolo Habitat Conservation Plan/Natural Community Conservation Plan
YSRCP	Yuba-Sutter Regional Conservation Plan

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