SSHCP South Sacramento Habitat Conservation Plan

AQUATIC RESOURCES PROGRAM

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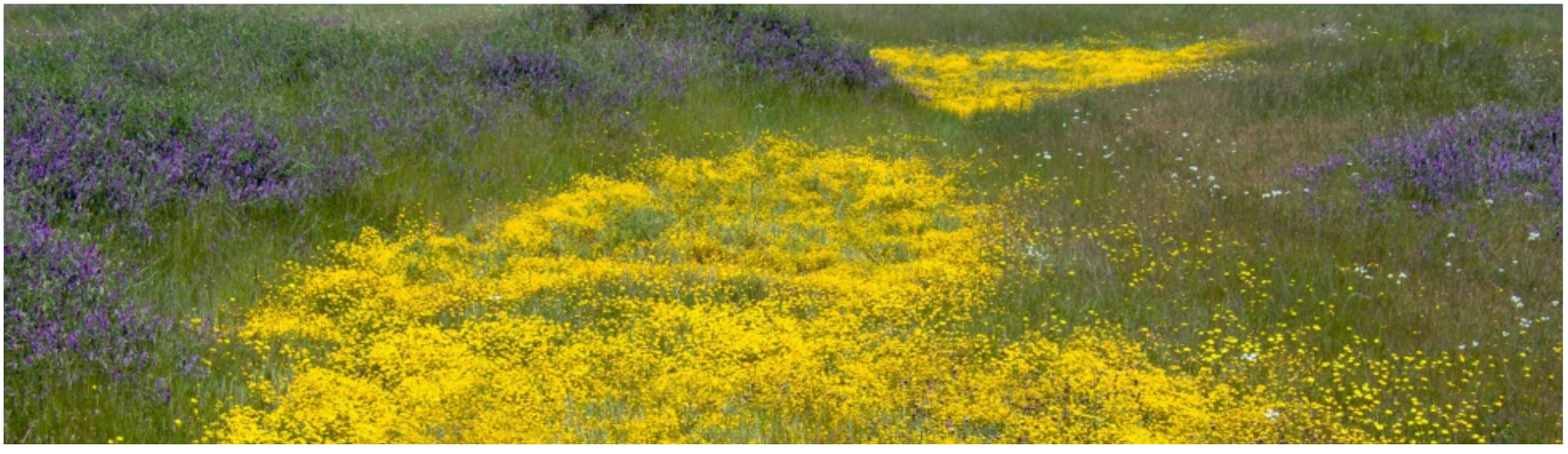

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SSHCP Aquatic Resources Program

February 2017

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ACRONYMS AND ABBREVIATIONS

Acronym or Abbreviation	Meaning
AMM	Avoidance and Minimization Measure
APE	area of potential effect
ARI	Aquatic Resources Impact
ARP	Aquatic Resources Program
BMP	best management practice
CDFW	California Department of Fish and Wildlife
CEDEN	California Environmental Data Exchange Network
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CRAM	California Rapid Assessment Method
CWA	Clean Water Act
DEESA	Determination of Environmentally Equivalent or Superior Alternative
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act (federal)
FCAM	Functional/Condition Assessment Method
GIS	geographic information system
GP	General Permit
HUC	Hydrologic Unit Code
ILF	in-lieu fee
ITP	Incidental Take Permit
IP	Individual Permit
JPA	Joint Powers Authority
LEDPA	least environmentally damaging practicable alternative
LID	low-impact development
LOP	Letter of Permission
LSA	Lake or Streambed Alteration Agreement
LTLSA	Long-Term Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MSAA	Master Streambed Alteration Agreement
MSLTA	Master Streambed Long-Term Agreement
NEPA	National Environmental Policy Act
NFWF	National Fish and Wildlife Foundation
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
OHWM	ordinary high-water mark
PGP	Programmatic General Permit
Porter-Cologne	Porter-Cologne Water Quality Control Act
PPU	Preserve Planning Unit

Draft SSHCP Aquatic Resources Program

Acronym or Abbreviation	Meaning
RDM	residual dry matter
RGP	Regional General Permit
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SHPO	State Historic Preservation Office
SP	Standard Permit
SSHCP	South Sacramento Habitat Conservation Plan
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
USB	Urban Services Boundary
UDA	Urban Development Boundary
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VPIH	Vernal Pool Invertebrate Habitat
VWADI	Vernal Wetland Acre/Density Index
WDR	Waste Discharge Requirement
WQC	Water Quality Certification
WRAMP	Wetland and Riparian Area Monitoring Plan

EXECUTIVE SUMMARY

The South Sacramento Habitat Conservation Plan (SSHCP) Aquatic Resources Program (ARP) is a local jurisdiction-based aquatic resources permitting program that also supports the anticipated implementation of a more efficient permitting strategy by the state and federal aquatic resource regulatory agencies (see SSHCP Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) Appendix C). The comprehensive, long-term watershed approach used in the ARP enables better protection and management of aquatic resources and enables increased permitting efficiency. It benefits the regulated public and initiates the formation of a large, connected conservation system that coordinates a balance between population growth and resource use. Such outcomes would not be possible under the conventional project-by-project resource agency review approach of the past.

The local jurisdiction based aquatic resources permitting program contained in the ARP promotes a regional approach to balancing development and conservation[1] of aquatic resources located within the SSHCP Plan Area. Application of procedures contained in the ARP will ensure that impacts to aquatic resources are avoided and minimized to the greatest extent practicable during implementation of future planned development.[2] The ARP also implements aquatic resource avoidance, minimization and compensatory mitigation at a landscape[3] level to protect largely intact watersheds in the Plan Area, including their associated aquatic resources. A primary goal of ARP implementation is to achieve an overall no net loss of aquatic resources functions and services.

The ARP local aquatic resources permitting program works in coordination with the SSHCP, and would complement the SSHCP's approach to evaluating SSHCP Covered Activities that require filling aquatic resources located within the Plan Area. The existing aquatic resources are described in terms of abundance, type, and condition as they occur in each Hydrologic Unit Code (HUC)-10 watershed of the SSHCP Plan Area. Under existing conditions, the Plan Area contains a total of approximately 24,255[4] acres of aquatic resources, comprised of 10

1 The Oxford Dictionary of Ecology defines conservation as "the maintenance of environmental quality and resources. In modern scientific usage, conservation implies sound biosphere management within given social and economic constraints, producing goods and services for humans without depleting natural ecosystem diversity, and acknowledging the naturally dynamic character of environmental systems. This contrasts with a "preservation" approach, which, it is argued, protects species or landscapes without reference to natural change in living systems or human requirements".

2 Planned development means the type and locations of future urban development and associated infrastructure as described in the approved General Plans for Sacramento County, Rancho Cordova, and Galt.

3 A landscape can be defined as a heterogeneous land area composed of interacting ecosystems that is repeated in a similar form throughout; a landscape is a land area at least a few kilometers wide (Forman and Godron 1981, 1986).

4 The total acreage of aquatic resources reported in the ARP is approximately 232 acres less than the total acreage of aquatic resources reported in the SSHCP. This is primarily due to three factors: (1) The use of different geographical information system (GIS) processes that result in fractional differences in acreage

different aquatic resource land cover types (e.g., freshwater marsh, vernal pool, open water); 8,280 acres of which are considered high-condition aquatic resources based on a landscape-level functional assessment.

The anticipated impacts to aquatic resources within the SSHCP Plan Area are used to project the abundance, diversity, and condition of remaining aquatic resources prior to considering compensatory mitigation. The predicted impacts, not considering compensatory mitigation, show an effect (reduction of 1,613 acres) on the abundance of aquatic resources. However, the overall types of aquatic resources and condition of the resources would remain largely unchanged even prior to considering the compensatory mitigation strategy of the SSHCP. The SSHCP's overall Conservation Strategy that requires landscape-scale and project-level avoidance and minimization measures (AMMs) would also contribute to maintaining the condition of aquatic resources. Landscape-scale measures include assembling a large network of interconnected preserves that preserve natural corridors, provide large blocks of contiguous habitat, and include buffers between new development and natural areas. From a project-level scale, avoidance and minimization of impacts would be ensured by requiring each development Covered Activity incorporate low-impact development (LID) design measures, implement best management practices (BMPs), comply with siting and design requirements, and provide Stream and Preserve Setbacks. All of these measures and practices synergistically combine to ensure maintenance of Plan Area aquatic resource functions and services.

In addition to the SSHCP and ARP's avoidance and minimization strategy, compensatory mitigation for unavoidable impacts to aquatic resources would be implemented with a watershed approach and would systematically prioritize compensatory mitigation projects based on anticipated impacts to aquatic resources, considering both watershed- and function-based factors. Upon consideration of the SSHCP and ARP compensatory mitigation strategy, the predicted future watershed profiles resulting from implementation of the SSHCP demonstrate that overall aquatic resource abundance, type, and condition within the Plan Area would be maintained or improved. There would not be a net loss of aquatic resources in terms of acreage; all aquatic resource types would remain intact; and the amount of high-condition resources within the Plan Area would be increased.

totals; (2) Rounding; and (3) Some of the acreage of riparian land cover types reported in the SSHCP are considered non-jurisdictional as they are mitigation sites comprised of created or restored riparian habitat. Non-jurisdiction aquatic resources are not discussed in the ARP. It is this last factor that accounts for the majority of the difference in reported aquatic resource acreage between the ARP and the SSHCP.

1 INTRODUCTION

1.1 Introduction to the ARP

The Aquatic Resources Program (ARP) is a local jurisdiction based aquatic resources permit program that adds to the strength of the South Sacramento Habitat Conservation Plan's (SSHCP or Plan's) framework of protection of natural communities and native plant and wildlife species, including protection of aquatic resources. The ARP identifies, classifies, and ranks the aquatic resources located within the SSHCP Plan Area (see discussion of Plan Area in ARP Section 1.2) (Figure 1), and describes a program to implement locally based permitting that relies on a systematic approach of aquatic resource avoidance, minimization, and compensatory mitigation. The implementation of this program is synergistic with other natural resources avoidance, minimization, and compensatory mitigation described in the SSHCP. Implementation of the SSHCP and ARP would protect ecological diversity and function in Southern Sacramento County, while allowing planned urban growth and development in accordance with approved General Plans and applicable laws. The ARP introduces a locally based permit program that would also promote more efficient permitting approaches by state and federal programs that regulate aquatic resources. The regional SSHCP Preserve System (see SSHCP Section 7.5) would be used within the ARP as part of a unified watershed strategy of avoidance, minimization, and compensatory mitigation. The ARP permitting framework (local, state, and federal, as envisioned by the Plan Permittees) would be more protective of aquatic resources compared to the current project-by-project permitting process, based on several factors described in this document.

While the ARP focuses on a permit program to address impacts to aquatic resources and the SSHCP focuses on permitting related to incidental take of species, both permitting processes are done in conjunction with one another and in coordination with a local jurisdictions' land use entitlement permitting process. Projects seeking permits to impact aquatic resources will follow the local permit application process described in Section 7 of this document. Some basic components of the permit package include a project description, submittal of a wetland delineation, a description of how a project complies with AMMs, and a compensatory mitigation plan.

The Plan Permittees (Sacramento County, the City of Galt, the City of Rancho Cordova, the Sacramento County Water Agency, the Southeast Connector Joint Powers Authority, and the SSHCP Implementing Entity) are also seeking concurrent and parallel authorizations from federal and state regulatory agencies for customized, more efficient permitting approaches to address impacts to waters of the United States and waters of the state as a result of implementing future activities and projects (Covered Activities) permitted under the SSHCP's ESA and CESA Incidental Take Permits (ITPs).

Broadly, the SSHCP and ARP provide a framework for an improved process for projects (Covered Activities) to obtain environmental permits for impacts to federally and state-regulated species, natural communities, and aquatic resources, while ensuring a comprehensive watershed-based mitigation strategy that includes avoidance, minimization, establishment, re-establishment, and preservation of aquatic resources. Because so many of the SSHCP's Covered Species live part or all of their lives in water bodies, the Plan conserves wetland and stream habitats that are subject to regulation under Sections 404 and 401 of the federal Clean Water Act (CWA), California's Porter-Cologne Water Quality Control Act, and California Fish and Game Code Section 1600 et eq. pursuant to California's Lake and Streambed Alteration Program.

Aquatic resources identified in the SSHCP Plan Area include those regulated by the U.S. Army Corps of Engineers (USACE), the State Water Resources Control Board (SWRCB), Central Valley Regional Water Quality Control Board (Central Valley RWQCB), the California Department of Fish and Wildlife (CDFW), and local zoning and aquatic resource ordinances.

The ARP is a watershed-based plan developed to be synergistic with and will be implemented in conjunction with the SSHCP for the purpose of improving the protection and management of Plan Area aquatic resources with a watershed-level approach and with a better evaluation of cumulative impacts.

1.1.1 ARP Overview

The ARP is a local-jurisdiction based aquatic resources regulatory program, that further hopes to enable a new state and federal regulatory framework with increased efficiencies, within a regional conservation approach (as described in the SSHCP) for aquatic resources located within the Plan Area. This regional approach avoids and minimizes impacts to Plan Area aquatic resources, and will provide compensatory mitigation at a landscape level to protect a subset of largely intact watersheds in the Plan Area, including their aquatic resources. A primary goal of ARP implementation is to achieve an overall no net loss of aquatic resource functions and services in accordance with the USACE's and U.S. Environmental Protection Agency's (EPA's) 2008 Compensatory Mitigation Rule, *33 C.F.R. Parts 325 and 332, Compensatory Mitigation for Losses of Aquatic Resources: Final Rule* (Mitigation Rule). The ARP is directly tied to the SSHCP and designed to be fully integrated with the SSHCP. The SSHCP includes a mitigation strategy that is consistent with the CWA Sections 404 and 401 implementing regulations, in particular the Mitigation Rule, California Fish and Game Code Section 1600, and the Porter-Cologne Water Quality Control Act (Porter-Cologne).

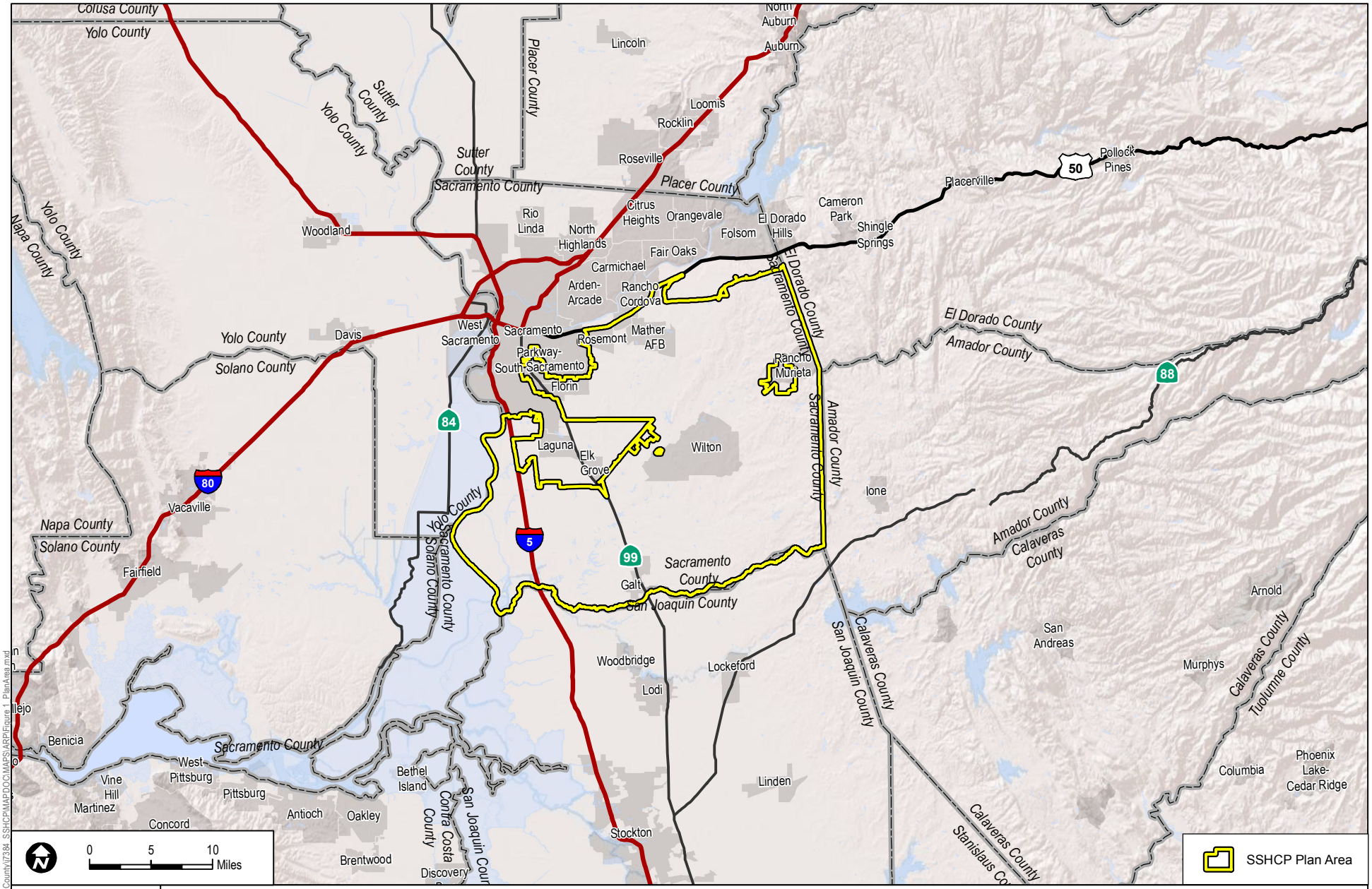

FIGURE 1

Plan Area

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN AQUATIC RESOURCES PROGRAM

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The ARP proposes to implement a regional compensatory mitigation strategy that recognizes the abundance, diversity, and condition of the aquatic resources so better decisions for avoidance, re-establishment, establishment, and preservation of aquatic resources are determined. This mitigation strategy is consistent with and provides for the planned urban growth and development described in the approved General Plans for Sacramento County, Galt and Rancho Cordova, and together they would result in improved economic and environmental planning for the Plan Area. This balanced regional approach to development and aquatic resource conservation in south Sacramento County provides a greater level of landscape- and watershed-scale protection of aquatic resources than has generally occurred with the conventional project-by-project agency review and permitting under the CWA Sections 404 and 401, and the California Fish and Game Code 1600 programs.

The avoidance, minimization, compensatory mitigation requirements coupled with the more efficient permitting process described in the ARP are derived from the SSHCP. However, the ARP focuses on Plan Area aquatic resources specifically, and, in some areas, addresses them in greater detail than the SSHCP. The ARP additionally articulates a proposed local jurisdiction-based aquatic resources permitting program that would be implemented via ordinances and would be implemented synergistically with the SSHCP.

1.1.2 ARP Program Objectives

The Plan Permittees and key stakeholders propose to implement a local aquatic resources permitting program, and have also coordinated with federal and state resource agencies to develop processes with a set of broad program goals for SSHCP Covered Activities that would collectively achieve the following ARP program objectives:

- **Local Implementation:** Establish local ordinances for successful implementation of the SSHCP and ARP.
- **Local Permitting Program:** Establish a local program carried out by the Plan Permittees to ensure improved permitting efficiency for future SSHCP Covered Activities for CWA 404 permits, 401 certifications, and California Fish and Game Code 1600 agreements. Such efficiency will help the regulated public and resource agencies save time and money, and will facilitate a better decision-making processes at the landscape and project levels.
- **Predictability:** Create a standardized and predictable permitting process for future SSHCP Covered Activities. A regionally integrated process allows permitting consistency and a more environmentally effective decision-making process.

- **Fair and Equitable Decisions:** Create a predictable decision-making outcome based upon a comprehensive approach that incorporates regionally important factors better serves the regulated public.
- **Greater Ecological Benefits:** Implement ecologically effective, watershed-based aquatic resource mitigation and conservation to achieve more robust protection for aquatic resources in the Plan Area.

1.2 SSHCP Summary

To offset expected impacts of future planned development described in the General Plans , the SSHCP would provide a landscape-level approach to protection of important biological and ecological resources, including suitable Covered Species habitats such as wetlands, streams, riparian, natural upland land covers, and certain types of agricultural lands that have important wildlife habitat value for SSHCP Covered Species (e.g., certain croplands and irrigated pasture-grassland). The SSHCP would provide Covered Activities with ESA and CESA incidental take coverage for their impact to 28 Covered Species of plants and wildlife, and to 17 land cover types that provide suitable habitat for the 28 Covered Species. The SSHCP Conservation Strategy will preserve approximately 36,282 acres. Properties would be acquired for the Preserve System from willing sellers via avoidance, land transfers in lieu of fees, and fees collected for development of the conservation mitigation strategy for Covered Activities located largely within urbanized areas. The 36,282 acres of new conservation would add to the approximately 64,535 acres of existing conservation in the Plan Area, resulting in total conservation of approximately 100,817 acres.

The Plan Area includes 317,656 acres within south Sacramento County, including the Cities of Galt and Rancho Cordova (see Figure 1, Plan Area). The Plan Area is defined as the area in which all SSHCP conservation actions would be implemented and where all SSHCP Covered Activities would occur. The boundary of the Plan Area was defined using political and ecological factors. The geographical boundaries are U.S. Highway 50 to the north, the Sacramento River levee and County Road J11 to the west, the Sacramento County line with El Dorado and Amador Counties to the east, and the San Joaquin County line to the south.

The Plan Area excludes the northern portion of Sacramento County, the City of Sacramento, the City of Elk Grove, the City of Folsom, the sovereign lands of the Miwok Tribe, and the Sacramento County community of Rancho Murieta. These areas were excluded from the Plan Area because they were either significantly built out, would not use the SSHCP, or were not likely to benefit from the SSHCP due to the absence of listed species or their habitats. The sovereign lands of the Miwok Tribe are not included as the tribe is not a proposed Plan Permittee.

A majority of development Covered Activities would occur within Sacramento County's Urban Services Boundary (USB). The USB is the limit to which urban services, such as public water

and sewer, would be provided; as such, it defines the "footprint" for urban development in Sacramento County. Development Covered Activities would also occur within the City limits of Galt and Rancho Cordova, and within the extra-territorial sphere of influence for the City of Galt. Together, the USB, the Galt and Rancho Cordova city limits, and the City of Galt's sphere of influence define the SSHCP Urban Development Area (UDA) (Figure 2). All urban development-related Covered Activities would occur within the UDA. Covered Activities outside the UDA are limited to a defined list of infrastructure projects (see Chapter 5 of the SSHCP), including specific rural transportation projects and specific water-related utilities (e.g., recycled water). See Chapter 6 of the SSHCP for a description of impacts to land covers and Covered Species resulting from Covered Activities.

The Plan Area is divided into two components: inside and outside of a UDA. Inside the UDA is where the planned development outlined in the General Plans (the SSHCP urban development Covered Activities) would occur. Consequently, most ground disturbance and associated species incidental take would occur inside the UDA. However, a limited amount of species incidental take is also requested for the specific infrastructure project Covered Activities and for preserve management Covered Activities proposed outside of the UDA. Under the SSHCP, natural resource preserves would be established in strategic locations within the Plan Area.

The UDA portion of the Plan Area totals 67,618 acres. Geographically, the UDA is the portion of the Sacramento County USB, the incorporated Cities of Rancho Cordova and Galt, and Galt's sphere of influence that are also within the Plan Area. The Plan Area outside of the UDA totals 250,038 acres.

To assist with development of the SSHCP Conservation Strategy, the Plan Area was further divided into eight Preserve Planning Units (PPUs) that encompass areas where important Covered Species habitat are present, and where habitat preservation is planned (Figure 3). These eight SSHCP PPUs are geographic subdivisions of the Plan Area designed to ensure that the SSHCP Biological Goals and Measurable Objectives (see Chapter 7 of the SSHCP) would be met for biological resources present in every part of the Plan Area.

1.3 ARP Purpose

The basic purpose of the ARP is to institute a locally based aquatic permitting program that is also anticipated to assist the Plan Permittees in complying with the requirements of federal, state, and local laws that protect aquatic resources. The ARP would be implemented locally using Aquatic Resources Protection Ordinances and would draw upon the comprehensive, landscape-, and project-level Conservation Strategy, as described in the SSHCP. The overall purpose of the ARP is to improve the protection of aquatic resources with a locally based, watershed-level approach and a better evaluation of individual and cumulative impacts. This strategy would benefit state and

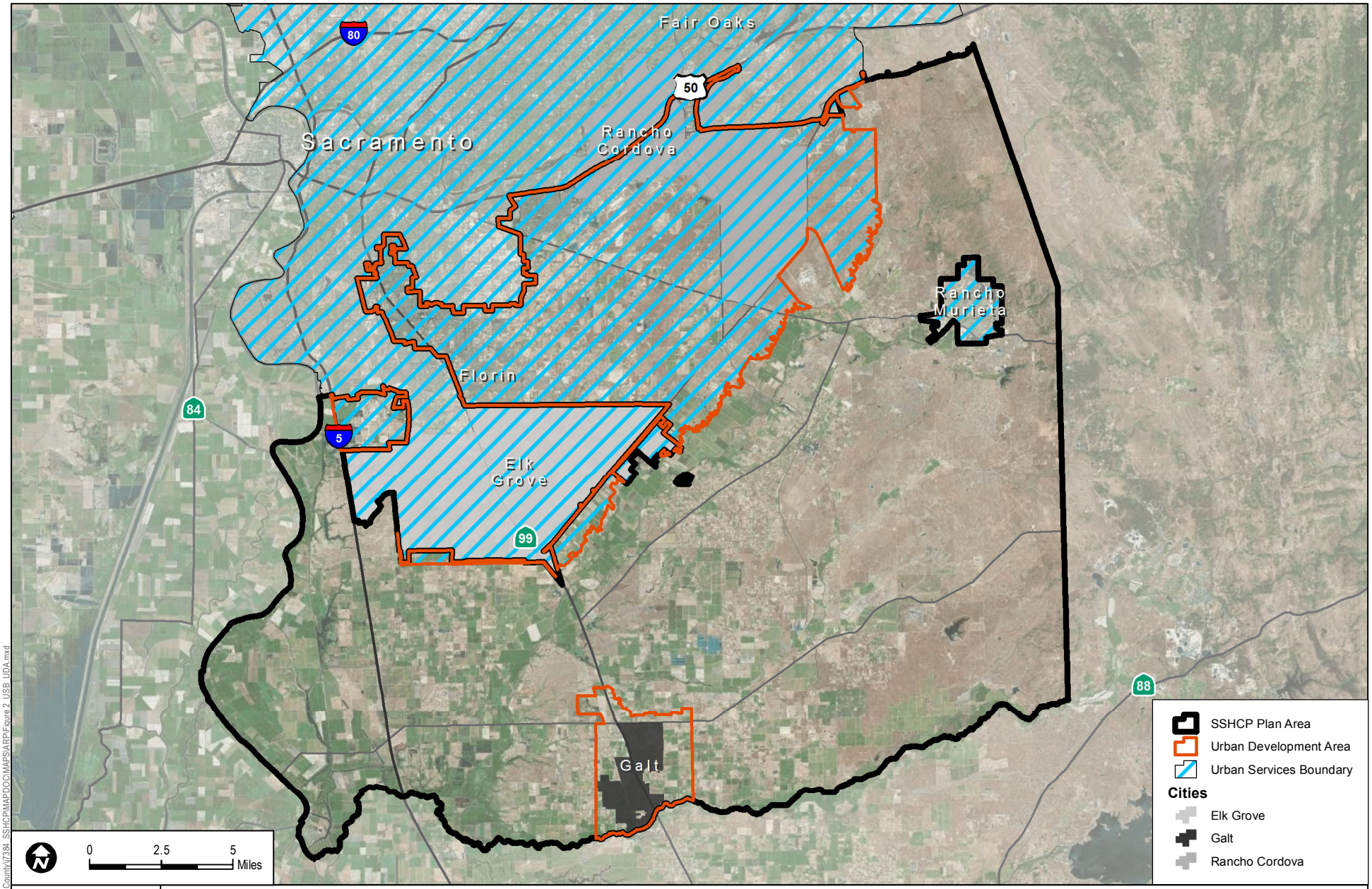
federal regulatory agencies by allowing for development of more efficient aquatic permitting processes, and the regulated public by streamlining permitting processes to allow a consolidated view of projected impacts and compensatory mitigation needs. This strategy also provides opportunities to accomplish greater environmental benefits than could be achieved via the conventional project-by-project review process.

The three Land Use Authority Permittees (the County of Sacramento and the Cities of Galt and Rancho Cordova), along with the SSHCP Implementing Entity (see Chapter 9 of the SSHCP), would administer the ARP. Incorporating aquatic resources protection into the environmental permit review process at the local level, closer to where project impacts occur, is expected to result in greater benefits to aquatic resources and regulatory efficiency.

The three SSHCP Land Use Authority Permittees and the Implementing Entity would establish a locally implemented permit process to administer the requirements set forth in the ARP, including review of applications for SSHCP Covered Activities that propose to impact aquatic resources in the Plan Area. They would do so by enacting Aquatic Resources Protection Ordinances. Compliance with the ARP and Aquatic Resources Protection Ordinances would be monitored, as described in Section 5.3.1.3 of the ARP, and in Chapter 8 of the SSHCP. Environmental review implemented at the local level would ensure compliance with established ordinances to protect aquatic resources in conjunction with local government aquatic resources protection policies (i.e., General Plan Policies) as part of the decision-making process (see Section 9.7 of the SSHCP).

Administration of the requirements set forth in the ARP and the Aquatic Resources Protection Ordinances would be implemented by one of the Land Use Authority Permittees or the Implementing Entity, depending on which of these governmental organizations has jurisdiction over a project. Jurisdiction over a project would be ceded to the Land Use Authority Permittee in which jurisdiction the project is being implemented. If a Land Use Authority Permittee does not have land use jurisdiction over a project (e.g., school district projects), then the Implementing Entity would take jurisdiction for purposes of administrating the ARP and Aquatic Resources Protection Ordinances.

In addition to describing the local aquatic resources permit program, the ARP describes the types, abundance, diversity, and condition of existing aquatic resources. It then identifies the anticipated impacts to those aquatic resources as a result of implementation of the SSHCP Covered Activities. The ARP uses a regional and local conservation strategy administered with federal, state, and local permitting agencies to improve the protection of aquatic resources within the Plan Area.



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SOURCE: Bing Maps, County of Sacramento 2014

FIGURE 2

Urban Services Boundary and Urban Development Area

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN AQUATIC RESOURCES PROGRAM

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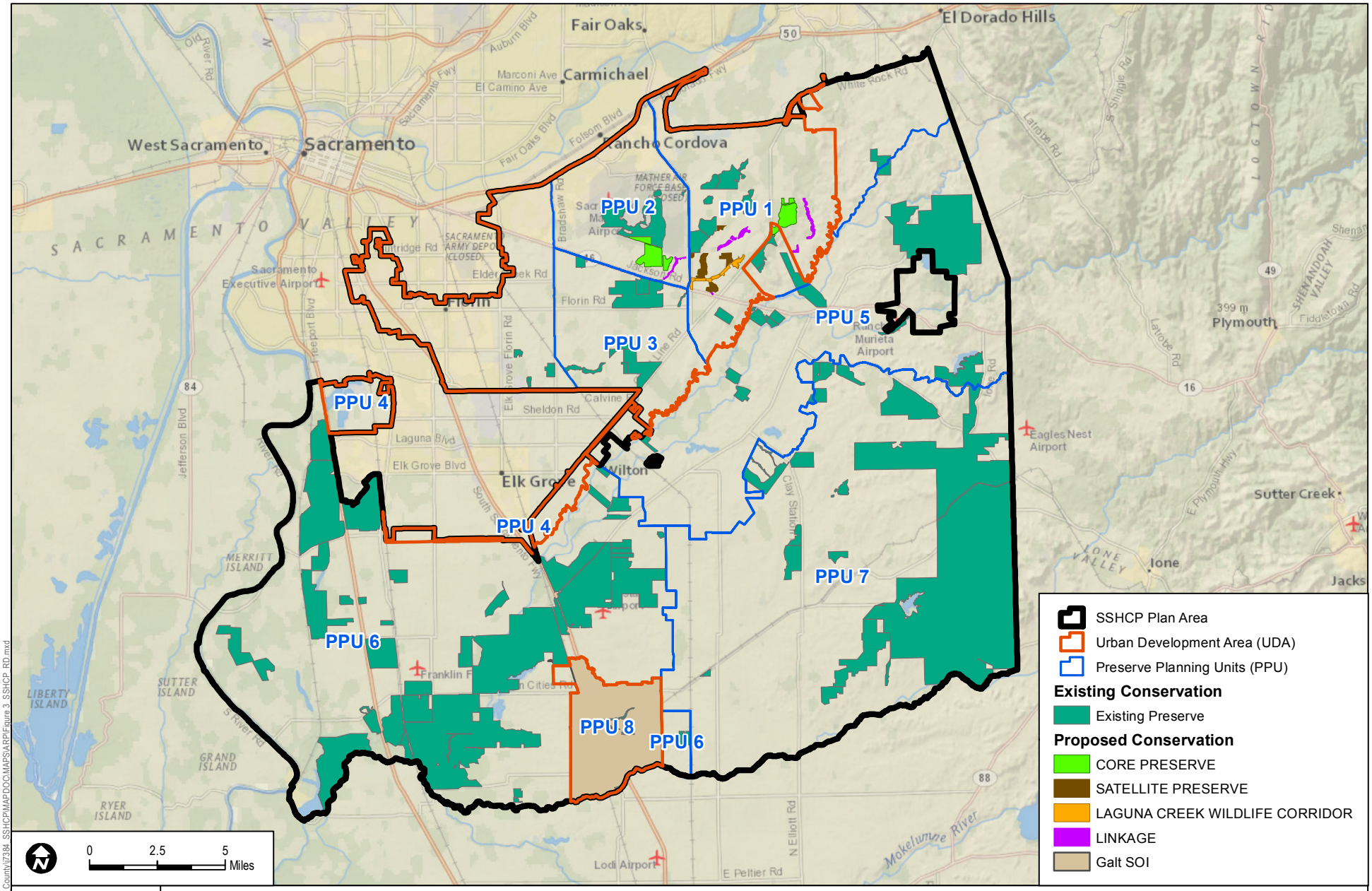

SOURCE: ESRI 2015, County of Sacramento 2014

FIGURE 3

Reserve Design Map

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN AQUATIC RESOURCES PROGRAM

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1.4 Relationship of ARP to the SSHCP

The ARP was developed in conjunction with the SSHCP to develop AMMs and compensatory mitigation requirements that meet or exceed the CWA and State of California Lake and Streambed Alteration Agreement Program mandates, and implement these standards in a local aquatic resources permit program. The ARP relies on (and is fully consistent with) the conservation plan of the SSHCP, including (1) Covered Activities that would use the ARP, (2) AMMs fully consistent with those of the SSHCP to avoid and reduce direct and indirect adverse impacts to aquatic habitats, (3) impacts analysis, and (4) mitigation for aquatic resources (e.g., the Conceptual SSHCP Preserve System, and proposed in-lieu fee (ILF) program). The ARP refers to SSHCP sections that describe or analyze aquatic resources, rather than re-stating facts and/or processes from the SSHCP. Thus, the synergistic relationship of the ARP to the SSHCP Conservation Strategy benefits Plan Area native plant and animal species and their habitats by providing a more effective strategy of protection of aquatic resources located within the SSHCP Plan Area. Together, the ARP and SSHCP would result in a comprehensive Conservation Strategy for conservation of all native plant and wildlife species of the Plan Area, including 28 special-status species of plants and wildlife, including 10 that are currently listed as threatened or endangered under the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA).

The list of SSHCP Covered Species can be found in SSHCP Chapter 1 (Table 1-2). SSHCP Chapter 5 describes the Covered Activities and conditions that would be required during Covered Activity implementation to avoid, minimize, or mitigate Covered Activity impacts to Plan Area natural communities, aquatic resources, and each Covered Species. The SSHCP Conservation Strategy includes Biological Goals and Measureable Objectives for the operational SSHCP at the landscape, natural community, and Covered Species levels (SSHCP Chapter 7, Table 7-1). The ARP focuses on the SSHCP Covered Activities that could impact aquatic resources of the Plan Area.

The Permittees developed the ARP to apply the SSHCP's standards and procedures in an integrated aquatic resources permitting process that is guided by local ordinance. The SSHCP includes a mitigation program that will achieve the SSHCP Biological Goals and Measureable Objectives for the Plan Area aquatic resources (see SSHCP Chapter 7). Together, the ARP and SSHCP provide the Plan Permittees, third-party project proponents, and resource agencies with a comprehensive regional approach to natural resource conservation and project permitting (see SSHCP Chapter 1 for details).

The ARP and the SSHCP are synergistic. The SSHCP minimizes and mitigates for impacts to Covered Species suitable habitat, including aquatic natural communities and their associated uplands, and provides for the conservation and management of aquatic natural communities at a

landscape-level and community-level scale. The ARP provides a programmatic approach for Plan Permittees and third-party project proponents to obtain permits for Covered Activity impacts to aquatic resources. The approach results in a more efficient process for issuing state and federal permits for Covered Activity impacts to aquatic resources, while maintaining a robust conservation strategy that includes required avoidance, minimization, and compensatory mitigation. Where it is determined that Covered Activity impacts to aquatic resources are unavoidable, and after all required SSHCP AMMs have been incorporated into the Covered Activity project, compensatory mitigation would be required. The aquatic resource mitigation requirements outlined in the ARP are integral to achieving many of the SSHCP Biological Goals and Measurable Objectives (see SSHCP Chapter 7).

The ARP would expedite permitting of Covered Activities that may impact aquatic resources within the Plan Area. The ARP describes the type, diversity, abundance, and condition of aquatic resources in the Plan Area and describes a Covered Activity permitting process that includes measures to avoid and minimize impacts to aquatic resources; and when impacts to aquatic resources cannot be avoided, the ARP provides an aquatic resources compensatory mitigation strategy that is consistent with and would be implemented synergistically with the SSHCP mitigation and conservation strategy.

2 AQUATIC RESOURCES PERMITTING OVERVIEW

2.1 Regulatory Framework

The ARP is designed to be a local-jurisdiction-based aquatic resources permitting program that demonstrates consistency with the SSHCP's regulatory framework for Covered Activity impacts under the CESA and ESA. The ARP is also intended to be consistent with and either meet or exceed the requirements of Sections 404 and 401 of the federal CWA and Porter-Cologne. The ARP is also written to be consistent with California Fish and Game Code Sections 1600–1616 (Lake or Streambed Alteration Agreement). Together, the ARP and SSHCP would result in a comprehensive Conservation Strategy for the conservation of aquatic resources, natural communities, native species, and 28 species of plants and wildlife within the Plan Area, including 10 that are listed as threatened or endangered under the federal ESA, CESA, or both, in the Plan Area. Chapter 1 of the SSHCP provides an overview of the regulatory framework.

2.2 Local Aquatic Resources Permitting Program Overview

A local-jurisdiction-based permit program (as mentioned above and described in greater detail in Section 7 of this document) is intended to serve as a program/document that federal and state regulatory agencies (e.g., USACE, Central Valley RWQCB, CDFW) can rely upon to develop complementary and efficient permitting approaches representative of their jurisdictional mandates (e.g., CWA Section 404). The ARP is designed to demonstrate consistency with the requirements of these regulatory agencies by protecting aquatic resources using a comprehensive, long-term watershed approach. This would allow the ARP to enact more efficient permitting timelines as well as to improve the protection and management of aquatic resources in the Plan Area.

The local jurisdiction based permit program would be established via a local aquatic resources protection ordinance that would require a project applicant who is impacting aquatic resources within the SSHCP Plan Area to acquire an Aquatic Resources Impact Permit form a local Land Use Authority Permittee. Each Land Use Authority Permittee that is participating in the SSHCP (Sacramento County, City of Rancho Cordova, and City of Galt) would be required to adopt aquatic resources protection ordnances. Locally based permit programs will be developed to occur concurrently with the SSHCP permitting process as well as with local entitlement permitting processes required by Land Use Authority Permittees. A detailed description of the aquatic resources permitting process and the application requirements is included in Section 7 of this document.

Under the currently implemented project-by-project aquatic permit review approach, the regulatory agencies have fewer opportunities to evaluate impacts or compensatory mitigation on a regional scale; thus, often have difficulty addressing aquatic resource impacts in a comprehensive manner. The ARP offers an opportunity to integrate local land use planning with aquatic resource protection,

which is expected to improve aquatic resources protection in a coordinated fashion, on a regional scale, and with greater certainty for the Plan Permittees.

The ARP's local aquatic permitting program would be implemented through Aquatic Resources Protection Ordinances adopted by the County of Sacramento and the Cities of Galt and Rancho Cordova, whereby the Land Use Authority Permittees and the Implementing Entity would have a standardized and integrated permitting review process established for Covered Activities implemented in the Plan Area (see ARP Chapter 8). The Aquatic Resources Protection Ordinances would incorporate AMMs, as described in SSHCP Section 5.4, which are equal to or stronger than those historically required by federal and state regulatory agencies on a conventional project-by-project basis. In this way, the ARP and Aquatic Resources Protection Ordinances would lead to consistent and robust aquatic resource protection measures.

For Covered Activities that comply with the requirements of the ARP and the SSHCP, and which require environmental permits from the regulatory agencies, the ARP would provide the opportunity for a fully integrated regulatory approach, by, as described above, providing a local program upon which state and federal aquatic resource programs could develop programmatic and complementary approaches to streamline their permitting processes. The approach would establish clear permitting procedures, along with reasonable timelines for review. The permitting procedures would thereby increase efficiency for the Plan Permittees and for the regulatory agencies.

2.3 Associated State and Federal Aquatic Resources Permits/Approvals

The ARP and the Aquatic Resources Protection Ordinances are intended to be consistent with the following federal and state regulations. The following programs have also been coordinating with the Plan Partners for an extended period of time, including working as cooperating agencies on NEPA and CEQA compliance documents for the SSHCP. As such, while the ARP cannot dictate the final decisions that state and federal agencies may make concerning their own aquatic permit approaches that can align with the locally based program, it has been developed in close coordination with the state and federal agency programs in order to optimize its consistency and ability to serve as a basis for a suite of complementary state and federal aquatic permitting approaches.

2.3.1 Clean Water Act Section 404

Section 404 of the CWA regulates discharge of dredged or fill material into "waters of the United States." The USACE and the EPA administer Section 404 of the CWA. Waters of the United States regulated under Section 404 of the CWA are identified in USACE regulations at 33 CFR 328.3. In

addition to streams and other waters of the United States with an ordinary high-water mark (OHWM), the definition of waters of the United States includes wetlands. Wetlands are defined as areas "that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3 (7)(b)).

The USACE evaluates two types of permits under Section 404 of the CWA: general permits (nationwide, regional, and programmatic) and individual permits (letters of permission and standard permits). General permits are issued by the USACE on a nationwide or regional basis for a category or categories of activities when (1) those activities are substantially similar in nature and cause only minimal individual and cumulative environmental impact; or (2) the general permit would result in avoiding unnecessary duplication of the regulatory control exercised by another federal, state, or local agency provided it has been determined that the environmental consequences of the action are individually and cumulatively minimal (33 CFR 322.2(f)). Individual permits are evaluated on a case-by-case basis for activities that do not qualify for a general permit (i.e., that may have more than a minimal adverse environmental impact).

The USACE intends to use the ARP and Aquatic Resources Protection Ordinances in the development of a Section 404 CWA permitting strategy for SSHCP Covered Activities (see SSHCP Environmental Impact Statement/Environmental Impact Report [EIS/EIR], Appendix C). The strategy could potentially include a Programmatic General Permit (PGP) based on the ARP and/or a Regional General Permit (RGP) for Covered Activities that have no more than minimal impacts on the aquatic environment; a Letter of Permission (LOP) procedure for Covered Activities with impacts that meet certain requirements/thresholds and are more than minimal but would have less-than-significant impacts to waters of the U.S.; and an abbreviated Standard Permit (SP) procedure for other Covered Activities that exceed the LOP threshold and/or may have significant adverse impacts to waters of the U.S., but otherwise comply with the requirements of the ARP and SSHCP.

2.3.2 California Fish and Game Code/Section 1600 Master or Long-Term Streambed Alteration Agreement

Section 1600 of the California Fish and Game Code requires that a Streambed Alteration Application be submitted to the CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." CDFW reviews the proposed actions and, if necessary, submits to the applicant a proposal for measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the applicant is a Lake or Streambed Alteration Agreement (LSA). Covered Activities that require an LSA may also require a permit from the USACE under Section 404 of the CWA. In these instances, the conditions of the CWA Section 404 permit and the LSA may overlap.

The ARP describes how the local Land Use Authority Permittees (County of Sacramento and Cities of Rancho Cordova and Galt) and the Implementing Entity would work with CDFW to develop a streamlined process for review of notifications of Lake or Streambed Alteration and, if applicable, issue Master Streambed Alteration Agreements (MSAA) or Routine Maintenance Agreements for future SSHCP Covered Activities to be implemented by a local Land Use Authority Permittee. Under the MSAA, a local Land Use Authority Permittee implementing a Covered Activity must submit a notification of streambed alteration to CDFW before construction. The notification requires an application fee for Streambed Alteration Agreements, with a specific fee schedule to be determined by CDFW.

For all other SSHCP Covered Activities that need a Streambed Alteration Agreement, the ARP would serve to quicken CDFW review by requiring projects' incorporation and compliance with the ARP's AMMs and the SSHCP conservation measures.

2.3.3 Clean Water Act Section 401 Porter-Cologne Act/Waste Discharge

Section 401 of the CWA requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge would comply with the state's applicable effluent limitations and water quality standards. In California, the RWQCB where the dredge or fill activity occurs administers CWA Section 401 requirements. For dredge or fill activities that occur in more than one RWQCB, the SWRCB administers CWA Section 401 requirements.

Porter-Cologne is California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater. Porter-Cologne grants the SWRCB and the RWQCBs' power to protect water quality. Porter-Cologne grants the SWRCB and the RWQCBs' authority to adopt plans and policies, to regulate discharges of waste to surface and groundwater, to regulate waste disposal sites, and to require cleanup of discharges of hazardous materials and other pollutants. Covered Activities that require a CWA Section 401 water quality certification, a CWA Section 404 permit, and/or a SAA may also require a report of waste discharge.

The ARP would facilitate the Central Valley RWQCB's development of water quality certification strategies, in conjunction with USACE's development of a CWA Section 404 permitting strategy for the Plan Area.

3 AQUATIC RESOURCES IN THE PLAN AREA

The status of existing aquatic resources in the Plan Area can be described in terms of the aquatic resources' diversity, abundance, and condition. Diversity is described in terms of the variety of aquatic resources by SSHCP land cover type (common name) and Cowardin class. Abundance is described in terms of acreage of each aquatic resource type within the Plan Area and per watershed (at the Hydrologic Unit Code [HUC]-10 level). Condition is described using a landscape-level functional assessment to determine the relative capacity of aquatic resources to perform various functions and services related to hydrology, water quality, and habitat.

3.1 Diversity and Abundance of Aquatic Resources in the Plan Area

The SSHCP and ARP impact analyses and Conservation Strategy are based upon land cover type mapping of the Plan Area. Land cover type classification is based upon the California Natural Communities classification system developed by CDFW (Sawyer and Keeler-Wolf 1995) and consists of polygons, or non-linear resources. Chapter 3 of the SSHCP provides further detail for the land cover type definitions and mapping methods. The land cover types described in the ARP are identical to the land cover types described in the SSHCP. Land cover types in the Plan Area were identified and classified through interpretation of signatures of major vegetation and physical characteristics discernible on aerial photography. This information was refined through ground-truthing.

Ten of the land cover types mapped in the Plan Area are composed of or contain aquatic features and, for purposes of this analysis, are considered potential jurisdictional aquatic resources (see Table 3-1 in Chapter 3 of the SSHCP). The definition of these land cover types and classifications of land cover types as interpreted by the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979) are included below. This planning-level inventory of aquatic resources was mapped to be fully inclusive of all areas that could potentially be waters of the United States and waters of the state. As such, the acreages mapped as potentially jurisdictional are likely to be larger than the actual extent of waters of the United States and waters of the state. Exact extents of waters of the United States and waters of the state would be delineated and the mapping verified by the regulatory agencies for individual Covered Activities brought forth under the SSHCP ITPs.

3.1.1 Types of Wetland Waters

Vernal Pool Land Cover (Cowardin: Palustrine, Emergent Wetland, Nonpersistent)

Vernal Pools are a type of seasonal wetland that is characterized by a specific set of physical parameters and a unique assemblage of highly specialized endemic plants and animals that are adapted to the annual cycle of winter inundation and summer drought. The most important

feature of Vernal Pools is a distinct wet/dry hydrologic regime. Vernal Pools generally occur in complexes of interconnected pools either by swales, described below, or through a perched aquifer that exists between the soil surface and the sub-surface restricting layer or both.

All Vernal Pools may appear to be similar, yet each pool may exhibit different hydrologic behavior. In some Vernal Pool habitats, clay soils keep most water on or near the surface, so Vernal Pools receive nearly all of their water due to direct precipitation and are maintained by surface flows. In these sites, smaller and shallower pools dry quickly due to evapo-transpiration (Williamson et al. 2005). In other Vernal Pool habitats, the smaller and shallower Vernal Pools can be buffered against evapo-transpiration loss by perched aquifers (Williamson et al. 2005; Rains at al. 2006). The ecology of Vernal Pools located on duripan or claypan soils in the Central Valley appear to be supported by perched aquifers (Rains et al. 2006). In these soils, a sub-surface hydrologic restricting layer has formed preventing percolation of water into the groundwater aquifer and creates the sub-surface perched aquifer. In these soils and hydrologic conditions, seasonal surface water and perched groundwater hydrologically connect uplands, vernal pools, and streams at the catchment scale. Perched groundwater discharges from uplands to vernal pools thereby stabilizes the pools and causes them to remain inundated for longer periods than would be the case if they were recharged only by precipitation. The greater watershed can supply as much as 60% or more of the water needed to fill pools to the margin; however, individual Vernal Pools can display markedly different hydrology due to variations in topography and soil properties near each pool (Williamson et al. 2005; O'Geen et al. 2008; Leibowitz and Brooks 2008). Whether a Vernal Pool system is a direct-precipitation surface water overland flow driven (e.g., clay soil pools) or is a perched aquifer/surface flow system (e.g., duripan/claypan soil pools) also greatly influences water chemistry in vernal pools and seasonal wetlands (Rains et al. 2008; O'Driscoll and Parizek 2008).

Water chemistry and related abiotic factors have been shown to influence aquatic flora and fauna biodiversity and abundance (Kneitel and Lessin 2010; Lessin 2010; Poirier 2012), although the degree to which such changes affect vernal pools is poorly understood because the fundamental hydrogeological characteristics of perched aquifers remain relatively unexplored (Rains et al. 2006). It is possible that remnant Vernal Pools within altered landscapes, or higher densities of re-established or established Vernal Pools, may not have adequate surface and/or subsurface flows to adequately function as suitable habitat for certain species. Alternatively, the abiotic habitat components such as water chemistry, which is mediated by transport through subsurface and surface flows, may alter the suitability of the habitat to support tadpole shrimp if anthropogenic activities significantly affect upland watersheds (Rains et al. 2008). For example, truncating the upland watershed of a perched aquifer vernal pool system may convert the system from a perched aquifer/surface flow system to a direct precipitation surface water overland flow system, which may function similarly from a hydroperiod perspective but may be fundamentally altered from an abiotic water chemistry perspective. The vernal pools in the Plan Area are all perched

aquifer/surface flow type pools that are supported by sub-surface hydrology. Therefore, the hydrologic regime of Vernal Pools in the Plan Area is mediated by the interaction between the pool and the surrounding uplands that support the perched aquifer. The majority of Vernal Pools occurring within the Plan Area are largely supported by sub-surface perched aquifer hydrology. Factors affecting Vernal Pools are further discussed in SSHCP Chapters 2, Physical Setting; 3, Biological Resources Setting; and 6, Effects Analysis.

Vernal Pools in the Plan Area exhibit a variety of size and pool depth. Appendix B-1 describes the variation in Plan Area Vernal Pool complexes in greater detail. Approximately 4,537 acres of Vernal Pools have been identified within the Plan Area. Key physical parameters include landform, drainage area, geologic formation, slope, soil type, structure and depth, pool size and depth, timing of the hydrologic cycle, and pool interconnectivity. Different geologic formations in the Plan Area (see SSHCP Chapter 2) and their associated soils exhibit different propensities for the development of Vernal Pools (Keeley and Zedler 1998; Holland and Dains 1990; Metz 2001) and Vernal Pool physical parameters appear to vary by soil type. Various geological formations support characteristic Vernal Pool types that differ in fundamental physical and biological ways between geologic formations in a given region (Holland and Dains 1990; Smith and Verrill 1998, Platenkamp 1998; Metz 2001; Vollmar 2002; Helm and Vollmar 2002; Laabs et al. 2002; Dittes and Guardino 2002).

As discussed in SSHCP Chapter 3, the particular plant and animal species present in Vernal Pools vary based on physical, chemical, biologic and hydrologic parameters. In particular, several SSHCP Covered Species generally require large, deep pools that are long lasting to successfully complete their life cycles, including Boggs Lake hedge-hyssop (*Gratiola heterosepala),* Sacramento and slender Orcutt grasses (*Orcuttia viscida* and *O. tenuis*), vernal pool tadpole shrimp (*Lepidurus packardi*), California tiger salamander (*Ambystoma californiense*), and western spadefoot (*Spea hammondii*). Other vernal pool Covered Species occur in and around small to medium-sized pools, or the more "flashy" pools that dry out relatively quickly and may inundate and dry several times during the wet season, such as Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*), dwarf downingia (*Downingia pusilla*), and pincushion navarretia (*Navarretia myersii*). For some plants in the latter category, the edges of larger Vernal Pools may provide conditions equivalent to small, flashy pools. The SSHCP Covered Species include two amphibian, four invertebrate, and seven plant Covered Species that depend on Vernal Pools (see SSHCP Table 3-2).

Seasonal Wetland Land Cover (Cowardin: Palustrine, Emergent Wetland, Nonpersistent)

Seasonal Wetlands are wetlands that saturate and/or pond for variable periods during a portion of the year, generally the rainy winter season, then dry relatively slowly, typically in the summer and early fall. Seasonal Wetlands tend to occur within moderate to large-sized depressional

features in valley grassland; along streams, creeks, and rivers; and along the edges of open water. Seasonal Wetlands are often characterized by herbaceous annual and perennial species, such as curly dock (*Rumex crispus*) and bulrush (*Scirpus* spp.).

Seasonal Wetlands provide habitat for some Covered Species (SSHCP Table 3-2). The SSHCP does not consider Seasonal Wetlands to be suitable habitat for the vernal pool invertebrate Covered Species. However, as discussed in SSHCP Section 3.4, Seasonal Wetlands do provide habitat for California tiger salamander, western spadefoot, Boggs lake hedge-hyssop, legenere (*Legenere limosa*), and Sanford's arrowhead (*Sagittaria sanfordii*). Other Covered Species that use seasonal wetland land cover as habitat are giant garter snake (*Thamnophis gigas*), all of the bird Covered Species except Cooper's hawk (*Accipiter cooperii;* mostly as foraging habitat), American badger (*Taxidea taxus*), and the three covered bat species. There are approximately 2,600 acres of Seasonal Wetlands mapped within the SSHCP Plan Area.

Swale Land Cover (Cowardin: Riverine, Intermittent, Nontidal)

Swales are shallow seasonal drainages typically found in flat to gently rolling valley grassland in association with vernal pool complexes on soils with an impermeable claypan or hardpan layer. Swales convey runoff as broad gently sloping ephemeral drainages during, and for short periods after, winter rainstorms. Swales are often associated with vernal pools and can provide conduits between vernal pools for movement of covered vernal pool plant and animal propagules (seeds, cysts, eggs, and spores) and adult California tiger salamanders and western spadefoots. Swales support several native plants commonly found in vernal pools. Swales also often include smaller shallow vernal pool riverine features that compose the headwaters of ephemeral tributaries within the Plan Area. The Plan Area includes approximately 1,252 acres of Swale.

Swales provide suitable habitat for portions or all of the life cycle of many of the Covered Species that occur in the vernal pool land cover type, including Ahart's dwarf rush, dwarf downingia, pincushion navarretia, mid-valley fairy shrimp (*Branchinecta mesovallensis*), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp, Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*), and western spadefoot. In addition, all of the bird Covered Species (except Cooper's hawk and greater sandhill crane (*Grus canadensis*)) would use Swale land cover as foraging habitat, along with the American badger, and the three bat Covered Species (SSHCP Table 3-2).

Freshwater Marsh Land Cover (Cowardin: Palustrine, Emergent Wetland, Persistent)

The Freshwater Marsh land cover type is defined by herbaceous wetlands occurring along rivers, streams, lakes, and other linear or open bodies of water that are dominated by emergent hydrophytic (water-loving) plants such as grasses, reeds, rushes, and sedges (Kramer 1988).

Freshwater Marshes are typically perennial wetlands, but may dry out for short periods. Freshwater Marshes vary in size from small clumps to vast areas covering several kilometers (Kramer 1988). On the upper margins of this habitat, saturated or periodically flooded soils support several moist soil plant species, including big-leaf sedge (*Carex amplifolia*), Baltic rush (*Juncus balticus*), redroot flatsedge (*Cyperus erythrorhizos*), nutgrass (*Cyperus rotundus*), and on more alkali sites, saltgrass (*Distichlis spicata*). On wetter sites, common cattail (*Typha* spp.), bulrushes, and arrowhead (*Sagittaria* spp.) are potential dominant species.

Most of California's Freshwater Marshes occur in the Sacramento Valley and the San Joaquin Delta regions. Approximately 2,954 acres of freshwater marsh are mapped within the Plan Area. The majority of Freshwater Marsh in the Plan Area occurs along the perennial Cosumnes River and Deer Creek and along the margins of open water in the southeastern portion of the Plan Area in PPU 6. Freshwater Marsh is important habitat for western pond turtle, giant garter snake, and tricolored blackbird (*Agelaius tricolor*) (SSHCP Table 3-2).

Riparian Land Covers (Cowardin: Palustrine, Forested or Scrub/Shrub Wetland)

While "riparian" has various definitions, the SSHCP uses the National Research Council's 2002 definition: "Riparian areas are transitional between terrestrial and aquatic ecosystems and are distinguished by gradients in biophysical conditions, ecological processes, and biota. They are areas through which surface and subsurface hydrology connect water bodies with their adjacent uplands. They include those portions of terrestrial ecosystems that significantly influence exchanges of energy and matter with aquatic ecosystems (i.e., a zone of influence). Riparian areas in the Plan Area are adjacent to perennial, intermittent and ephemeral streams, lakes" (NRC 2002). The ARP assumes that riparian areas are aquatic resources so that the broadest suite of potential aquatic resources in the Plan Area are conserved.

Riparian ecosystems are highly dependent on landscape setting and numerous physical and biotic interactions. Riparian ecosystems provide essential foraging, shelter, and breeding habitat for several of the Covered Species and other native plant and animal species, including both resident and migratory species. SSHCP Covered Species that strongly depend on riparian land covers and often associated stream/creek land covers for at least some critical phase of their life history include valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), giant garter snake, western pond turtle, Cooper's hawk, Swainson's hawk (*Buteo swainsonii*), white-tailed kite (*Elanus leucurus*), pallid bat (*Antrozous pallidus*), western red bat (*Lasiurus blossevillii*), and Yuma myotis bat (*Myotis yumanensis*).

Over the last 150 years, there have been substantial anthropogenic alterations of streams and creeks that support riparian habitat in the Central Valley related to agriculture, rangeland use, and urban development (Katibah 1984), including straightening and deepening of channels;

construction of levees, dams, and other impoundments; riprap and concrete walls; vegetation clearing; and other alterations (see SSHCP Chapter 2). These alterations have adversely affected many riparian functions by isolating active stream and creek channels from their floodplains, altering natural flow patterns (e.g., timing and amount), and disrupting many other dynamic physical processes, such as groundwater recharge and sediment transport, scouring, and deposition that affect the fluvial dynamics of the system, including growth and distribution of riparian vegetation. In the Plan Area, these alterations may be expressed as small patches of riparian vegetation, usually as small clusters of trees and shrubs, or just a thin strip of riparian vegetation that is only one or two trees wide. In the eastern portion of the Plan Area (PPU 6 and PPU 8 in Figure 3), there are cottonwoods in some streamside locations, while along other streams, there is little riparian woodland vegetation. Streams flowing through vernal pool and valley grassland land covers in PPUs 1, 2, 3, 5, and 7 often exhibit little difference in vegetation between the riparian zone along the stream and the adjacent uplands; in some cases, there is just patchy distribution of mixed riparian scrub. Some streams in the urban areas of PPUs 3 and 4 are bounded by concrete walls and support no riparian vegetation, while others have narrow undeveloped riparian zones with a mix of trees, grasses, vernal pools, and seasonal wetlands (see SSHCP Chapter 2).

The SSHCP has identified three riparian land cover types totaling approximately 7,952 acres or 2.5% of the Plan Area: Mine Tailing Riparian Woodland, Mixed Riparian Scrub, and Mixed Riparian Woodland.

The Mine Tailing Riparian Woodland land cover type is distributed among older mine tailings. This land cover type contains species commonly found in riparian woodlands and riparian scrub habitats, such as Fremont cottonwood (*Populus fremontii*), blue elderberry (*Sambucus mexicana*), willow (*Salix* spp.), and coyote-brush (*Baccharis pilularis*). In the Plan Area, this land cover type can also intergrade with Mixed Riparian Forest along bodies of water.

Mixed Riparian Scrub land cover type is interspersed with Mixed Riparian Woodlands in the floodplains of waterways throughout Sacramento County. In the Plan Area, this land cover type consists of an open to dense shrubby thicket dominated by a mixture of sandbar willow (*Salix exigua*), arroyo willow (*S. lasiolepis*), red willow (*S. laevigata*), and immature stands of mixed riparian woodland tree species (see description below). This plant community can also be a subcanopy community in Mixed Riparian Woodlands. Though dense stands of riparian scrub in the Plan Area typically lack an understory, some of the more open canopy mixed riparian scrub stands do support an understory of native and non-native species, including wild rose (*Rosa californica*), wild grape (*Vitis californica*), perennial pepperweed (*Lepidium latifolium*), Himalayan blackberry (*Rubus discolor*), curly dock, and various non-native grasses.

The Mixed Riparian Woodland land cover type is distinguishable by an open canopy layer dominated by tall Fremont cottonwood trees. Beneath this open layer, a moderately dense mid-

canopy layer is composed of tree species such as Oregon ash (*Fraxinus latifolia*), Goodding's willow (*Salix gooddingii*), California black walnut (*Juglans californica* var. *hindsii*), valley oak (*Quercus lobata*), and box elder (*Acer negundo*). In some areas, a subcanopy of dense riparian scrub dominated by willow species, including arroyo willow and sandbar willow, is present. A discontinuous shrub layer is also present, particularly along the northern boundary of the Plan Area, and includes species such as blue elderberry, Himalayan blackberry, coyote-brush, wild rose, and wild grape. The understory is sparsely to densely vegetated with herbaceous species. Invasive weeds that have colonized portions of the mixed riparian woodland in the Plan Area include tamarisk (*Tamarix* spp.) and giant reed (*Arundo donax*).

Riparian land covers are associated with Plan Area streams and creeks (see SSHCP Section 3.2.1) and typically occur in the zone between the active stream channel mapped as streams/creeks and adjacent upland land covers.

The best-developed existing Riparian systems in the Plan Area are outside the UDA in PPU 6 along the parallel Cosumnes River and Deer Creek that run from the northeast to the southwest (Figure 3). In many areas, the Cosumnes River riparian woodland is relatively wide and is characterized by a multi-canopy structure, including a mix of cottonwood, sycamore, and valley oaks; a shrub layer of narrow-leaf willow (*Salix exigua*), California and Himalayan blackberry, and wild grape; and an understory layer of grasses, forbs, and sedges. This species and structural diversity provides suitable habitat for a rich diversity of wildlife, including several Covered Species.

Besides the Riparian land cover along the Cosumnes River and Deer Creek, the other main concentrations of Riparian land cover in the Plan Area are approximately 219 acres of Mine Tailing Riparian Woodland in the northern portion of the Plan Area (PPU 1) and approximately 345 acres of Mine Tailing Riparian Woodland just south of the Cosumnes River in the eastern portion of the Plan Area (north portion of PPU 7). The document treats Mine Tailing Riparian Woodland land cover as an aquatic resource.

3.1.2 Types of Non-Wetland Waters

Open Water Land Cover (Cowardin: Riverine and Limnetic, Unconsolidated Bottom, Nontidal)

The Open Water land cover type includes perennial or seasonal features, such as natural or manmade ponds, lakes, and reservoirs. Open Waters may contain either no vegetation, or non-rooted aquatic vegetation, such as algae, floating pondweeds, and other plants. Along shorelines, rooted, emergent vegetation may occur, forming freshwater marsh. Like freshwater marsh, open water habitats are used by numerous bird, mammal, amphibian, and reptile species, including several Covered Species, such as western pond turtle and giant garter snake. The marshy shorelines may be used by tricolored blackbird for nesting colonies (SSHCP Table 3-2).

Open Water habitat is found throughout the SSHCP area, and accounts for 2,342 acres in the Plan Area. The largest open water features are found on or near the Cosumnes River and Deer Creek. These open water features are largely unnamed with the exception of Blodgett Reservoir inside the UDA and Rancho Seco Lake outside the UDA.

Stream/Creek Land Cover (Cowardin: Riverine, Perennial or Intermittent, Nontidal)

The SSHCP Stream/Creek land cover includes rivers such as the Cosumnes River, streams such as Laguna Creek, and smaller intermittent or perennial creeks. This land cover also includes ephemeral streams outside the UDA; ephemeral streams inside the UDA were assumed to be associated with the vernal pool ecosystem and are categorized as stream/creek (vernal pool invertebrate habitat [VPIH]) below.

The Plan Area includes approximately 2,777 acres of Stream/Creek land cover. Polygons of the Stream/Creek land cover occur in areas that contain vernal pools and other wetlands, in Valley Grassland, Blue Oak Woodlands and Savannas, Agriculture, and Developed land cover types.

According to the National Hydrography Dataset, the Plan Area includes approximately 930 miles of "natural" streams and creeks (i.e., excluding artificial path, canal/ditch, connector, and pipeline). The larger streams inside the UDA, such as Laguna Creek, have perennial flow, due to summer runoff from irrigation. However, the upstream portions of these creeks, if undeveloped, generally have intermittent (i.e., seasonal) flows. Many smaller creeks and tributaries to larger creeks have intermittent or ephemeral (i.e., following rain events) flows. Most streams in the Plan Area are valley floor streams characterized by slow-moving water, except after rain events, and often carry substantial sediment loads as a result of land disturbances. Some reaches of tributaries in the eastern portion of the Plan Area flow over gently sloping terrain and have more of a pool and riffle structure. Due to their relatively small size and location among urban and farming or rangeland uses, most Plan Area creeks have been substantially affected in terms of water quality, invasive species, habitat loss, or other habitat degradation, although they still provide suitable habitat and important ecological functions for several of the Covered Species in the SSHCP, especially where the streams and creeks are associated with other riparian and wetland communities. The following streams are listed as impaired waters under Section 303(d) of the CWA: Carson Creek, Cosumnes River, Deer Creek, Elder Creek, Lower Mokelumne River, and Morrison Creek.

Covered Species associated with the Stream/Creek land cover type include Sanford's arrowhead, California tiger salamander, western spadefoot, giant garter snake, western pond turtle, and western red bat. Some streams or creeks provide habitat for vernal pool crustaceans, which are addressed in the Stream/Creek VPIH land cover below.

Over the last 150 years, there have been substantial man-made alterations of many of the streams and creeks in the Plan Area, including straightening and deepening of channels, construction of levees, dams and other impoundments, riprap and concrete walls, vegetation clearing, and other changes. These changes have adversely affected many stream and creek area functions by separating active channels from their natural floodplains, altering natural flow patterns, and disrupting many other dynamic physical processes that maintain stream and creek functions.

Stream/Creek (VPIH) Land Cover (Cowardin: Riverine, Intermittent, Nontidal)

The SSHCP Stream/Creek (VPIH) land cover type was only mapped in the UDA; outside the UDA these features are included in either the Swale land cover type or the Stream/Creek land cover type. Stream/Creek (VPIH) is typically vegetated (i.e., with valley grassland plant species) and conveys water only after rain events (ephemeral). Unlike most swales, streams/creeks (VPIH) are less likely to exhibit vegetation characteristic of vernal pools, and the SSHCP does not consider Stream/Creek (VPIH) land cover habitat for vernal pool plant Covered Species. However, the Stream/Creek (VPIH) land cover can provide suitable habitat for some vernal pool crustaceans in depressional features that may pond water between storm events. The Stream/Creek (VPIH) land cover type often occurs in association with vernal pools and swales. The Plan Area includes approximately 73 acres of stream/creek (VPIH).

3.1.3 Amounts (Abundance) of Aquatic Resources

Within the Plan Area, there are a total of approximately 24,256 acres of mapped potentially jurisdictional aquatic resources, spread throughout 10 different HUC-10 watersheds: American River (HUC 1802011102), Deer Creek (HUC 1804001305), Laguna (HUC 1804001307), Lower Cosumnes River (HUC 1804001308), Lower Dry Creek (HUC 1804001209), Lower Mokelumne River (HUC 1804001211), Morrison Creek (HUC 1802016304), Sherman Lake–Sacramento River (HUC 1802016307), Snodgrass Slough (HUC 1804001210), and Upper Cosumnes River (HUC 1804001306). The watersheds containing the greatest abundance of aquatic resources are Snodgrass Slough and Lower Cosumnes River (Figure 4). The watersheds containing the least amounts of aquatic resources are the American River, Sherman Lake–Sacramento River, and Lower Mokelumne River.

The most abundant aquatic resource types within the Plan Area are Mixed Riparian Woodland and vernal pool. The least abundant are Ephemeral Streams (likely due to the narrow width of such creeks) and Mine Tailing Riparian woodland. See Table 1 for a summary of aquatic resource types and amounts per watershed.

Table 1
Aquatic Resource Types and Amounts per Watershed within the Plan Area

Riparian, Wetland, or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Acres and Linear Miles (if applicable) per Watershed[1]										Total
			American River	*Deer Creek*	*Laguna*	*Lower Cosumnes*	*Lower Dry Creek*	*Lower Mokelumne*	*Morrison Creek*	*Sherman Lake – Sac River*	*Snodgrass Slough*	*Upper Cosumnes*	
Riparian	Mine Tailing Riparian Woodland	R	47.9	40.7	158.3	17.3	0	0	129.4	2.0	0	245.5	**641.1**
	Mixed Riparian Scrub	R	0	80.4	58.1	271.8	47.1	2.4	57.0	130.1	528.2	99.7	**1,274.7**
	Mixed Riparian Woodland	R	0.4	835.8	261.7	1,877.0	400.6	196.4	157.1	50.6	1,292.6	732.6	**5,804.8**
Subtotal Riparian			*48.3*	*956.9*	*478.1*	*2,166.1*	*447.7*	*198.8*	*343.5*	*182.7*	*1,820.8*	*1,077.8*	*7,720.6*
Wetland Waters	Freshwater Marsh	PEM1	2.0	38.3	167.2	1,126.9	47.5	20.9	369.9	39.7	1,029.6	112.3	**2,954.1**
	Seasonal Wetland	PEM2	22.6	128.7	418.6	615.8	116.7	0	106.7	0	781.7	408.9	**2,599.8**
	Swales	R	2.8 (2.61 linear miles)	160.4 (127.55 linear miles)	428.2 (366.66 linear miles)	144.2 (96.86 linear miles)	65.2 (57.45 linear miles)	0	358.5 (218.44 linear miles)	1.4 (0.69 linear mile)	10.2 (8.10 linear miles)	80.6 (57.14 linear miles)	**1,251.5 (935.50 linear miles)**
	Vernal Pools	PEM2	6.9	274.3	1,917.0	619.1	202.8	0.1	766.5	5.3	420.9	324.7	**4,537.5**
Subtotal Wetland Waters			*34.3*	*601.7*	*2931*	*2,506.00*	*432.2*	*21*	*1,601.6*	*46.4*	*2,242.40*	*926.5*	*11,342.90*

Table 1
Aquatic Resource Types and Amounts per Watershed within the Plan Area

Riparian, Wetland, or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Acres and Linear Miles (if applicable) per Watershed[1]										Total
			American River	*Deer Creek*	*Laguna*	*Lower Cosumnes*	*Lower Dry Creek*	*Lower Mokelumne*	*Morrison Creek*	*Sherman Lake – Sac River*	*Snodgrass Slough*	*Upper Cosumnes*	
Non-Wetland Waters	Open Water	POW	2.7	200.1	297.4	663.1	8.7	3.1	156.7	9.4	720.3	280.2	**2,341.6**
	Streams/ Creeks (Intermittent and Perennial)	R2UB/ R3UB	5.4 (7.30 linear miles)	228.2 (215.56 linear miles)	416.0 (257.08 linear miles)	345.0 (148.53 linear miles)	78.2 (77.63 linear miles)	67.4 (8.02 linear miles)	122.7 (69.82 linear miles)	23.9 (7.01 linear miles)	1,141.0 (151.77 linear miles)	349.7 (94.88 linear miles)	**2,777.4 (1,037.61 linear miles)**
	Streams/ Creeks VPIH (Ephemeral)	R4SB	0	18.7 (11.29 linear miles)	0	0	0	0	54.5 (38.19 linear miles)	0	0	0	**73.2 (49.48 linear miles)**
Subtotal Non-Wetland Waters			*8.1*	*447*	*713.4*	*1,008.1*	*86.9*	*70.5*	*333.9*	*33.3*	*1,861.3*	*629.9*	*5,192.20*
Subtotal Wetland Waters and Non-Wetland Waters			*42.4*	*1,048.7*	*3,644.4*	*3,514.10*	*519.1*	*91.5*	*1,935.5*	*79.7*	*4,103.70*	*1,556.4*	*16,535.10*
Grand Total[1]			**90.7**	**2,005.6**	**4,122.5**	**5,680.2**	**966.8**	**290.3**	**2,279.0**	**262.4**	**5,924.5**	**2,634.2**	**24,255.7**

Note: [1] Table may not total precisely due to rounding.
Acreage totals in the ARP may not match precisely with acreage totals in the SSHCP. Factors that may result in differences between acreage figures in the ARP as compared to the SSHCP include: 1) The ARP only considers direct impacts where the SSHCP considers both direct and indirect impacts; 2) The ARP only includes jurisdictional wetlands for some land cover types where the SSHCP includes all wetlands; and 3) Slightly different Geographical Information System processes that result in small differences in totals.

3.2 Functions and Services of Aquatic Resources in the Plan Area

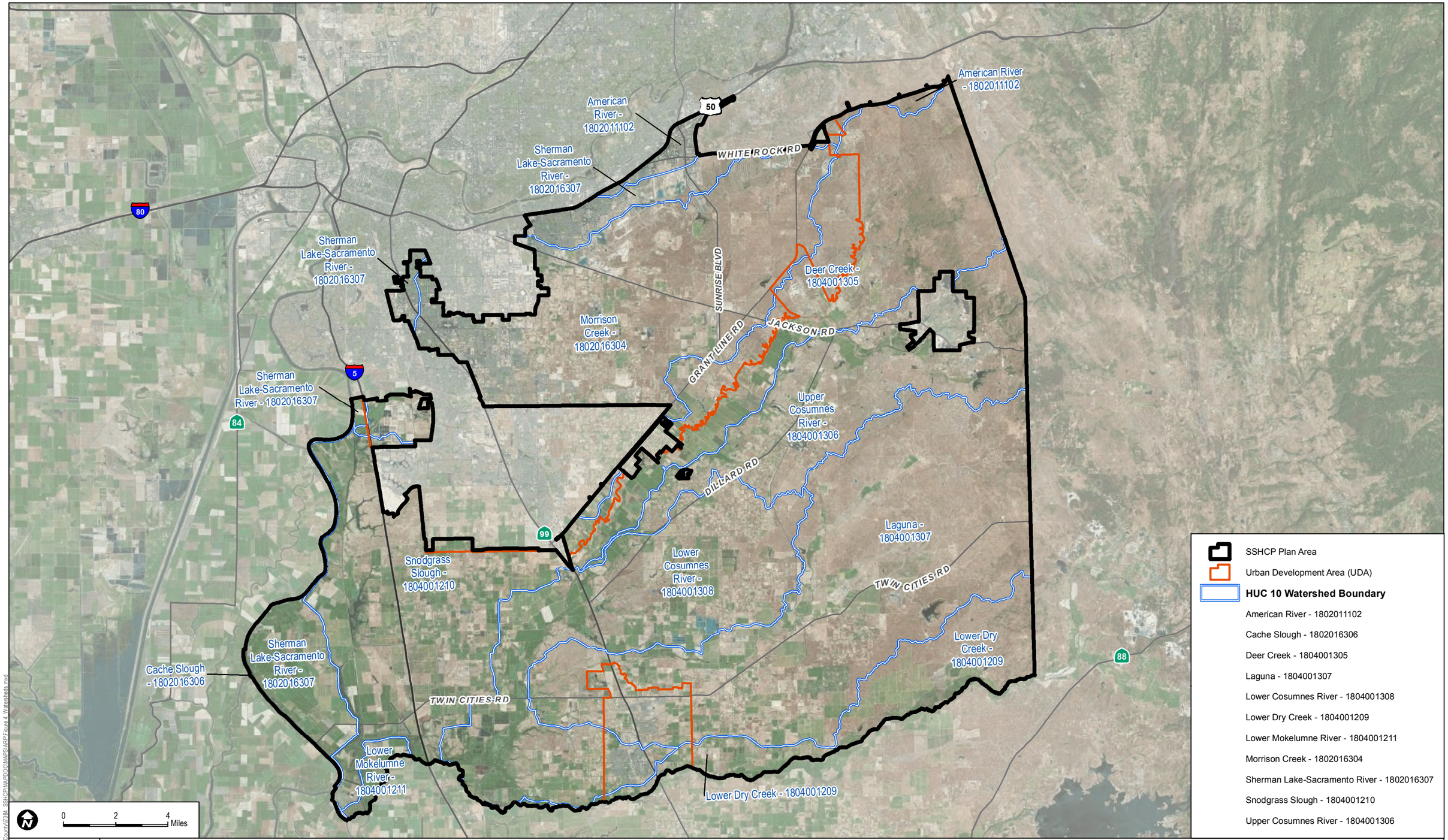
The current condition of aquatic resources within the Plan Area is used to describe the relative ability of the resources to support various functions and services. Condition is obtained from the results of the Functional Assessment for the South Sacramento Habitat Conservation Plan and Aquatic Resources Plan (Appendix C), which categorizes the Plan Area's aquatic resources into high, moderate, low, or very low condition relative to aquatic resources within the Plan Area.

3.2.1 Current Condition of Aquatic Resources

A landscape-level assessment of the relative quality of potentially jurisdictional waters of the United States and waters of the state was prepared for the aquatic resource types mapped in the Plan Area using a Functional/Condition Assessment Method (FCAM) developed for use by the ARP (Appendix C) and the SSHCP. The functional assessment assists in determining which potentially jurisdictional aquatic resource areas have the highest quality and greatest potential for re-establishment/establishment and preservation.

The overall quality of aquatic resources was assessed based on the following factors: area of the aquatic resource, HUC-10 watershed, primary adjacent land cover, secondary adjacent land cover, and aquatic resource type. Function scores were assigned for each of these factors, per aquatic resource feature, based upon ability to maintain or improve the following functions: habitat, water quality, and hydrology. Habitat was evaluated based on the ability of an aquatic resource to support wildlife and plant species. Water quality was evaluated based on the ability to improve or maintain water quality through processes such as filtration and/or trapping of contaminants such as sediment or toxicants and prevention of erosion. Hydrology was evaluated based on the ability of an aquatic resource to facilitate groundwater recharge and store floodwaters via beneficial flood storage and flood flow modifications.

The functional assessment factor related to the habitat, water quality, and hydrology conditions for each HUC-10 watershed was based on the results of a watershed study completed for the SSHCP and ARP (Appendix A). The watershed study results were used to develop appropriate scores for aquatic resources occurring in each HUC-10, based on Covered Species occurrences within each HUC-10 (habitat function score), percentage natural land cover within each HUC-10 (water quality function score), and percentage impervious surface within each HUC-10 (hydrology function score).



Path: Z:\Projects\Sacramento_County\7284_SSHCP\MAPDOC\MAPS\ARPF\Figure 4_Watersheds.mxd

SOURCE: Bing Maps 2015, USGS 2013 National Hydrography Dataset (NHD)

DUDEK

FIGURE 4

Watersheds

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN AQUATIC RESOURCES PROGRAM

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The results of the FCAM analysis provide an overall functional score of very low, low, moderate, or high for each potentially jurisdictional land cover type. Table 2 summarizes the current condition of aquatic resources in the Plan Area, and Figure 5 is a graphical depiction of those data.

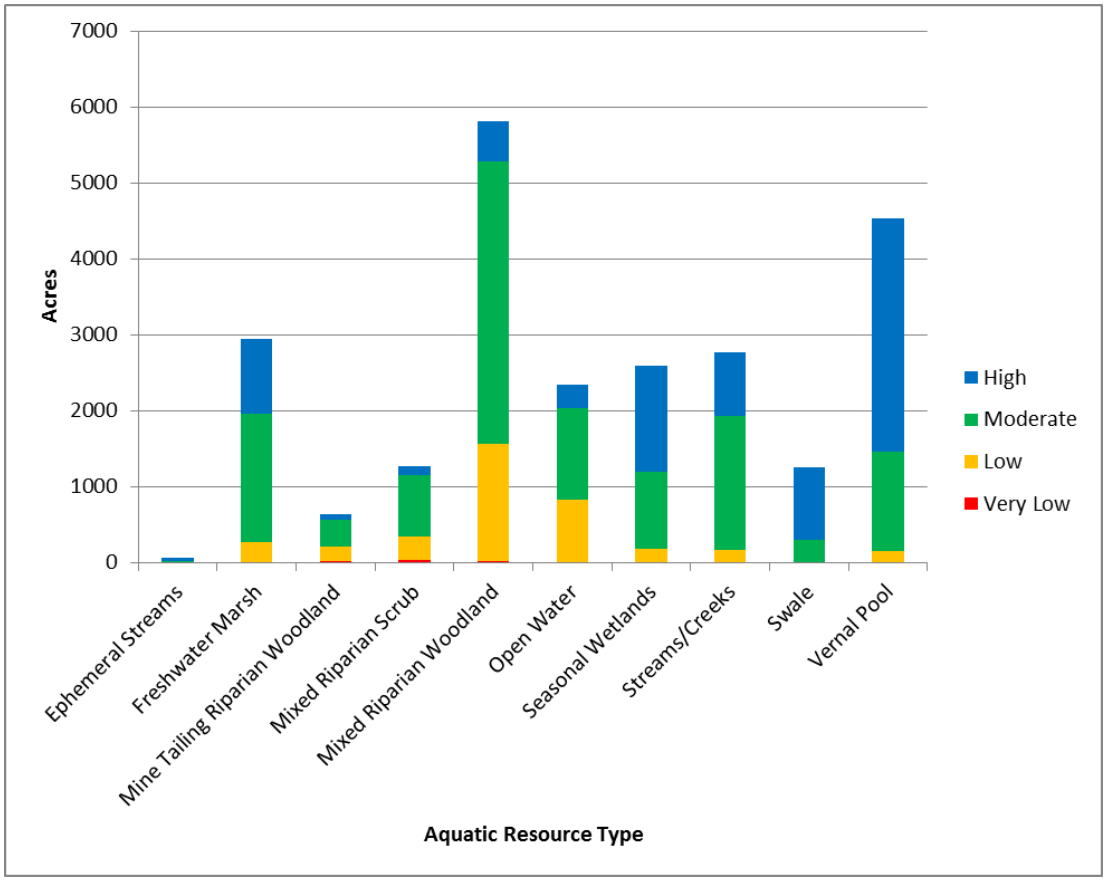
Table 2
Current Condition of Aquatic Resources in the Overall Plan Area

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	High	Moderate	Low	Very Low	Total
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	67.6	363.8	183.4	26.3	**641.1**
	Mixed Riparian Scrub	R2/R3	112.0	820.2	297.7	44.7	**1,274.7**
	Mixed Riparian Woodland	R2/R3	520.9	3,710.3	1,554.9	18.8	**5,804.8**
		Subtotal Riparian	*700.5*	*4,894.3*	*2,036.0*	*89.8*	*7,720.6*
Wetland Waters	Freshwater Marsh	PEM1	988.0	1,697.2	268.9	0	**2,954.1**
	Seasonal Wetland	PEM2	1,395.8	1,019.3	184.7	0	**2,599.8**
	Swales	R2/R3	944.3	302.2	5.0	0	**1,251.5**
	Vernal Pools	PEM2	3,067.5	1,313.0	157.0	0	**4,537.5**
		Subtotal Wetland Waters	*6,395.6*	*4,331.7*	*615.6*	*0*	*11,342.9*
Non-Wetland Waters	Open Water	POW	298.3	1,206.3	821.1	15.9	**2,341.6**
	Streams/Creeks (Intermittent and Perennial)	R2UB/R3UB	840.9	1,758.4	177.0	1.0	**2,777.4**
	Streams/Creeks VPlH (Ephemeral)	R4SB	44.3	27.4	1.5	0	**73.2**
		Subtotal Non-Wetland Waters	*1,183.5*	*2,992.1*	*999.6*	*16.9*	*5,192.2*
		Subtotal Wetland Waters and Non-Wetland Waters	*7,579.1*	*7,323.8*	*1,615.2*	*16.9*	*16,535.1*
		Grand Total[1]	**8,279.6**	**12,218.1**	**3,651.2**	**106.7**	**24,255.7**

Note: 1. Table may not total precisely due to rounding.
Acreage totals in the ARP may not match precisely with acreage totals in the SSHCP. Factors that may result in differences between acreage figures in the ARP as compared to the SSHCP include: 1) The ARP only considers direct impacts where the SSHCP considers both direct and indirect impacts; 2) The ARP only includes jurisdictional wetlands for some land cover types where the SSHCP includes all wetlands; and 3) Slightly different Geographical Information System processes that result in small differences in totals.

Of the aquatic resource types, vernal pools exhibited the greatest acreage of high condition features (3,067 acres out of 4,053 acres). This result was expected, as the SSHCP and ARP recognize the highly specialized habitat functions that vernal pools serve (see Appendix B-1). Swales, Seasonal Wetlands, and Freshwater Marsh had the next largest high condition acreages (944 acres, 1,396 acres, and 988 acres, respectively). Approximately 50% of all aquatic resources within the Plan Area are considered to be of moderate condition. Mixed Riparian Woodland and Open Water resources had the largest acreages of low condition features (1,554 acres and 821 acres, respectively). The Plan Area overall did not exhibit large acreages or proportions of very low condition resources (only 107 acres total across all resource types).

Figure 5 Current Condition of Aquatic Resources in the Overall Plan Area



Current conditions of the aquatic resources can be further examined at the watershed (HUC-10) level. The following tables (Tables 3 through 12) and associated figures (Figures 6 through 15) describe the current condition of the aquatic resources within each of the ten watersheds located within the Plan Area (Figures 16 through 25). These figures, or watershed profiles, visually summarize the abundance, diversity, and condition of aquatic resources in each watershed. Deer

Creek, Laguna, Lower Cosumnes River, Lower Dry Creek, Morrison Creek, and Upper Cosumnes River watersheds all contain a majority of moderate to high condition aquatic resources. Of these, the watersheds with the greatest proportion of high condition aquatic resources are Laguna and Morrison Creek. American River, Lower Mokelumne, Sherman Lake–Sacramento River, and Snodgrass Slough watersheds currently contain no high condition aquatic resources, and the resources are mostly low to moderate in condition. Sherman Lake–Sacramento River watershed contains the greatest acreage of very low condition aquatic resources and has the highest proportion of low condition resources. Figure 26 summarizes aquatic resources condition acreages by watershed.

Table 3
American River Watershed Current Conditions

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	High	Moderate	Low	Very Low	Total
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	27.4	15.4	5.1	47.9
	Mixed Riparian Scrub	R2/R3	0	0	0	0	0
	Mixed Riparian Woodland	R2/R3	0	0.4	0	0	0.4
Subtotal Riparian			*0*	*27.8*	*15.4*	*5.1*	*48.3*
Wetland Waters	Freshwater Marsh	PEM1	0	2.0	0	0	2.0
	Seasonal Wetland	PEM2	0	22.6	0	0	22.6
	Swales	R2/R3	0	2.8	<0.1	0	2.8
	Vernal Pools	PEM2	0	5.1	1.0	0	6.1
Subtotal Wetland Waters			*0*	*32.5*	*1*	*0*	*33.5*
Non-Wetland Waters	Open Water	POW	0	0	2.7	0	2.7
	Streams/Creeks (Intermittent and Perennial)	R2UB/R3UB	0	5.4	<0.1	0	5.4
	Streams/Creeks VPIH (Ephemeral)	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*0*	*5.4*	*2.7*	*0*	*8.1*
Subtotal Wetland Waters and Non-Wetland Waters			*0*	*37.9*	*3.7*	*0*	*41.6*
Grand Total[1]			**0**	**65.7**	**19.1**	**5.1**	**89.9**

Note: 1. Table may not total precisely due to rounding.

Figure 6 Current Condition of Aquatic Resources in the American River Watershed

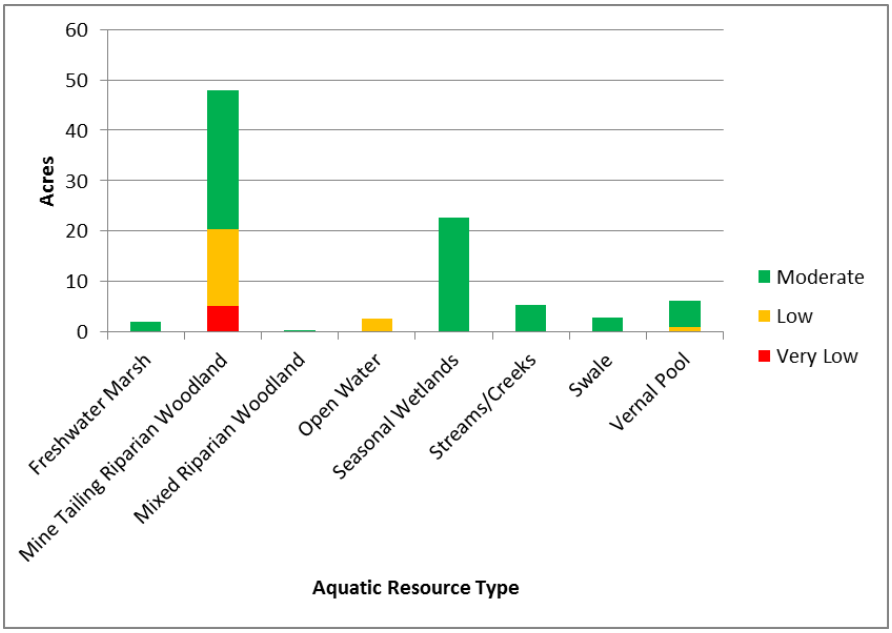


Table 4
Deer Creek Watershed Current Conditions

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	High	Moderate	Low	Very Low	Total
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	13.0	27.7	0	40.7
	Mixed Riparian Scrub	R2/R3	49.1	28.3	3.0	0	80.4
	Mixed Riparian Woodland	R2/R3	150.6	667.3	18.0	0	835.8
Subtotal Riparian			*199.7*	*708.6*	*48.7*	*0*	*956.9*
Wetland Waters	Freshwater Marsh	PEM1	15.5	22.8	0	0	38.3
	Seasonal Wetland	PEM2	70.8	57.9	0	0	128.7
	Swales	R2/R3	131.7	28.5	0.2	0	160.4
	Vernal Pools	PEM2	182.2	89.2	3.0	0	274.3
Subtotal Wetland Waters			*400.2*	*198.4*	*3.2*	*0*	*601.7*
Non-Wetland Waters	Open Water	POW	29.2	167.6	3.2	0	200.1
	Streams/Creeks (Intermittent and Perennial)	R2UB/R3UB	178.4	49.9	<0.1	0	228.2
	Streams/Creeks VPIH (Ephemeral)	R4SB	14.8	3.8	0	0	18.7
Subtotal Non-Wetland Waters			*222.4*	*221.3*	*3.2*	*0*	*447*
Subtotal Wetland Waters and Non-Wetland Waters			*622.6*	*419.7*	*6.4*	*0*	*1,048.7*
Grand Total[1]			**822.3**	**1,128.3**	**55.1**	**0**	**2,005.6**

Note: 1. Table may not total precisely due to rounding.

Figure 7 Current Condition of Aquatic resources in the Deer Creek Watershed

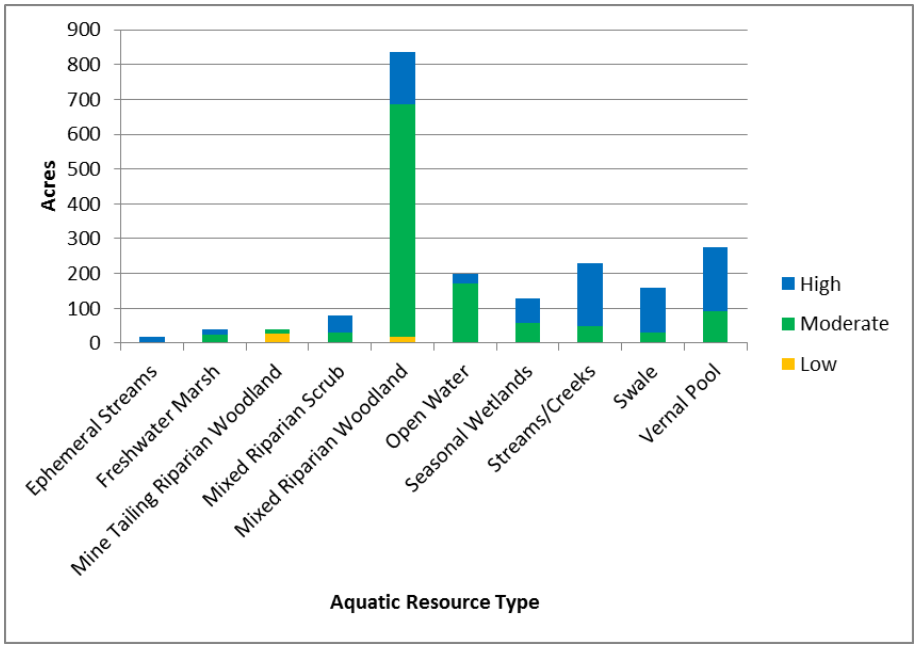


Table 5
Laguna Watershed Current Conditions

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	High	Moderate	Low	Very Low	Total
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	67.6	71.8	18.9	0	158.3
	Mixed Riparian Scrub	R2/R3	19.7	36.4	2.1	0	58.1
	Mixed Riparian Woodland	R2/R3	122.7	137.8	1.2	0	261.7
Subtotal Riparian			*210.0*	*246.0*	*22.2*	*0*	*478.1*
Wetland Waters	Freshwater Marsh	PEM1	147.7	19.1	0.4	0	167.2
	Seasonal Wetland	PEM2	400.7	17.9	0	0	418.6
	Swales	R2/R3	416.1	11.8	0.3	0	428.2
	Vernal Pools	PEM2	1,837.2	39.7	3.5	0	1,917.0
Subtotal Wetland Waters			*2,801.7*	*88.5*	*4.2*	*0*	*2,931.0*
Non-Wetland Waters	Open Water	POW	182.1	101.3	14.0	0	297.4
	Streams/Creeks (Intermittent and Perennial)	R2UB/R3UB	341.2	74.8	0	0	416.0
	Streams/Creeks VPIH (Ephemeral)	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*5,23.3*	*176.1*	*14.0*	*0*	*713.4*
Subtotal Wetland Waters and Non-Wetland Waters			*3,325.0*	*264.6*	*18.2*	*0*	*3,644.4*
Grand Total[1]			**3,535.0**	**510.6**	**40.4**	**0**	**4,122.5**

Note: 1. Table may not total precisely due to rounding.

Figure 8 Current Condition of Aquatic Resources in the Laguna Watershed

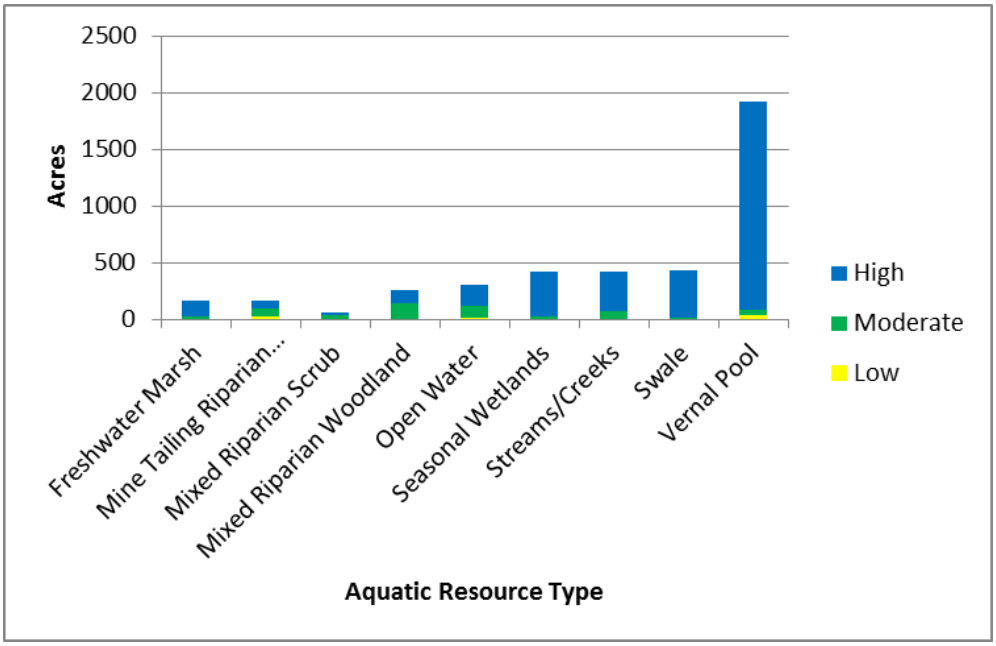


Table 6
Lower Cosumnes Watershed Current Conditions

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	High	Moderate	Low	Very Low	Total
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	17.3	0	0	17.3
	Mixed Riparian Scrub	R2/R3	0	257.2	14.6	0	271.8
	Mixed Riparian Woodland	R2/R3	0	1,438.4	438.6	0	1,877.0
Subtotal Riparian			*0*	*1,712.9*	*453.2*	*0*	*2,166.1*
Wetland Waters	Freshwater Marsh	PEM1	498.1	619.9	8.9	0	1,126.9
	Seasonal Wetland	PEM2	420.5	193.8	1.5	0	615.8
	Swales	R2/R3	16.0	126.9	1.3	0	144.2
	Vernal Pools	PEM2	273.5	300.5	45.1	0	619.1
Subtotal Wetland Waters			*1,208.1*	*1,241.1*	*56.8*	*0*	*2,506.0*
Non-Wetland Waters	Open Water	POW	0	279.3	383.8	0	663.1
	Streams/Creeks (Intermittent and Perennial)	R2UB/ R3UB	135.6	147.5	61.9	0	345.0
	Streams/Creeks VPIH (Ephemeral)	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*135.6*	*426.8*	*445.7*	*0*	*1,008.1*
Subtotal Wetland Waters and Non-Wetland Waters			*1,343.7*	*1,667.9*	*502.5*	*0*	*3,514.1*
Grand Total[1]			**1,343.7**	**3,380.8**	**955.7**	**0**	**5,680.2**

Note: 1. Table may not total precisely due to rounding.

Figure 9 Current Condition of Aquatic Resources in the Lower Cosumnes Watershed

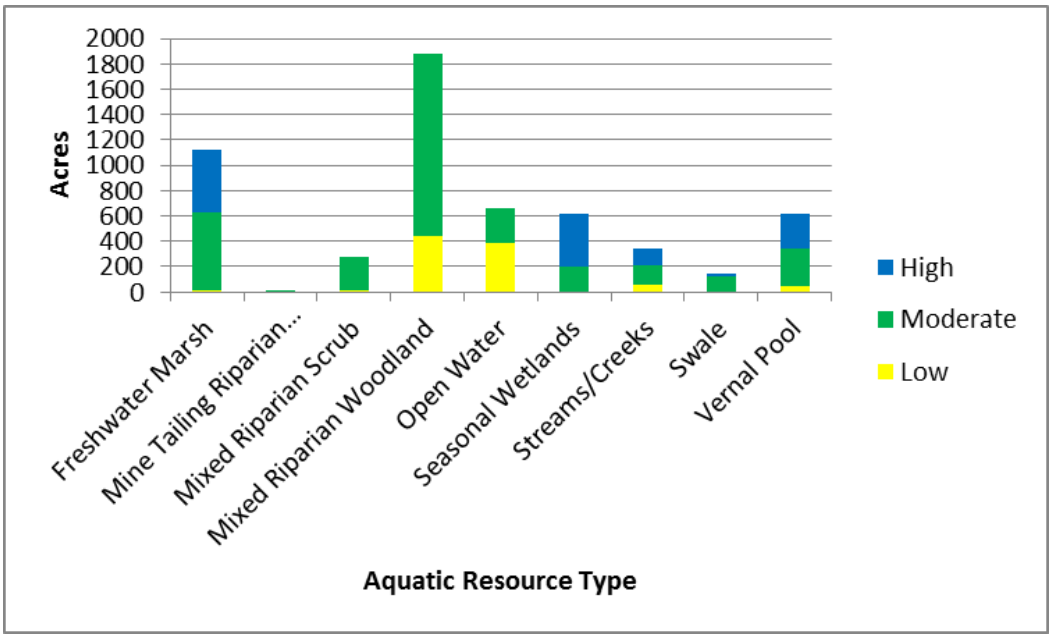


Table 7
Lower Dry Creek Watershed Current Conditions

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	High	Moderate	Low	Very Low	Total
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	3.1	39.8	4.2	0	47.1
	Mixed Riparian Woodland	R2/R3	0	378.4	22.3	0	400.6
Subtotal Riparian			*3.1*	*418.2*	*26.5*	*0*	*447.7*
Wetland Waters	Freshwater Marsh	PEM1	16.4	30.9	0.2	0	47.5
	Seasonal Wetland	PEM2	105.1	11.6	0	0	116.7
	Swales	R2/R3	42.8	22.4	<0.1	0	65.2
	Vernal Pools	PEM2	104.4	91.8	6.6	0	202.7
Subtotal Wetland Waters			*268.7*	*156.7*	*6.8*	*0*	*432.1*
Non-Wetland Waters	Open Water	POW	0	6.8	1.9	0	8.7
	Streams/Creeks (Intermittent and Perennial)	R2UB/R3UB	13.8	60.4	4.0	0	78.2
	Streams/Creeks VPIH (Ephemeral)	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*13.8*	*67.2*	*5.9*	*0*	*86.9*
Subtotal Wetland Waters and Non-Wetland Waters			*282.5*	*223.9*	*12.7*	*0*	*519*
Grand Total[1]			**285.6**	**642.1**	**39.2**	**0**	**966.7**

Note: 1. Table may not total precisely due to rounding.

Figure 10 Current Condition of Aquatic Resources in the Lower Dry Creek Watershed

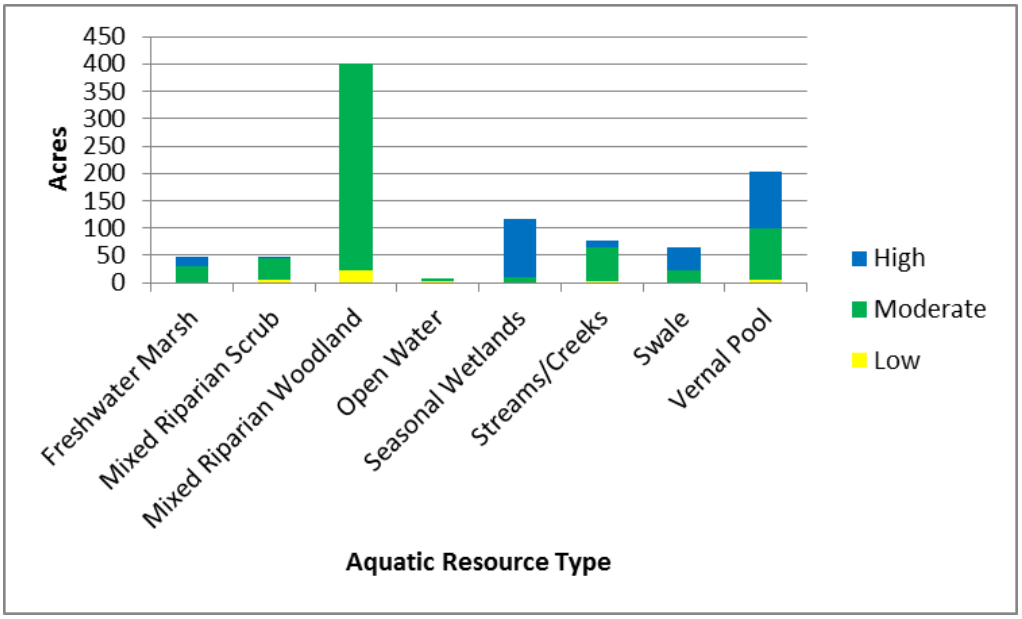


Table 8
Lower Mokelumne River Watershed Current Conditions

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	High	Moderate	Low	Very Low	Total
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	0	<0.1	2.4	0	2.4
	Mixed Riparian Woodland	R2/R3	0	19.5	176.8	0	196.4
		Subtotal Riparian	*0*	*19.5*	*179.2*	*0*	*198.8*
Wetland Waters	Freshwater Marsh	PEM1	0	20.9	0	0	20.9
	Seasonal Wetland	PEM2	0	0	0	0	0
	Swales	R2/R3	0	0	0	0	0
	Vernal Pools	PEM2	0	0.1	0	0	0.1
		Subtotal Wetland Waters	*0*	*21.0*	*0*	*0*	*21.0*
Non-Wetland Waters	Open Water	POW	0	3.1	0	0	3.1
	Streams/Creeks (Intermittent and Perennial)	R2UB/R3UB	0	65.1	2.2	0	67.4
	Streams/Creeks VPIH (Ephemeral)	R4SB	0	0	0	0	0
		Subtotal Non-Wetland Waters	*0*	*68.2*	*2.2*	*0*	*70.5*
		Subtotal Wetland Waters and Non-Wetland Waters	*0*	*89.2*	*2.2*	*0*	*91.5*
		Grand Total[1]	**0**	**108.7**	**181.4**	**0**	**290.3**

Note: [1.] Table may not total precisely due to rounding.

Figure 11 Current Condition of Aquatic Resources in the Lower Mokelumne River Watershed

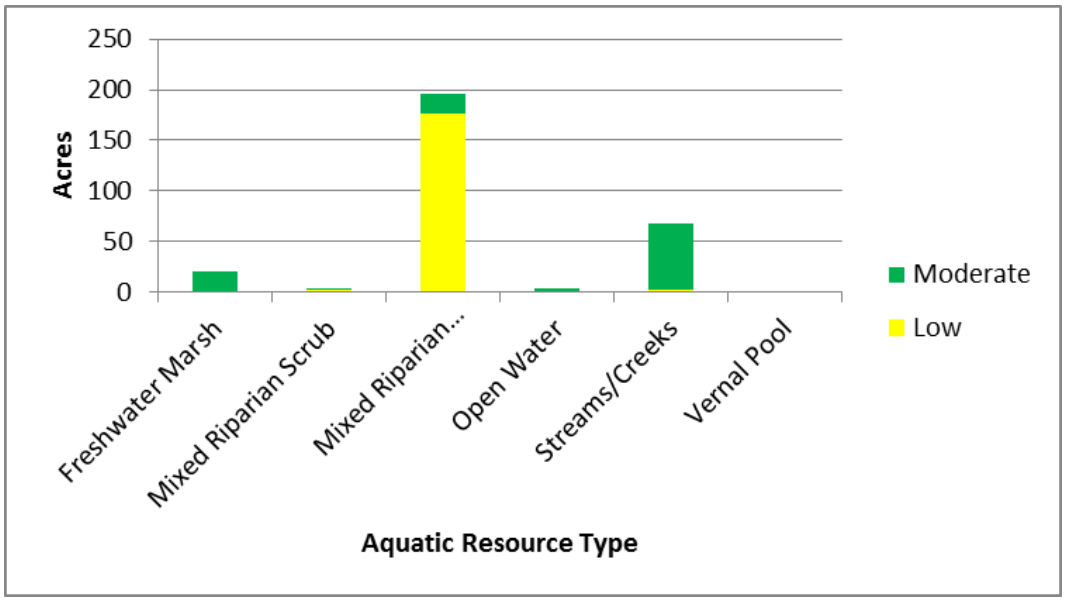


Table 9
Morrison Creek Watershed Current Conditions

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	High	Moderate	Low	Very Low	Total
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	25.9	84.3	19.2	129.4
	Mixed Riparian Scrub	R2/R3	3.2	47.0	6.8	0	57.0
	Mixed Riparian Woodland	R2/R3	0	98.9	58.2	0	157.1
		Subtotal Riparian	*3.2*	*171.8*	*149.3*	*19.2*	*343.5*
Wetland Waters	Freshwater Marsh	PEM1	261.8	103.5	4.6	0	369.9
	Seasonal Wetland	PEM2	59.5	23.0	24.2	0	106.7
	Swales	R2/R3	277.2	80.0	1.4	0	358.5
	Vernal Pools	PEM2	522.3	231.4	12.6	0	766.3
		Subtotal Wetland Waters	*1,120.8*	*437.9*	*42.8*	*0*	*1,601.4*
Non-Wetland Waters	Open Water	POW	0	118.8	37.9	0	156.7
	Streams/Creeks (Intermittent and Perennial)	R2UB/R3UB	7.3	93.0	22.4	0	122.7
	Streams/Creeks VPIH (Ephemeral)	R4SB	29.5	23.5	1.5	0	54.5
		Subtotal Non-Wetland Waters	*36.8*	*235.3*	*61.8*	*0*	*333.9*
		Subtotal Wetland Waters and Non-Wetland Waters	*1,157.6*	*673.2*	*104.6*	*0*	*1,935.3*
		Grand Total[1]	**1,160.8**	**845**	**253.9**	**19.2**	**2,278.8**

Note: [1.] Table may not total precisely due to rounding.

Figure 12 Current Condition of Aquatic Resources in the Morrison Creek Watershed

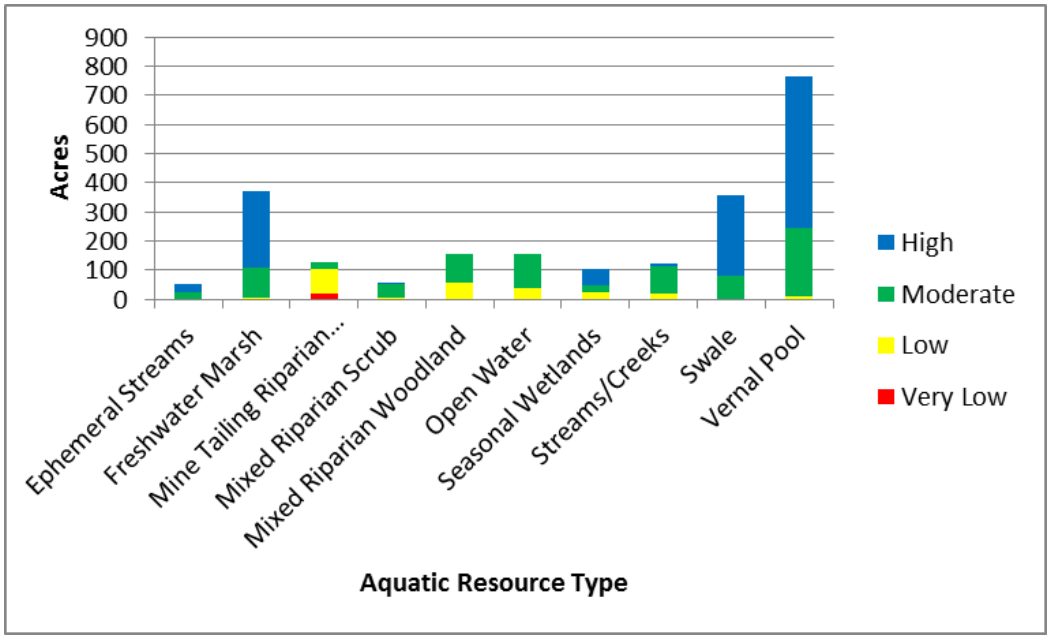


Table 10
Sherman Lake–Sacramento River Watershed Current Conditions

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	High	Moderate	Low	Very Low	Total
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	2.0	2.0
	Mixed Riparian Scrub	R2/R3	0	0	85.4	44.7	130.1
	Mixed Riparian Woodland	R2/R3	0	0	31.9	18.8	50.6
Subtotal Riparian			*0*	*0*	*117.3*	*65.5*	*182.7*
Wetland Waters	Freshwater Marsh	PEM1	0	7.2	32.5	0	39.7
	Seasonal Wetland	PEM2	0	0	0	0	0
	Swales	R2/R3	0	1.3	0.1	0	1.4
	Vernal Pools	PEM2	0	3.0	2.4	0	5.3
Subtotal Wetland Waters			*0*	*11.5*	*35.0*	*0*	*46.4*
Non-Wetland Waters	Open Water	POW	0	0	9.4	0	9.4
	Streams/Creeks (Intermittent and Perennial)	R2UB/R3UB	0	0.3	22.6	1.0	23.9
	Streams/Creeks VPIH (Ephemeral)	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*0*	*0.3*	*32.0*	*1.0*	*33.3*
Subtotal Wetland Waters and Non-Wetland Waters			*0*	*11.8*	*67.0*	*1.0*	*79.7*
Grand Total[1]			**0**	**11.8**	**184.3**	**66.5**	**262.4**

Note: [1] Table may not total precisely due to rounding.

Figure 13 Current Condition of Aquatic Resources in the Sherman Lake–Sacramento River Watershed

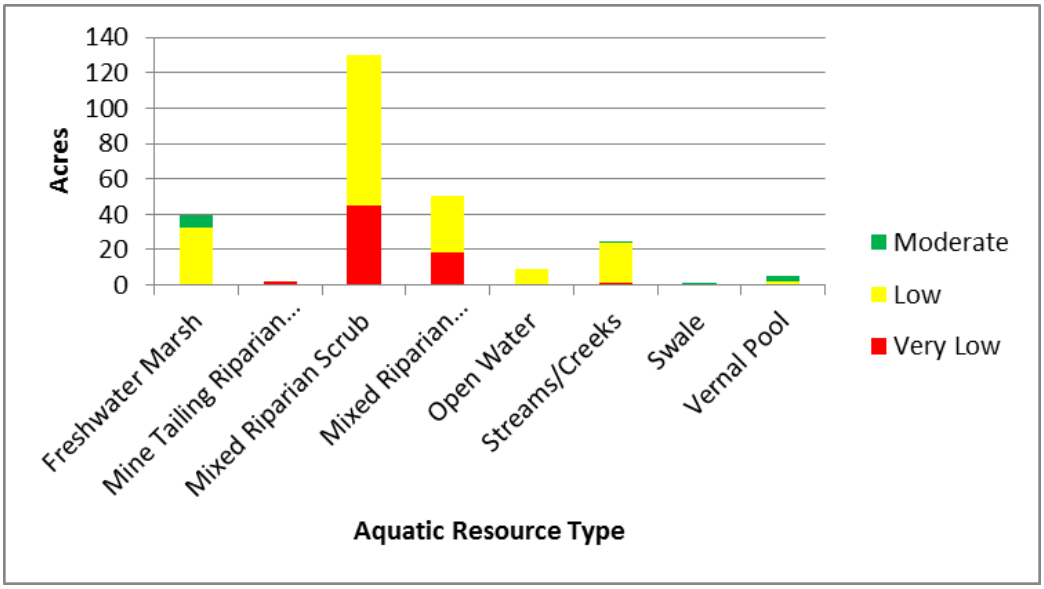


Table 11
Snodgrass Slough Watershed Current Conditions

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	High	Moderate	Low	Very Low	Total
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	0	350.7	177.5	0	528.2
	Mixed Riparian Woodland	R2/R3	0	488.1	804.4	0	1,292.6
Subtotal Riparian			*0*	*838.8*	*981.9*	*0*	*1,820.8*
Wetland Waters	Freshwater Marsh	PEM1	0	809.3	220.3	0	1,029.6
	Seasonal Wetland	PEM2	0	623.8	157.9	0	781.8
	Swales	R2/R3	0	9.7	0.5	0	10.2
	Vernal Pools	PEM2	0	407.5	13.4	0	420.9
Subtotal Wetland Waters			*0*	*1,850.3*	*392.1*	*0*	*2,242.5*
Non-Wetland Waters	Open Water	POW	0	417.4	287.0	15.9	720.3
	Streams/Creeks (Intermittent and Perennial)	R2UB/R3UB	0	1,077.2	63.9	0	1,141.0
	Streams/Creeks VPIH (Ephemeral)	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*0*	*1,494.6*	*350.9*	*15.9*	*1,861.3*
Subtotal Wetland Waters and Non-Wetland Waters			*0*	*3,344.9*	*743.0*	*15.9*	*4,103.8*
Grand Total[1]			**0**	**4,183.7**	**1,724.9**	**15.9**	**5,924.6**

Note: [1] Table may not total precisely due to rounding.

Figure 14 Current Condition of Aquatic Resources in the Snodgrass Slough Watershed

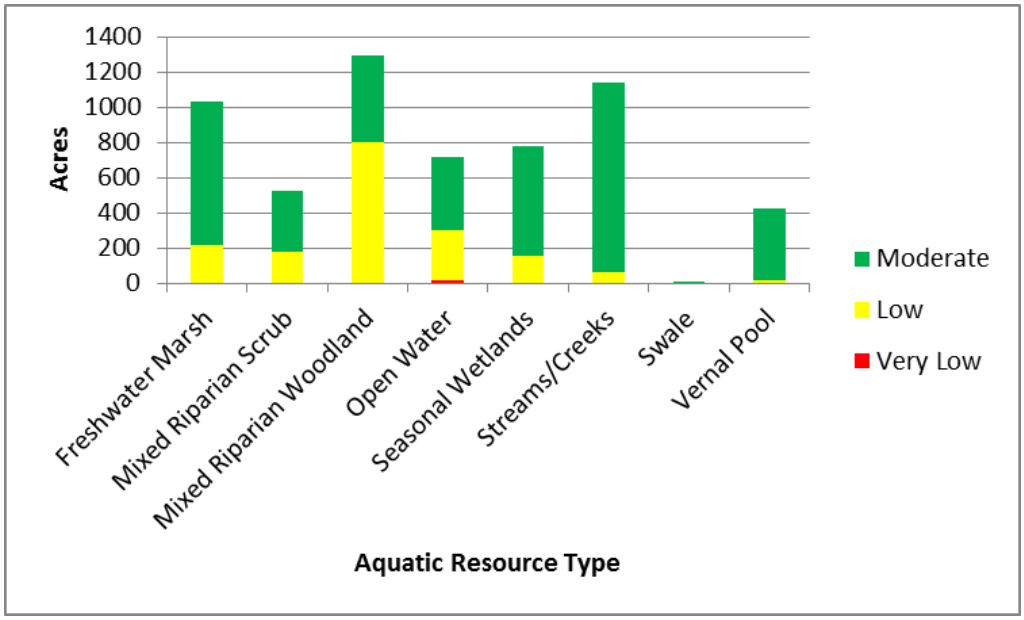
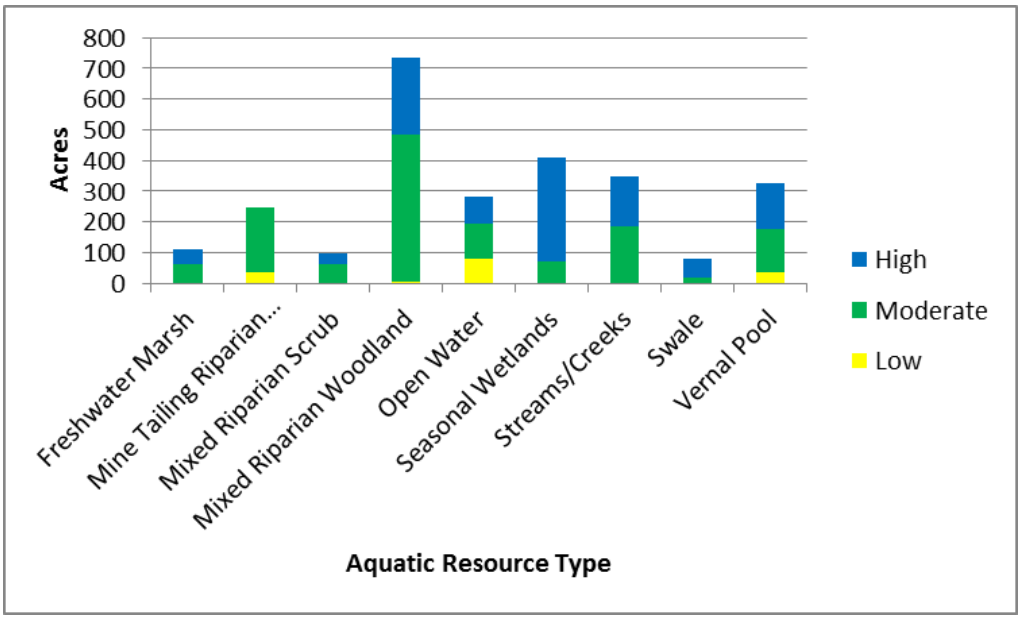


Table 12
Upper Cosumnes Watershed Current Conditions

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	High	Moderate	Low	Very Low	Total
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	208.4	37.1	0	245.5
	Mixed Riparian Scrub	R2/R3	37.0	61.0	1.7	0	99.7
	Mixed Riparian Woodland	R2/R3	247.6	481.7	3.4	0	732.6
		Subtotal Riparian	*284.6*	*751.1*	*42.2*	*0*	*1077.8*
Wetland Waters	Freshwater Marsh	PEM1	48.7	61.6	2.0	0	112.3
	Seasonal Wetland	PEM2	339.2	68.7	1.0	0	408.9
	Swales	R2/R3	60.6	18.8	1.2	0	80.6
	Vernal Pools	PEM2	147.0	143.8	34.0	0	324.7
		Subtotal Wetland Waters	*595.5*	*292.9*	*38.2*	*0*	*926.5*
Non-Wetland Waters	Open Water	POW	87.0	111.9	81.3	0	280.2
	Streams/Creeks (Intermittent and Perennial)	R2UB/R3UB	164.8	184.9	<0.1	0	349.7
	Streams/Creeks VPIH (Ephemeral)	R4SB	0	0	0	0	0
		Subtotal Non-Wetland Waters	*251.8*	*296.8*	*81.3*	*0*	*629.9*
		Subtotal Wetland Waters and Non-Wetland Waters	*847.3*	*589.7*	*119.5*	*0*	*1,556.4*
		Grand Total[1]	**1,131.9**	**1,340.8**	**161.7**	**0**	**2,634.2**

Note: [1] Table may not total precisely due to rounding.

Figure 15 Current Condition of Aquatic Resources in the Upper Cosumnes Watershed



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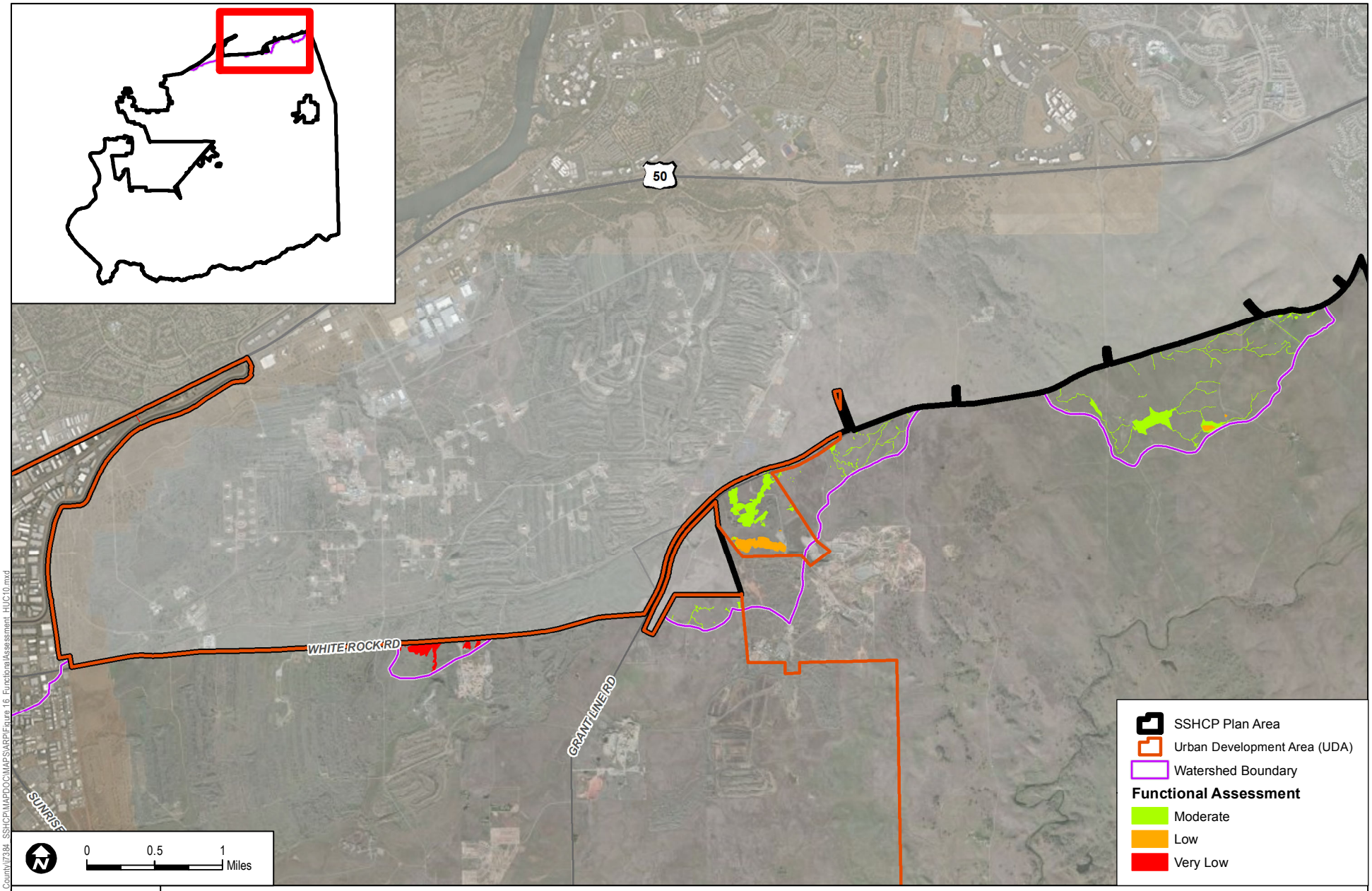

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SOURCE: Bing 2015, County of Sacramento 2014, USGS 2013 NHD

FIGURE 16

Functional Assessment - American River Watershed

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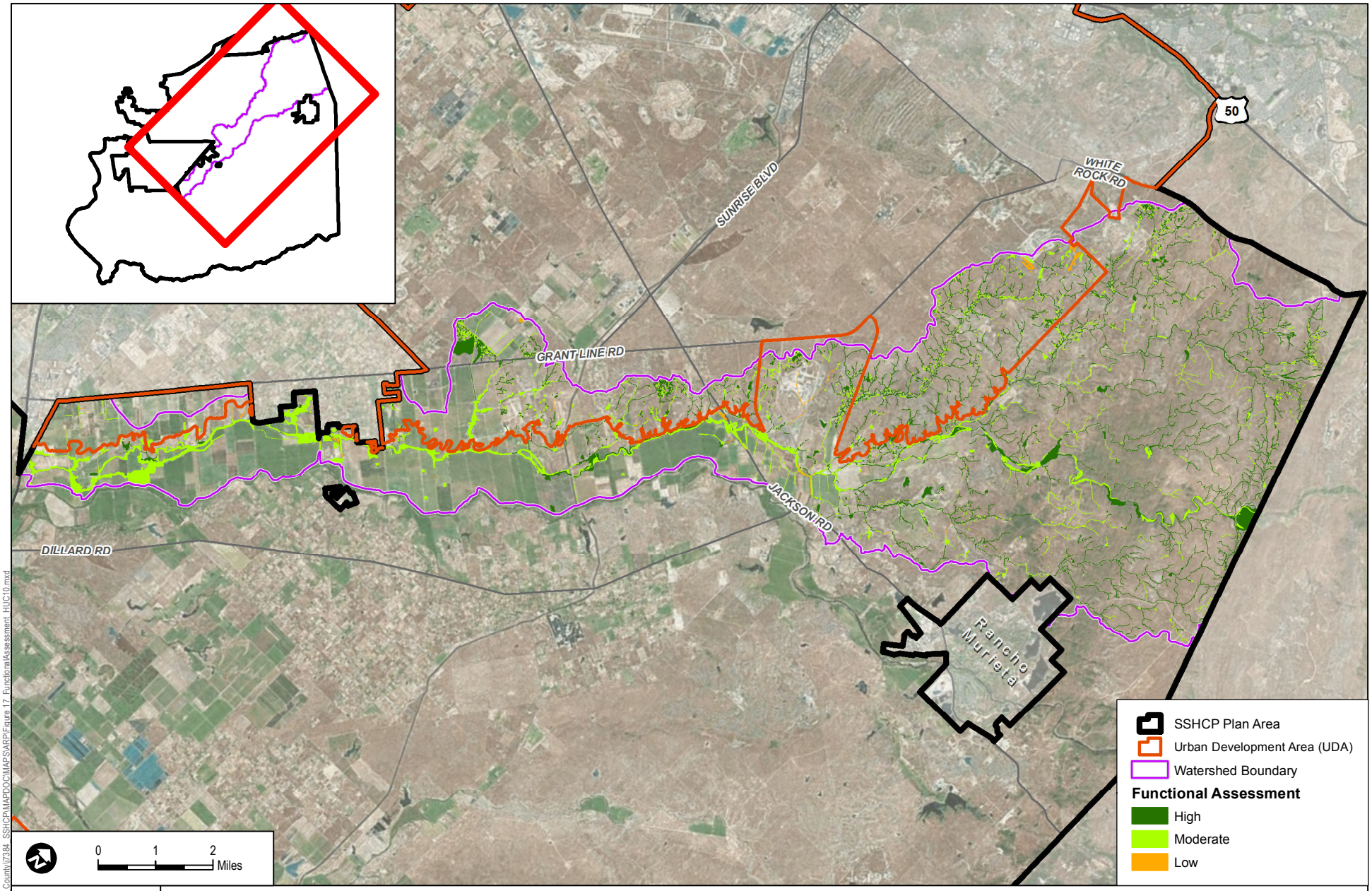

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SOURCE: Bing 2015, County of Sacramento 2014, USGS 2013 NHD

FIGURE 17

Functional Assessment - Deer Creek Watershed

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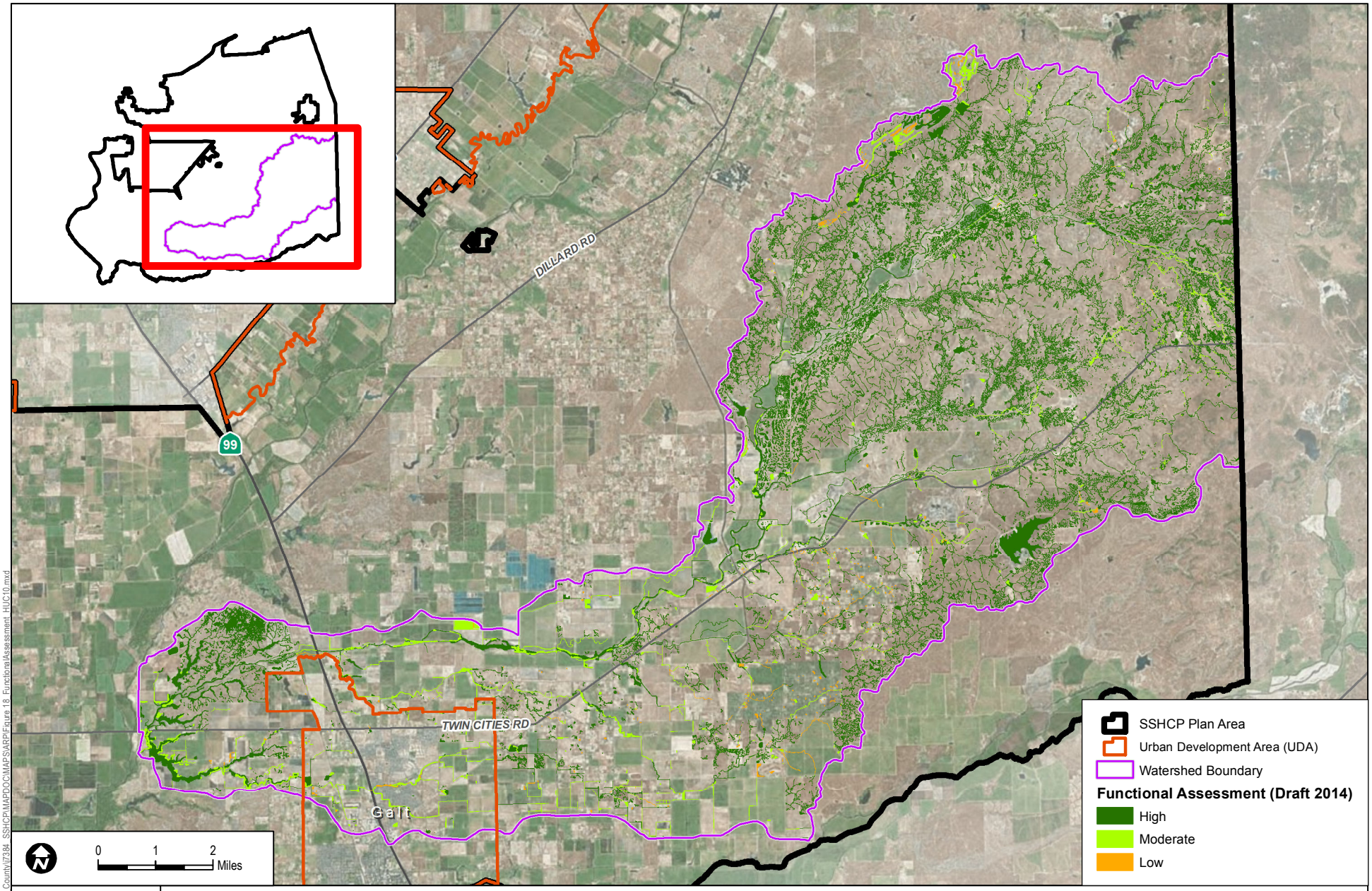

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SOURCE: Bing 2015, County of Sacramento 2014, USGS 2013 NHD

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FIGURE 18

Functional Assessment - Laguna Watershed

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN AQUATIC RESOURCES PROGRAM

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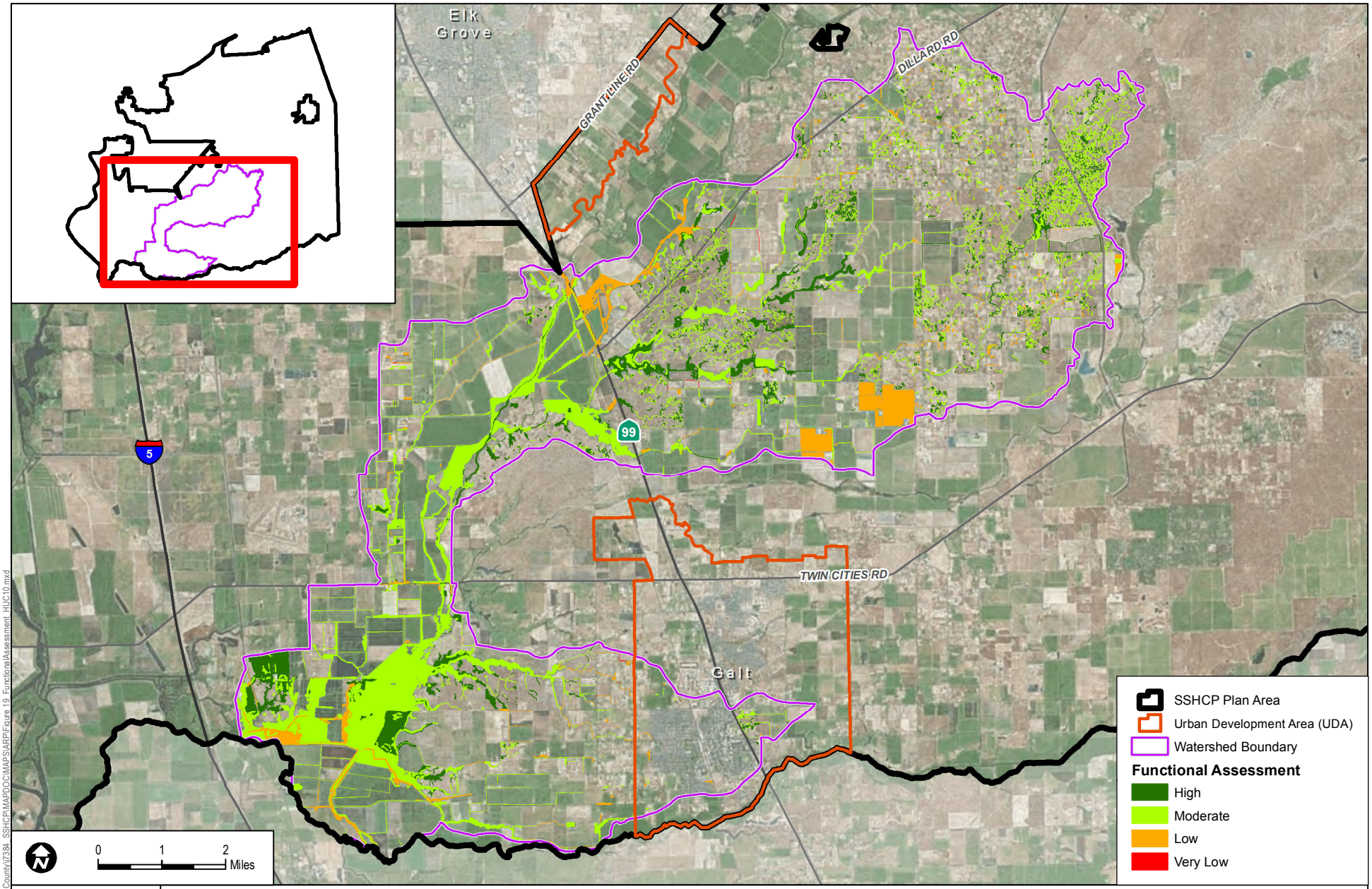

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SOURCE: Bing 2015, County of Sacramento 2014, USGS 2013 NHD

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FIGURE 19

Functional Assessment - Lower Cosumnes River Watershed

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN AQUATIC RESOURCES PROGRAM

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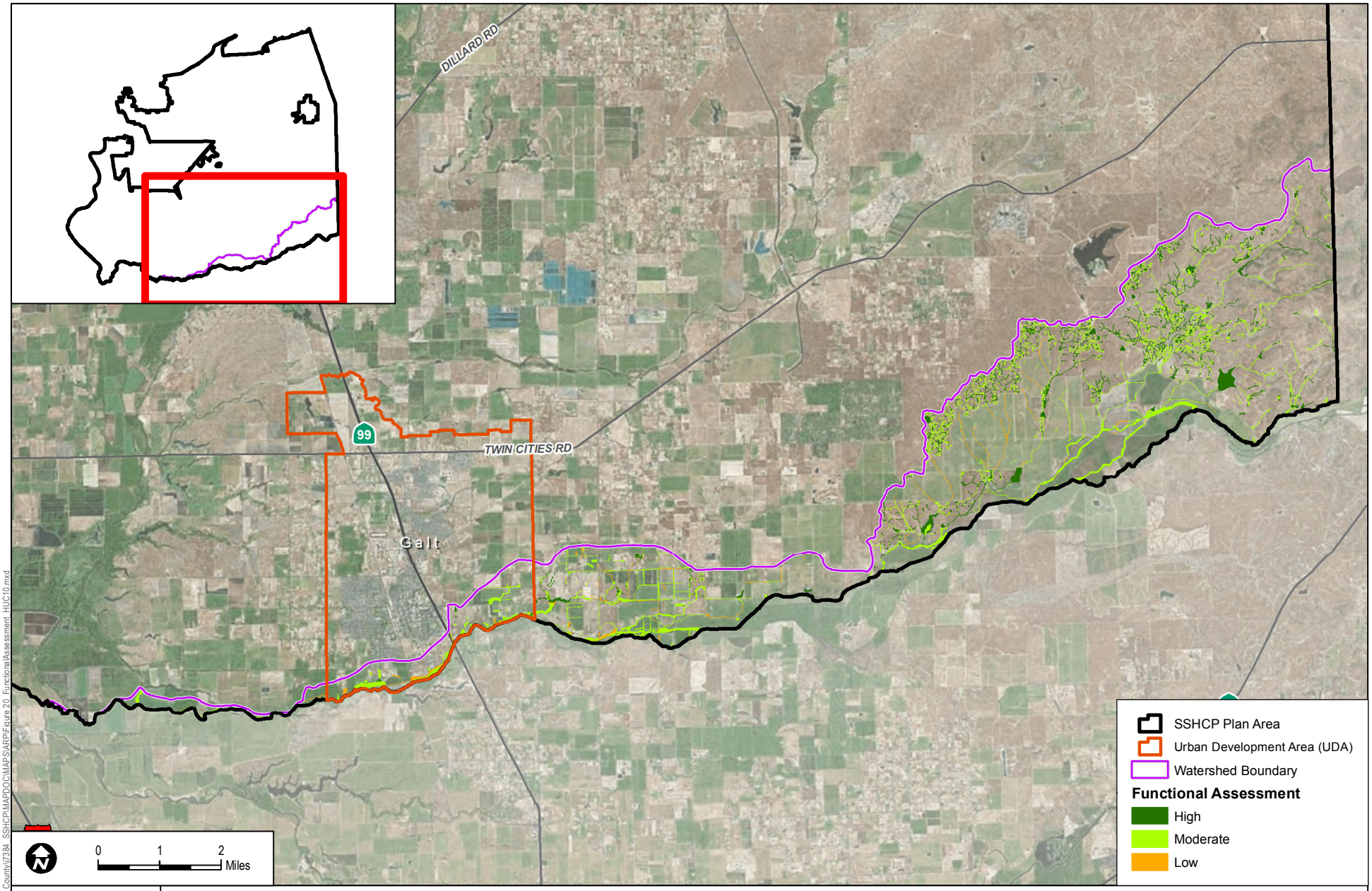

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SOURCE: Bing 2015, County of Sacramento 2014, USGS 2013 NHD

FIGURE 20

Functional Assessment - Lower Dry Creek Watershed

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN AQUATIC RESOURCES PROGRAM

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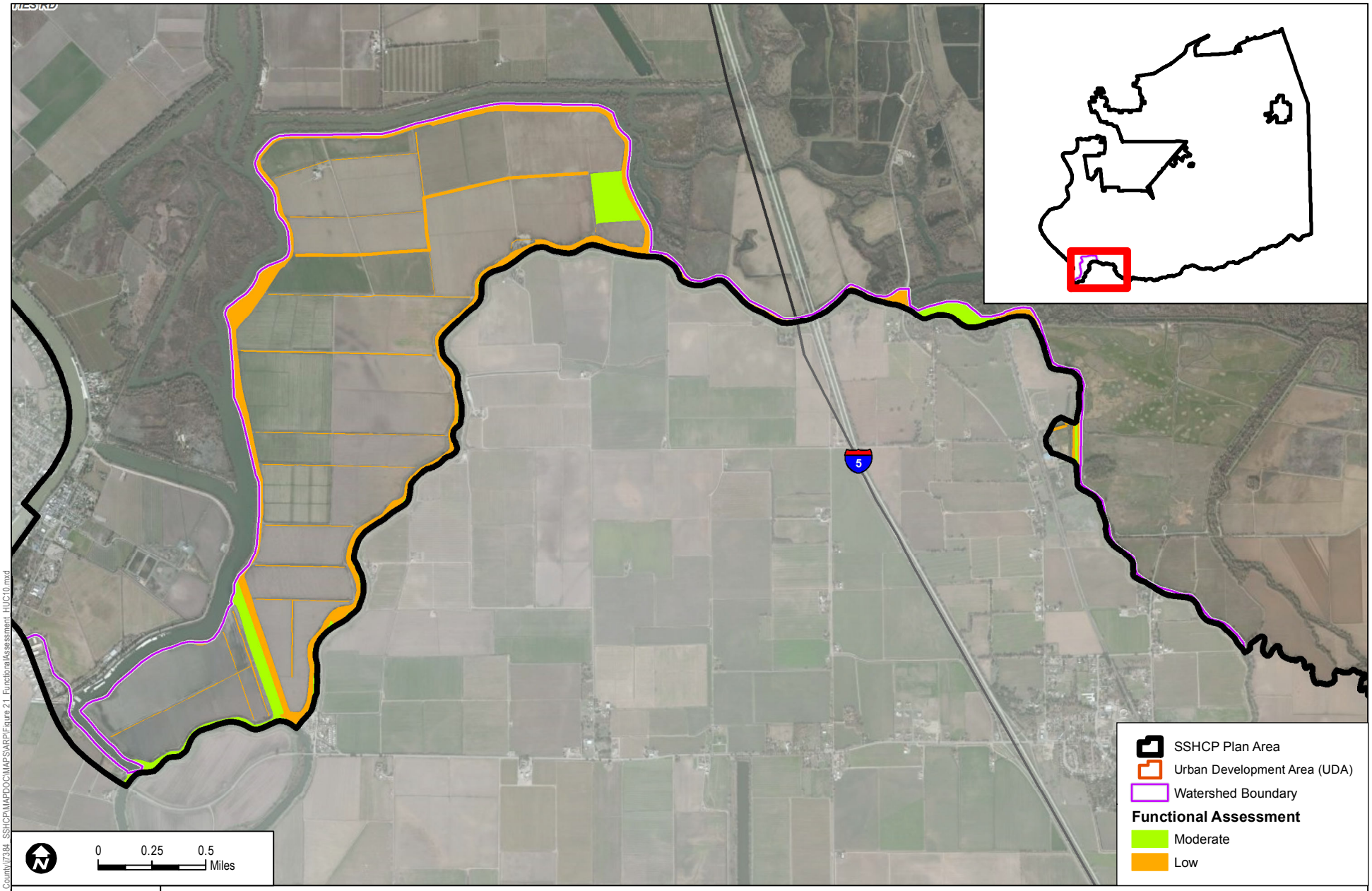

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SOURCE: Bing 2015, County of Sacramento 2014, USGS 2013 NHD

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FIGURE 21

Functional Assessment - Lower Mokelumne River Watershed

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN AQUATIC RESOURCES PROGRAM

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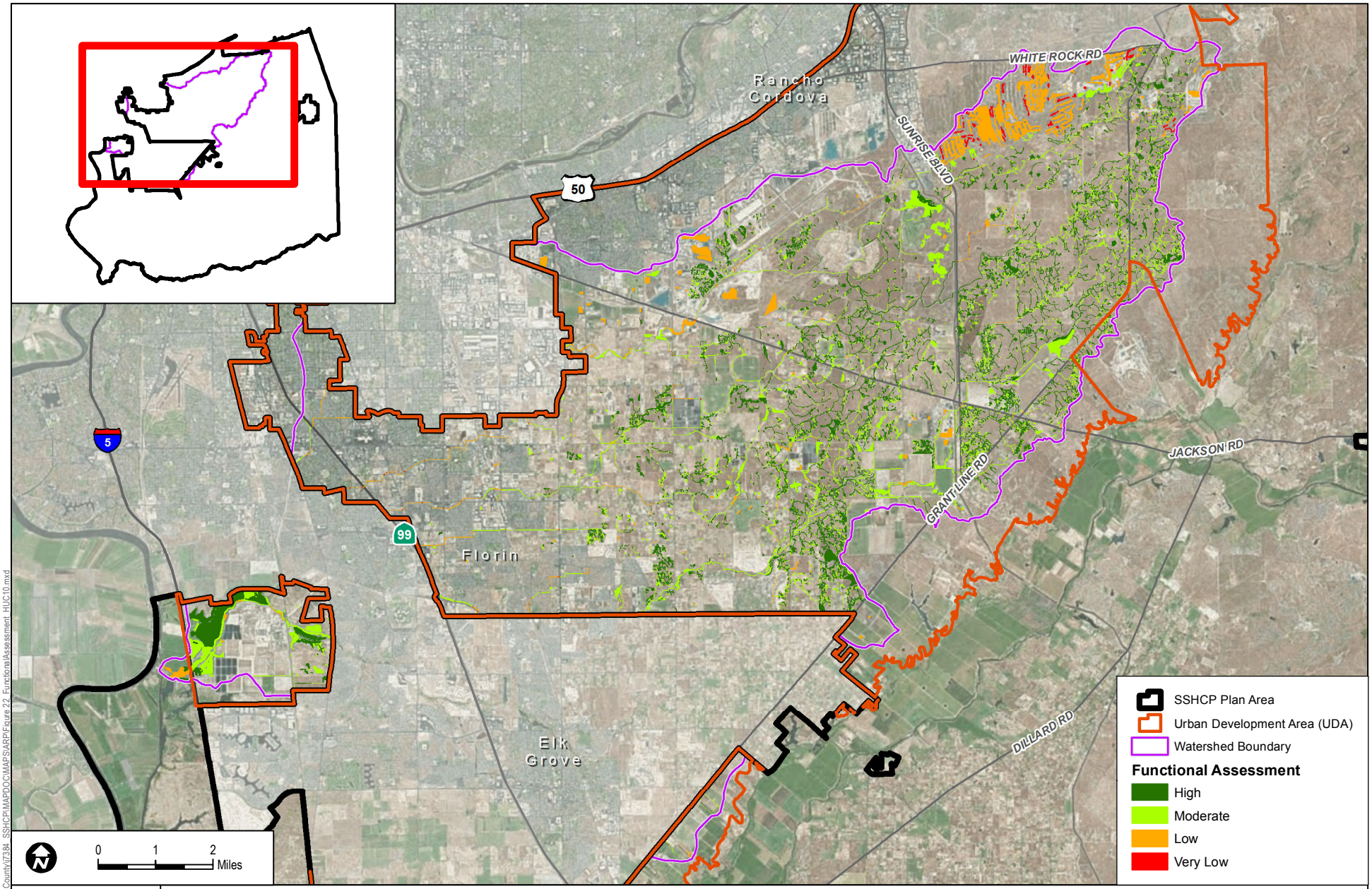

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SOURCE: Bing 2015, County of Sacramento 2014, USGS 2013 NHD

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FIGURE 22

Functional Assessment - Morrison Creek Watershed

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN AQUATIC RESOURCES PROGRAM

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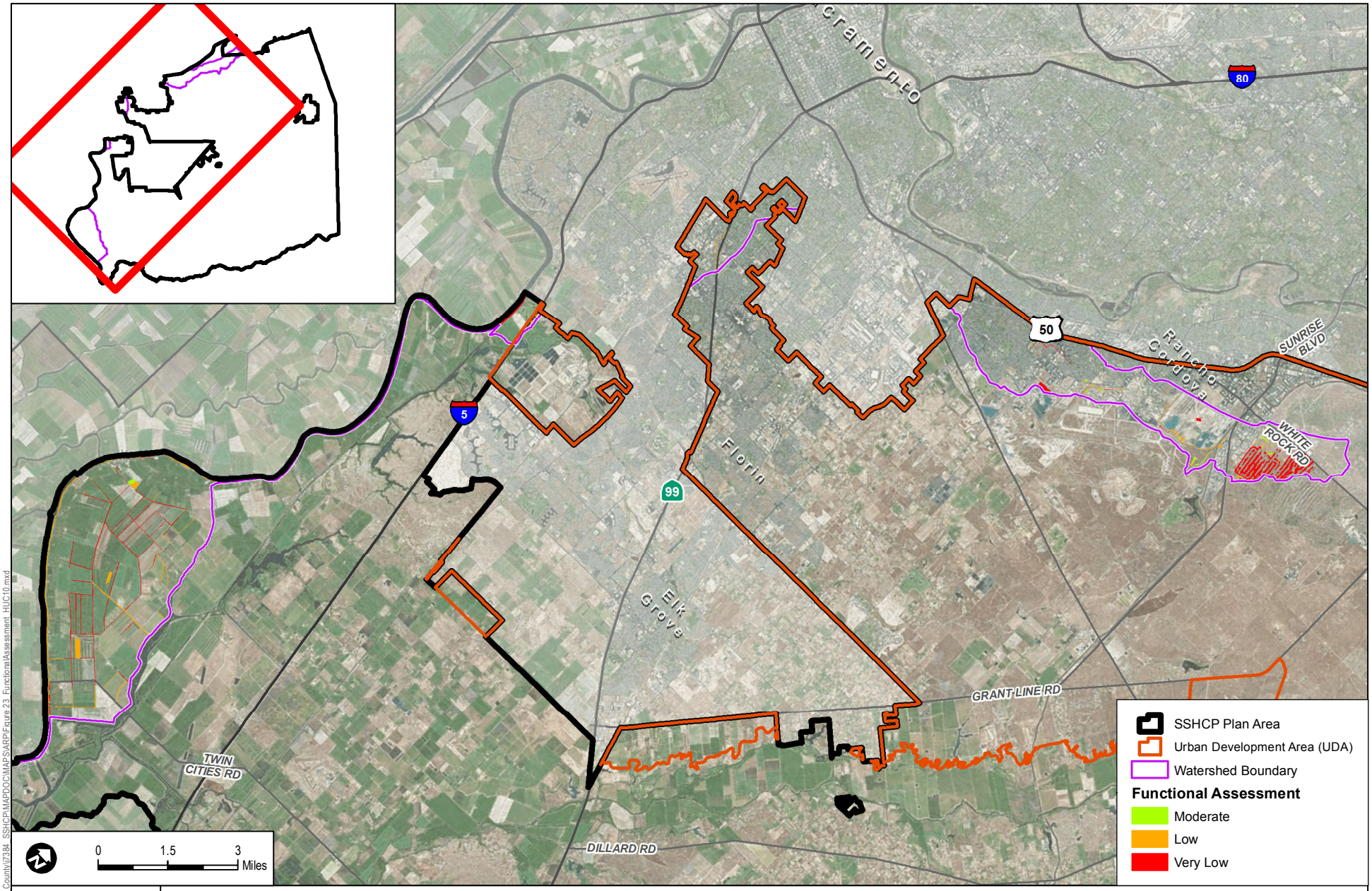

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SOURCE: Bing 2015, County of Sacramento 2014, USGS 2013 NHD

FIGURE 23

Functional Assessment - Sherman Lake-Sacramento River Watershed

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN AQUATIC RESOURCES PROGRAM

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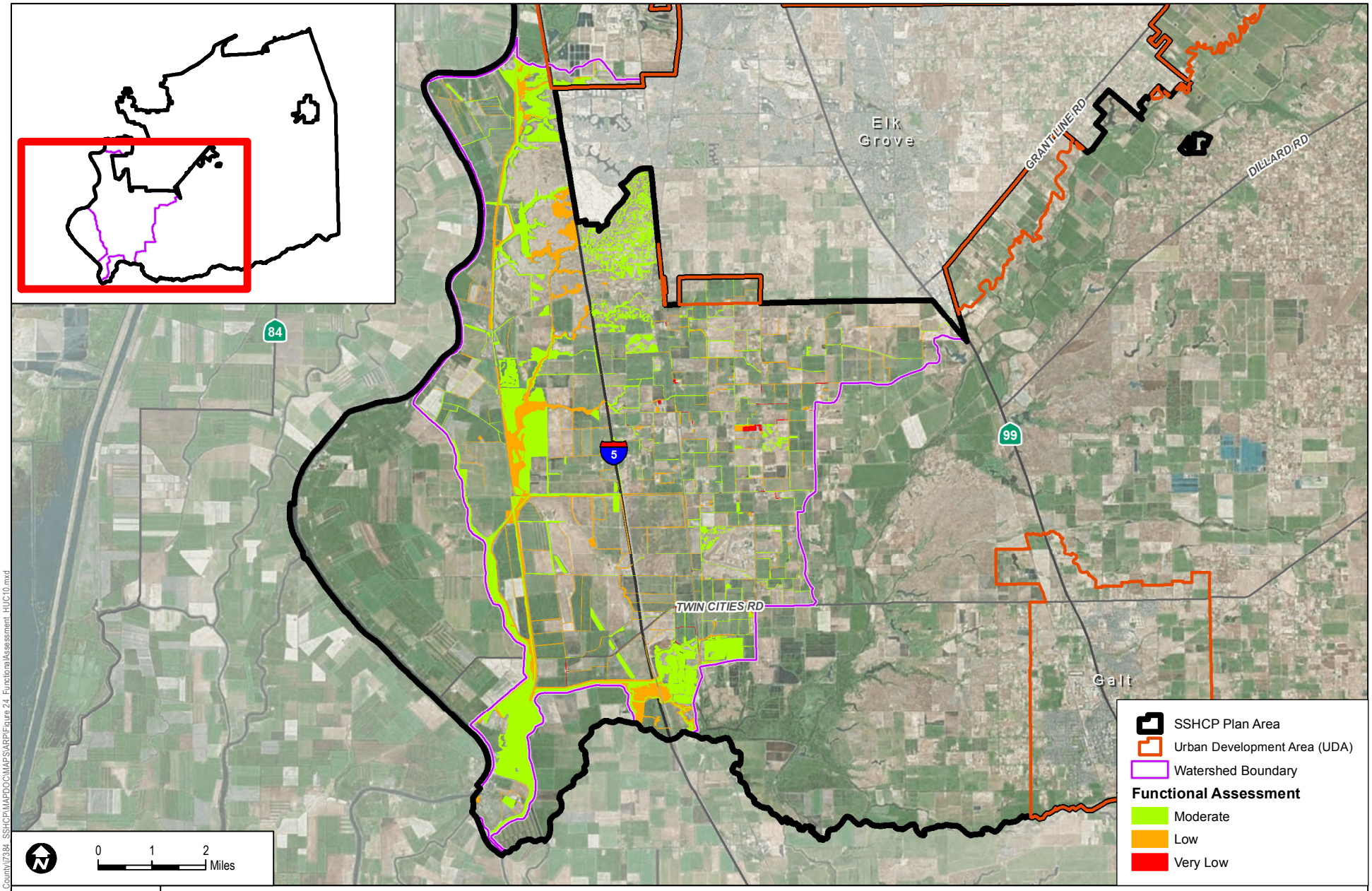

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SOURCE: Bing 2015, County of Sacramento 2014, USGS 2013 NHD

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FIGURE 24

Functional Assessment - Snodgrass Slough Watershed

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN AQUATIC RESOURCES PROGRAM

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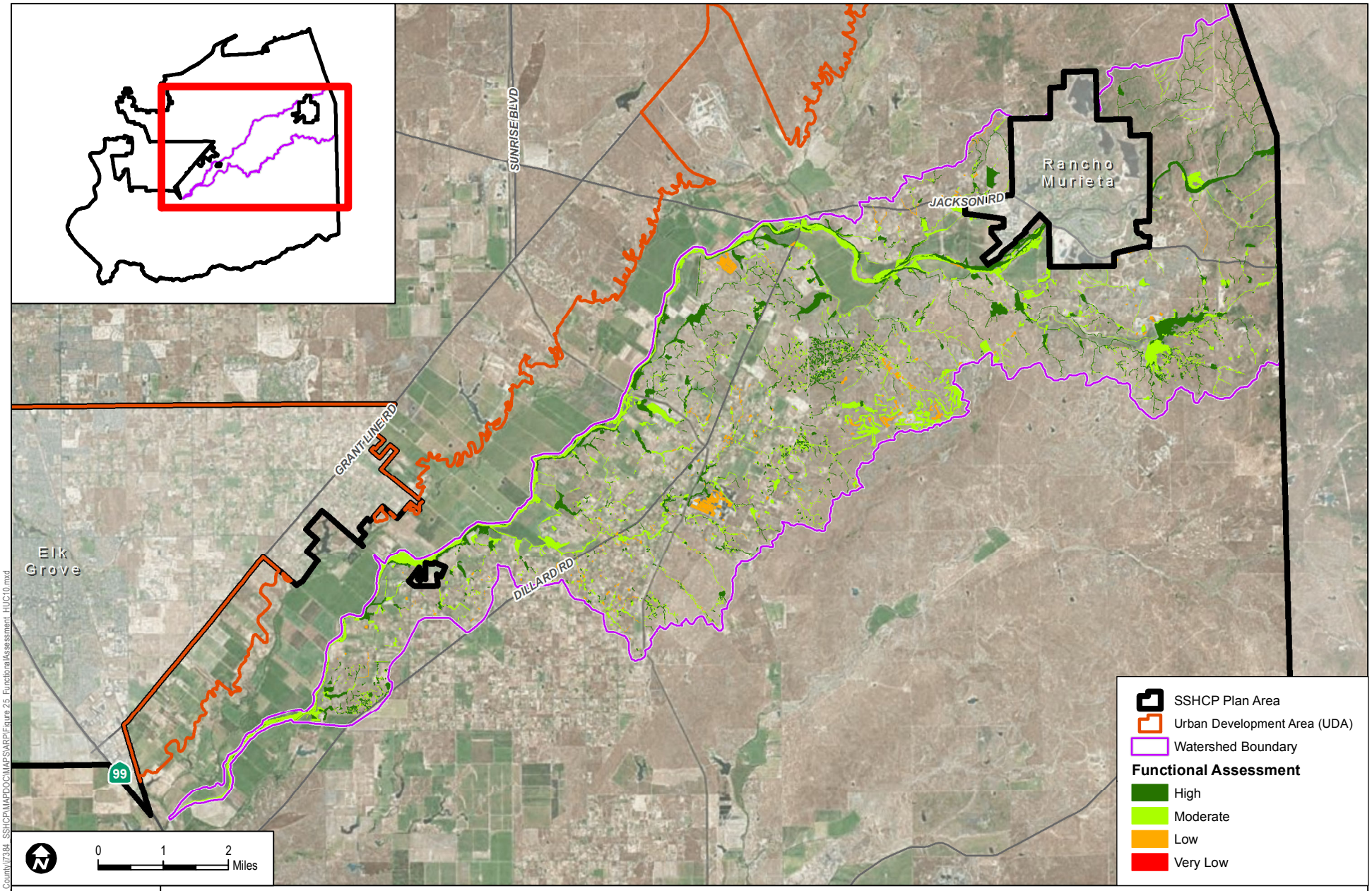

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SOURCE: Bing 2015, County of Sacramento 2014, USGS 2013 NHD

FIGURE 25

Functional Assessment - Upper Cosumnes River Watershed

SOUTH SACRAMENTO COUNTY HABITAT CONSERVATION PLAN AQUATIC RESOURCES PROGRAM

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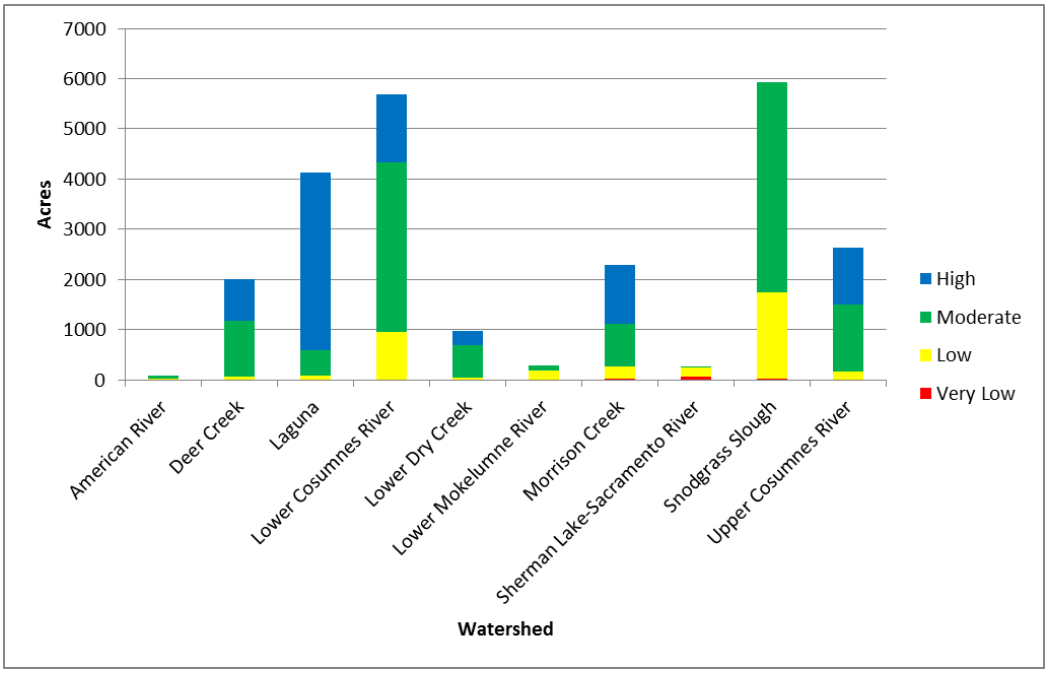
Figure 26 Summary of Overall Aquatic Resources Condition per Watershed



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4 PROPOSED IMPACTS TO AQUATIC RESOURCES

Proposed impacts to aquatic resources within the SSHCP in the Plan Area can be described in terms of the aquatic resources' resulting diversity, abundance, and condition, in the same manner as they were for the existing conditions. Diversity is again described in terms of the variety of aquatic resources by land cover type (common name) and Cowardin class that would be impacted, and the variety that would remain after impacts. Abundance is described in terms of acreage of each impacted aquatic resource type within the Plan Area and per watershed (at the HUC-10 level), and the acreage that would remain. Condition is described using a landscape-level functional assessment to determine the relative capacity of the remaining aquatic resources to perform various functions and services related to hydrology, water quality, and habitat. In this section, the effects of implementing the SSHCP are examined without considering compensatory mitigation (please see Chapter 6 for an assessment of effects after consideration of compensatory mitigation), but do consider incorporation of AMMs, whose implementation would be integral to carrying out Covered Activities in the SSHCP.

4.1 Estimated Impacts to Abundance and Diversity of Aquatic Resources within the Plan Area

The SSHCP allows for specific categories of Covered Activities to occur within the Plan Area and to receive incidental take authorization from the Wildlife Agencies (U.S. Fish and Wildlife Service (USFWS) and CDFW). Covered Activities are described in Section 5.2 of Chapter 5 of the SSHCP. Conditions on Covered Activities are described in Section 5.3 of the SSHCP. The majority of the Covered Activities would be implemented within the region of the Plan Area designated as the UDA. Such Covered Activities include urban development and mining in the UDA, as well as Covered Activities in Preserves, Preserve Setbacks, and Stream Setbacks. Urban development in the UDA comprises planned urban growth and all ground-disturbing activities associated with urban development. This includes the construction of typical urban facilities, public and private, such as residential, commercial, and industrial structures; park and recreation facilities; water supply facilities; flood control and stormwater management (including operations and maintenance activities, such as vegetation control, sediment removal in the immediate vicinity of bridges, culverts and pipes, and erosion repair); stream bank stabilization projects; public and private utilities; and urban transportation. Covered Activities in Stream Setbacks and in the Laguna Creek Wildlife Corridor include trails, low-velocity bio-retention swales, perpendicular stream crossings, stream bank stabilization, fencing, shade structures (e.g., awnings) and shade trees, interpretive signs and kiosks, riparian habitat re-establishment or establishment, outfalls, and flood control structures and stormwater management (see Section 5.2.6 in Chapter 5 of the SSHCP). Covered Activities in Preserve Setbacks include trails, low-velocity bio-retention swales, fencing, firebreaks, shade structures and shade trees, and interpretive signs and kiosks (see Section 5.2.5 in Chapter 5 of the SSHCP). Covered Activities

in preserves include management and monitoring; low-impact nature trails; habitat enhancement, re-establishment, and establishment; species surveys, research, and adaptive management activities; water supply for livestock; groundwater monitoring and extraction wells; and utility maintenance and repair (see Section 5.2.7 in Chapter 5 of the SSHCP). Covered Activities in preserve linkages include all of the Covered Activities described in preserves plus limited use of detention basins (see Section 5.2.7 in Chapter 5 of the SSHCP). Covered Activities outside the UDA are limited to rural transportation projects, recycled water projects, and SSHCP Preserve System Covered Activities. Complete descriptions of all categories of Covered Activities can be found in Section 5.2 of the SSHCP.

Direct impacts are assumed to result in a permanent loss[5] of aquatic resources. Direct impacts to aquatic resources resulting from the SSHCP's Covered Activities were quantified at a programmatic scale using a geographic information system (GIS). GIS was used to overlay an electronic map-layer of projected Covered Activity footprints onto an electronic map-layer of the SSHCP land cover baseline (existing conditions) map to quantify the acres of overlap to determine acres of direct impact to each potentially jurisdictional aquatic resource land cover type. In this manner, direct impacts were quantified at a programmatic scale. This approach reasonably estimates the amount of permanent loss of aquatic resources within the Plan Area that would result from implementation of Covered Activities. For example, it is likely that a number of stream channels would be widened and/or deepened within the Plan Area, but the stream channel will remain in its relative position within the landscape. For purposes of the SSHCP impacts analysis, it is assumed that Covered Activities would impact the entire stream, resulting in a permanent loss of stream acres even though this may not be the case. This conservative approach to quantifying impacts to aquatic resources provides the uppermost thresholds for anticipated direct impacts resulting in permanent loss of aquatic resources.

Participation in the SSHCP/ARP is compulsory. Impacts to all aquatic resources within the SSHCP Plan Area would be tracked by the application processes implemented by the Land Use Authority Permittees, and by the monitoring program of the SSHCP/ARP that requires periodic surveys to be performed that are designed to detect conversion of aquatic resources throughout the Plan Area.

4.1.1 Impacts on Abundance and Diversity of Aquatic Resources

Within the Plan Area, of the currently existing 24,255 acres of mapped potentially jurisdictional aquatic resources, there are projected direct impacts to approximately 1,614 acres, leaving approximately 22,641 acres (93%) of aquatic resources remaining in the Plan Area. Of the total

[5] Aquatic resources that are permanently adversely affected by filling, flooding, excavation, or drainage because of the activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody.

amount of potentially jurisdictional aquatic resources, there are 11,343 acres of wetland waters, 5,192 acres of non-wetland waters, and 7,721 acres of riparian (Table 1). As shown in Table 13, of the currently existing 11,343 acres of wetland waters, there are projected direct impacts to approximately 856 acres, leaving approximately 10,487 acres (92%) of wetland waters remaining in the Plan Area. Of the currently existing 5,192 acres of non-wetland waters, there are projected direct impacts to approximately 294 acres, leaving approximately 4,898 acres (94%) of wetland waters remaining in the Plan Area. Of the currently existing 7,721 acres of riparian aquatic resources, there are projected direct impacts to approximately 464 acres, leaving approximately 7,257 acres (94.0%) of riparian aquatic resources remaining in the Plan Area. The watershed with the largest acreage amount of projected impacts to aquatic resources is the Morrison Creek watershed, with a total of 994 acres of impact (43.6% of aquatic resources). Proportionally, the watershed with the largest amount of impacts (61.6%) is the American River watershed; however, the actual acreage of impact is only 56 acres.

Within the Plan Area the land cover types that have the largest acreage of impact is vernal pool (389 acres), followed by Swale (235 acres). See Table 13 for a summary of impacts to aquatic resources types per watershed and Table 14 for a summary of remaining aquatic resources by type per watershed.

4.2 Estimated Impacts to Functions and Services of Aquatic Resources in the Plan Area

The effects of the SSHCP Covered Activities impacts are estimated by projecting the future condition of aquatic resources within the Plan Area, without considering mitigation. The projected future condition is obtained from the results of the Functional Assessment Report (Appendix C), which categorizes the Plan Area's aquatic resources into high, moderate, low, or very low condition.

Table 13
Direct Impacts to Aquatic Resources in the Plan Area by Type (Acres)

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Watershed										Total
			American River	*Deer Creek*	*Laguna*	*Lower Cosumnes River*	*Lower Dry Creek*	*Lower Mokelumne*	*Morrison Creek*	*Sherman Lake-Sac River*	*Snodgrass Slough*	*Upper Cosumnes River*	
Riparian	Mine Tailing Riparian Woodland	R	47.9	40.5	0	0	0	0	127.8	2.0	0	0	218.2
	Mixed Riparian Scrub	R	0	1.6	5.0	4.1	9.9	0	36.5	3.9	0.7	0	61.7
	Mixed Riparian Woodland	R	0	15.4	9.2	17.0	78.4	0.1	54.5	2.7	1	4.9	184.1
Subtotal Riparian			*47.9*	*57.5*	*14.2*	*21.1*	*88.3*	*0.1*	*218.8*	*8.6*	*1.7*	*4.9*	*464*
Wetland Waters	Freshwater Marsh	PEM1	1.4	2.0	7.5	0.7	2.5	0	104.8	0.4	7.2	0.5	127.0
	Seasonal Wetland	PEM2	0	10.1	15.0	4.2	1.4	0	68.0	0	6.5	0.3	105.5
	Swale	R2/R3	0.9	62.3	2.3	2.6	0.9	0	162.7	1.4	1.2	0.1	234.5
	Vernal Pools	PEM2	4.4	33.2	31.1	14.1	9.4	0	283.4	5.3	5.0	3.1	389.1
Subtotal Wetland Waters			*6.7*	*107.6*	*55.9*	*21.6*	*14.2*	*0*	*618.9*	*7.1*	*19.9*	*4*	*856.1*

Table 13
Direct Impacts to Aquatic Resources in the Plan Area by Type (Acres)

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Watershed										Total
			American River	*Deer Creek*	*Laguna*	*Lower Cosumnes River*	*Lower Dry Creek*	*Lower Mokelumne*	*Morrison Creek*	*Sherman Lake-Sac River*	*Snodgrass Slough*	*Upper Cosumnes River*	
Non-Wetland Waters	Open Water	POW	0.5	70.8	2.0	0.1	0.3	0	80.4	0.2	1.1	0	155.3
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	0.9	12.3	14.0	6.4	2.5	<0.1	57.4	3.8	18.5	1.1	116.8
	Streams/ Creeks (VPIH) Ephemeral	R4SB	0	2.6	0	0	0	0	19.0	0	0	0	21.6
Subtotal Non-Wetland Waters			*1.4*	*85.7*	*16.0*	*6.5*	*2.8*	*0*	*156.8*	*4*	*19.6*	*1.1*	*293.7*
Subtotal Wetland Waters and Non-Wetland Waters			*8.1*	*193.3*	*71.9*	*28.1*	*17*	*0*	*718.3*	*11.1*	*39.5*	*5.1*	*1,149.8*
Grand Total[1]			**56**	**250.8**	**86.1**	**49.2**	**105.3**	**0.1**	**937.1**	**19.7**	**41.2**	**10**	**1,613.8**

Note: [1] Table may not total precisely due to rounding.
Acreage totals in the ARP may not match precisely with acreage totals in the SSHCP. Factors that may result in differences between acreage figures in the ARP as compared to the SSHCP include: 1) The ARP only considers direct impacts where the SSHCP considers both direct and indirect impacts; 2) The ARP only includes jurisdictional wetlands for some land cover types where the SSHCP includes all wetlands; and 3) Slightly different Geographical Information System processes that result in small differences in totals.

Table 14
Post-Impact Abundance of Aquatic Resources in the Plan Area by Type (Acres)

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Watershed										Total
			American River	*Deer Creek*	*Laguna*	*Lower Cosumnes River*	*Lower Dry Creek*	*Lower Mokelumne*	*Morrison Creek*	*Sherman Lake – Sac River*	*Snodgrass Slough*	*Upper Cosumnes River*	
Riparian	Mine Tailing Riparian Woodland	R	0	0.2	158.3	17.3	0	0	1.6	0	0	245.5	422.9
	Mixed Riparian Scrub	R	0	78.8	53.1	267.7	37.2	2.4	20.7	126.2	527.5	99.7	1,213.2

Table 14
Post-Impact Abundance of Aquatic Resources in the Plan Area by Type (Acres)

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Watershed										Total
			American River	*Deer Creek*	*Laguna*	*Lower Cosumnes River*	*Lower Dry Creek*	*Lower Mokelumne*	*Morrison Creek*	*Sherman Lake – Sac River*	*Snodgrass Slough*	*Upper Cosumnes River*	
	Mixed Riparian Woodland	R	0.4	820.5	252.5	1,859.9	322.3	196.2	102.6	48.0	1,290.6	727.7	5,620.7
Subtotal Riparian			*0.4*	*899.5*	*463.9*	*2,144.9*	*359.5*	*198.6*	*124.9*	*174.2*	*1,818.1*	*1,072.9*	*7,256.8*
Wetland Waters	Freshwater Marsh	PEM1	0.6	36.2	159.7	1,126.2	45.0	20.9	265.2	39.3	1,022.4	111.7	2,827.1
	Seasonal Wetland	PEM2	22.6	118.9	403.5	611.5	115.4	0	38.9	0	775.2	408.6	2,494.6
	Swale	R2/R3	1.9	98.1	425.9	141.6	64.3	0	195.9	0	9.1	80.4	1,017.2
	Vernal Pools	PEM2	2.5	241.1	1,886.0	605.0	193.3	0.1	481.2	0	415.9	321.6	4,146.5
Subtotal Wetland Waters			*27.6*	*494.3*	*2,875.1*	*2,484.3*	*418*	*21*	*981.2*	*39.3*	*2,222.6*	*922.3*	*10,485.4*
Non-Wetland Waters	Open Water	POW	2.2	129.4	295.4	663.0	8.4	3.1	78.4	9.2	719.2	280.2	2,188.5
	Perennial or Intermittent Streams/ Creeks	R2UB/R3 UB	4.7	216.1	402.0	338.6	75.7	67.4	65.4	20.1	1,122.8	348.6	2,661.2
	Streams/ Creeks (VPIH) Ephemeral	R4SB	0	16.1	0	0	0	0	35.6	0	0	0	51.6
Subtotal Non-Wetland Waters			*6.9*	*361.6*	*697.4*	*1,001.6*	*84.1*	*70.5*	*179.4*	*29.3*	*1842*	*628.8*	*4,901.3*
Subtotal Wetland Waters and Non-Wetland Waters			*34.5*	*855.9*	*3,572.5*	*3,485.9*	*502.1*	*91.5*	*1,160.6*	*68.6*	*4,064.6*	*1,551.1*	*15,386.7*
Grand Total[1]			**34.9**	**1,755.4**	**4,036.4**	**5,630.8**	**861.6**	**290.1**	**1,285.5**	**242.8**	**5,882.7**	**2,624.0**	**22,643.5**

Note: [1] Table may not total precisely due to rounding.
Acreage totals in the ARP may not match precisely with acreage totals in the SSHCP. Factors that may result in differences between acreage figures in the ARP as compared to the SSHCP include: 1) The ARP only considers direct impacts where the SSHCP considers both direct and indirect impacts; 2) The ARP only includes jurisdictional wetlands for some land cover types where the SSHCP includes all wetlands; and 3) Slightly different Geographical Information System processes that result in small differences in totals.

4.2.1 Impacted Condition of Aquatic Resources

The landscape-level assessment (FCAM) that was used to describe the existing condition of the aquatic resources was also used to predict the future condition of the resources after Covered Activity impacts have occurred. As with existing condition, the future condition of aquatic resources describes the relative ability of the resources to support various functions and services. The overall quality of remaining aquatic resources (after direct impacts have occurred) was predicted based on the same factors: area of the aquatic resource, HUC-10 watershed, primary adjacent land cover, secondary adjacent land cover, and aquatic resource type. Function scores were assigned for each of these factors, per aquatic resource feature, based upon ability to maintain or improve the following functions: habitat, water quality, and hydrology. The second factor, HUC-10 watershed, was updated based on the predicted future state of each of the watersheds. The results of the analysis provided an overall functional score of very low, low, moderate, or high for each aquatic resource.

Table 15 summarizes acreage and function/condition of aquatic resources (hereinafter simply condition) using FCAM, in the overall Plan Area following impacts and before accounting for compensatory mitigation, and Figure 27 is a graphical depiction of those data, showing how the impacted Plan Area compares to the existing conditions. Compared to the existing conditions, the impacted Plan Area conditions without mitigation show that the amount of high condition resources remains stable (very slight increase of 29 acres). However, the amounts of moderate, low, and very low condition resources all decrease (decreases of 1,266 acres, 297 acres, and 79 acres, respectively). The slight increase in the amount of high condition resources is the result of the shifts in Covered Species occurrences among watersheds resulting from implementation of the SSHCP and the subsequent shift of some of the associated function scores from moderate to high via an improvement to one or more of the attributes (e.g., implementation of setback).

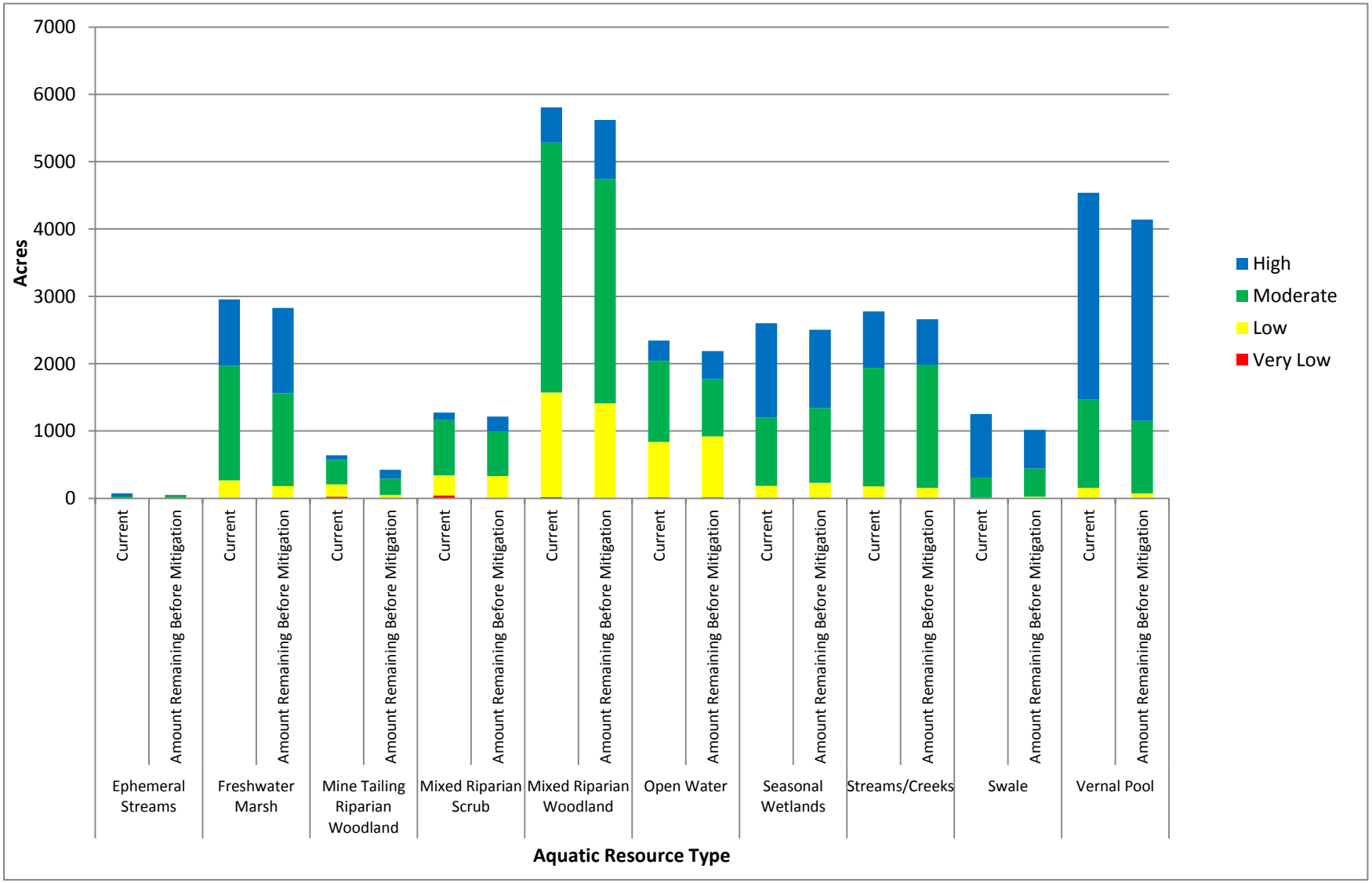
Tables 16 through 25 summarize the condition of aquatic resources in each HUC-10 watershed following impacts and before accounting for compensatory mitigation, and Figures 28 through 37 are graphical depictions, comparing the existing to the impacted watershed conditions. Table 26 summarizes current conditions in the Mather Core Recovery Area and following impacts prior to accounting for compensatory mitigation.

Table 15
Condition of Remaining Aquatic Resources in the Overall Plan Area After Impacts and Before Accounting for Compensatory Mitigation

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Remaining Aquatic Resources				Total (acres)
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	131.0	241.0	50.9	0	422.9
	Mixed Riparian Scrub	R2/R3	218.3	665.3	324.2	5.4	1,213.2
	Mixed Riparian Woodland	R2/R3	877.7	3,332.7	1,403.5	6.7	5,620.7
		Subtotal Riparian	*1,227.0*	*4,239.0*	*1,778.6*	*12.1*	*7,256.8*
Wetland Waters	Freshwater Marsh	PEM1	1,267.5	1,378.0	181.6	0	2,827.1
	Seasonal Wetland	PEM2	1,162.5	1,107.8	231.8	0	2,502.1
	Swales	R2/R3	575.4	415.6	26.4	0	1,017.3
	Vernal Pools	PEM2	2,988.2	1,078.7	72.3	0	4,139.1
		Subtotal Wetland Waters	*5,993.6*	*3,980.1*	*512.1*	*0*	*10,485.6*
Non-Wetland Waters	Open Water	POW	413.6	855.8	903.6	15.5	2,188.5
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	674.3	1,832.2	154.7	0	2,661.2
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	46.1	5.5	0	51.6
		Subtotal Non-Wetland Waters	*1,087.9*	*2,734.1*	*1,063.8*	*15.5*	*4,901.3*
		Subtotal Wetland Waters and Non-Wetland Waters	*7,081.5*	*6,714.2*	*1,575.9*	*15.5*	*15,386.9*
		Grand Total[1]	**8,308.5**	**10,953.2**	**3,354.5**	**27.6**	**22,643.7**

Note: [1] Table may not total precisely due to rounding.
Acreage totals in the ARP may not match precisely with acreage totals in the SSHCP. Factors that may result in differences between acreage figures in the ARP as compared to the SSHCP include: 1) The ARP only considers direct impacts where the SSHCP considers both direct and indirect impacts; 2) The ARP only includes jurisdictional wetlands for some land cover types where the SSHCP includes all wetlands; and 3) Slightly different Geographical Information System processes that result in small differences in totals.

Figure 27 Existing and Post-Impact Watershed Profiles of Aquatic Resources in the Plan Area



The Morrison Creek watershed, in addition to showing the largest decrease in abundance (acreage) of aquatic resources, was also predicted to have the largest decrease in high condition aquatic resources (943 acres), showing a shift in portions of Freshwater Marsh, Swale, and vernal pool resources to moderate condition. The amount of high condition aquatic resources is balanced out throughout the overall Plan Area because of shifts in moderate condition resources to high in other watersheds such as Lower Cosumnes and Upper Cosumnes as a result of changed Covered Species occurrences following SSHCP implementation (see Appendix C, Functional Assessment).

Within the Mather Core Recovery Area, 80% of high condition and moderate condition vernal pools would be avoided. Vernal pools in the Mather Core Recovery Area have recognized ecological importance and those proposed for avoidance were selected based on an assessment of their conservation value using FCAM and the Vernal Wetland Acre/Density Index (VWADI) as described in Section 5.2.1 below. Those vernal pool complexes with the highest conservation value scores received special consideration during the development of the SSHCP Conservation Strategy and the conceptual design of the SSHCP Preserve System.

Table 16
Condition of Remaining Aquatic Resources in the American River Watershed After Impacts and Before Accounting for Compensatory Mitigation

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Remaining Aquatic Resources				Total (acres)
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	0	0	0	0	0
	Mixed Riparian Woodland	R2/R3	0	0	0.4	0	0.4
Subtotal Riparian			*0*	*0*	*0.4*	*0*	*0.4*
Wetland Waters	Freshwater Marsh	PEM1	0	0.2	0.4	0	0.6
	Seasonal Wetland	PEM2	0	22.6	0	0	22.6
	Swales	R2/R3	0	1.4	0.5	0	1.9
	Vernal Pools	PEM2	0	2.5	<.1	0	2.5
Subtotal Wetland Waters			*0*	*26.7*	*0.9*	*0*	*27.6*
Non-Wetland Waters	Open Water	POW	0	0	2.2	0	2.2
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	0	1.9	2.9	0	4.7
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*0*	*1.9*	*5.1*	*0*	*6.9*
Subtotal Wetland Waters and Non-Wetland Waters			*0*	*28.6*	*6*	*0*	*34.5*
Grand Total[1]			**0**	**28.6**	**6.4**	**0**	**34.9**

Note: [1] Table may not total precisely due to rounding.

Figure 28 Existing and Post-Impact Watershed Profiles of Aquatic Resources in the American River Watershed

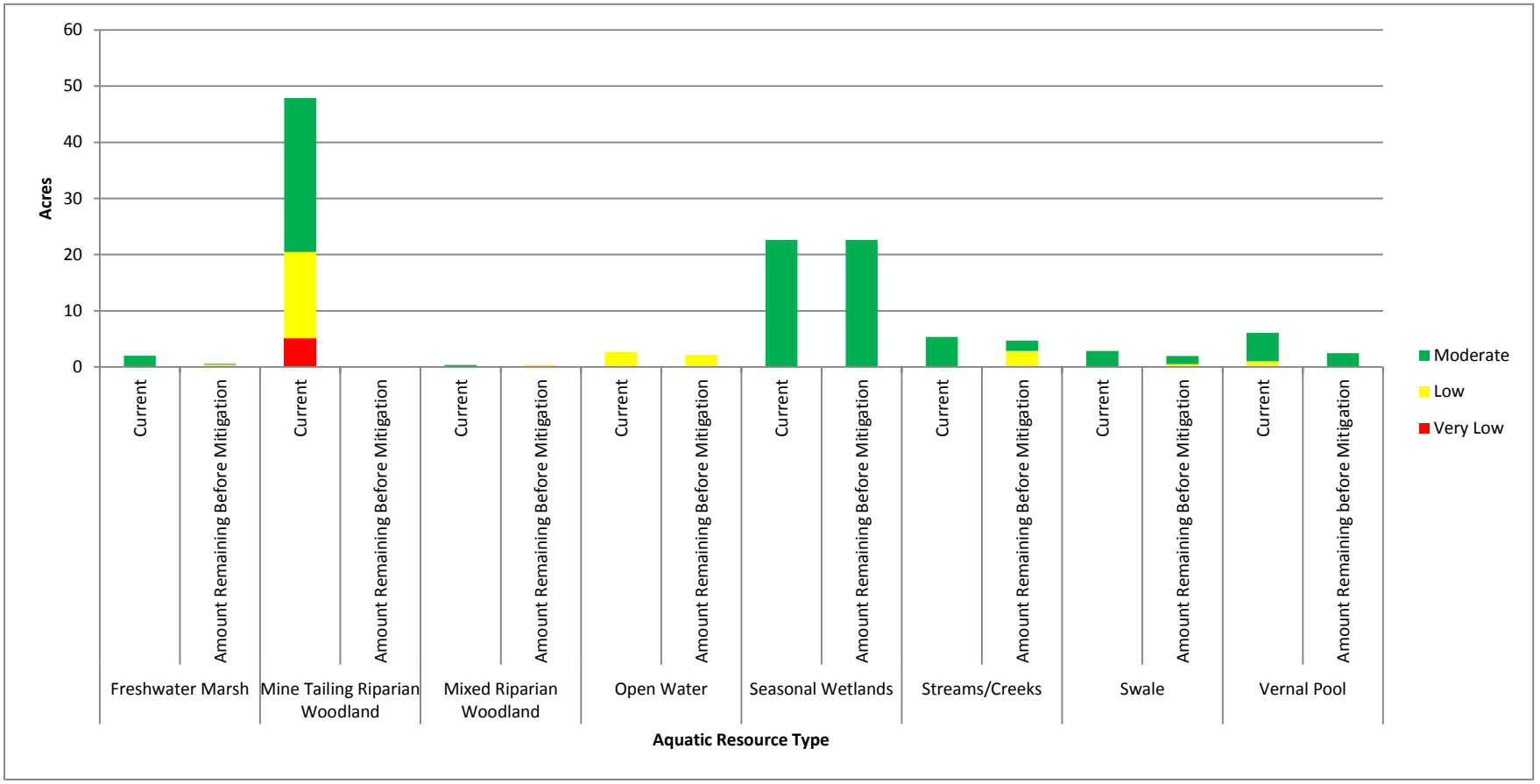


Table 17
Condition of Remaining Aquatic Resources in the Deer Creek Watershed After Impacts and Before Accounting for Compensatory Mitigation

Wetland or Non-wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Remaining Aquatic Resources				Total (acres)
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0.2	<0.1	0	0.2
	Mixed Riparian Scrub	R2/R3	40.3	35.4	3.0	0	78.8
	Mixed Riparian Woodland	R2/R3	106.6	694.6	19.3	0	820.5
Subtotal Riparian			*146.9*	*730.2*	*22.3*	*0*	*899.5*
Wetland Waters	Freshwater Marsh	PEM1	21.9	14.3	0	0	36.2
	Seasonal Wetland	PEM2	13.8	100.1	5.0	0	118.9
	Swale	R2/R3	70.9	26.3	0.9	0	98.1
	Vernal Pools	PEM2	183.6	57.2	0.3	0	241.1
Subtotal Wetland Waters			*290.2*	*197.9*	*6.2*	*0*	*494.3*
Non-Wetland Waters	Open Water	POW	69.4	56.4	3.6		129.4
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	0	121.5	<0.1	0	216.1
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	15.3	0.8	0	16.1
Subtotal Non-Wetland Waters			*69.4*	*193.2*	*4.4*	*0*	*361.6*
Subtotal Wetland Waters and Non-Wetland Waters			*359.6*	*391.1*	*10.6*	*0*	*855.9*
Grand Total[1]			**506.5**	**1,121.3**	**32.9**	**0**	**1,755.4**

Note: [1] Table may not total precisely due to rounding.

Figure 29 Existing and Post-Impact Watershed Profiles of Aquatic Resources in the Deer Creek Watershed

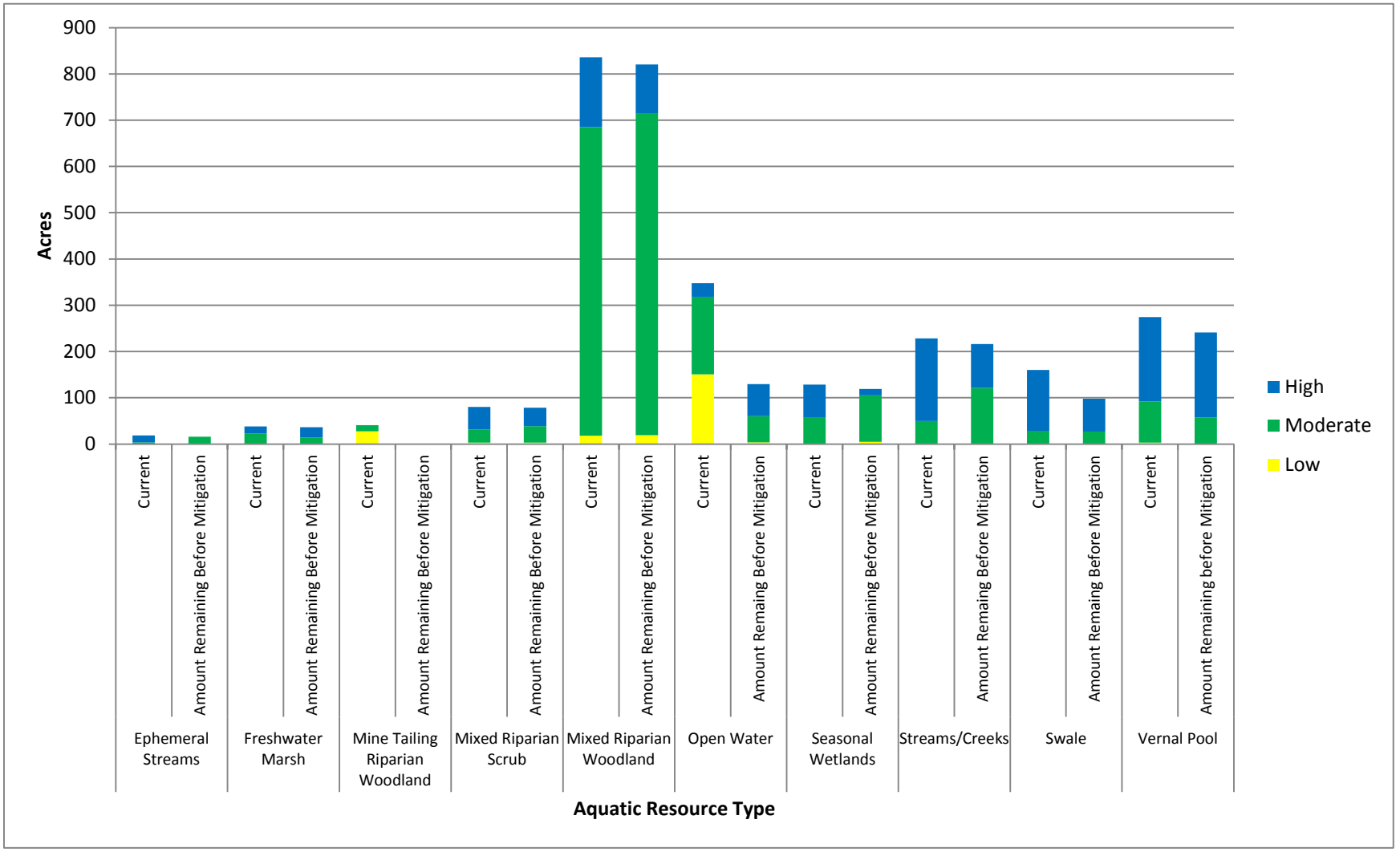


Table 18
Condition of Remaining Aquatic Resources in the Laguna Watershed After Impacts and Before Accounting for Compensatory Mitigation

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Remaining Aquatic Resources				Total (acres)
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	63.8	74.8	19.7	0	158.3
	Mixed Riparian Scrub	R2/R3	5.4	45.6	2.1	0	53.1
	Mixed Riparian Woodland	R2/R3	63.0	179.5	10.0	0	252.5
Subtotal Riparian			*132.2*	*299.9*	*31.8*	*0*	*463.9*
Wetland Waters	Freshwater Marsh	PEM1	139.6	19.6	0.4	0	159.7
	Seasonal Wetland	PEM2	370.8	25.1	14.5	0	410.5
	Swales	R2/R3	312.0	113.7	0.3	0	425.9
	Vernal Pools	PEM2	1,801.3	70.3	7.4	0	1,879.0
Subtotal Wetland Waters			*2,623.7*	*228.7*	*22.6*	*0*	*2,875.1*
Non-Wetland Waters	Open Water	POW	178.8	47.5	69.2	0	295.4
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	232.3	167.6	2.0	0	402.0
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*411.1*	*215.1*	*71.2*	*0*	*697.4*
Subtotal Wetland Waters and Non-Wetland Waters			*3,034.8*	*443.8*	*93.8*	*0*	*3,572.5*
Grand Total[1]			**3,167.0**	**743.7**	**125.6**	**0**	**4,036.4**

Note: [1] Table may not total precisely due to rounding.

Figure 30 Existing and Post-Impact Watershed Profiles of Aquatic Resources in the Laguna Watershed

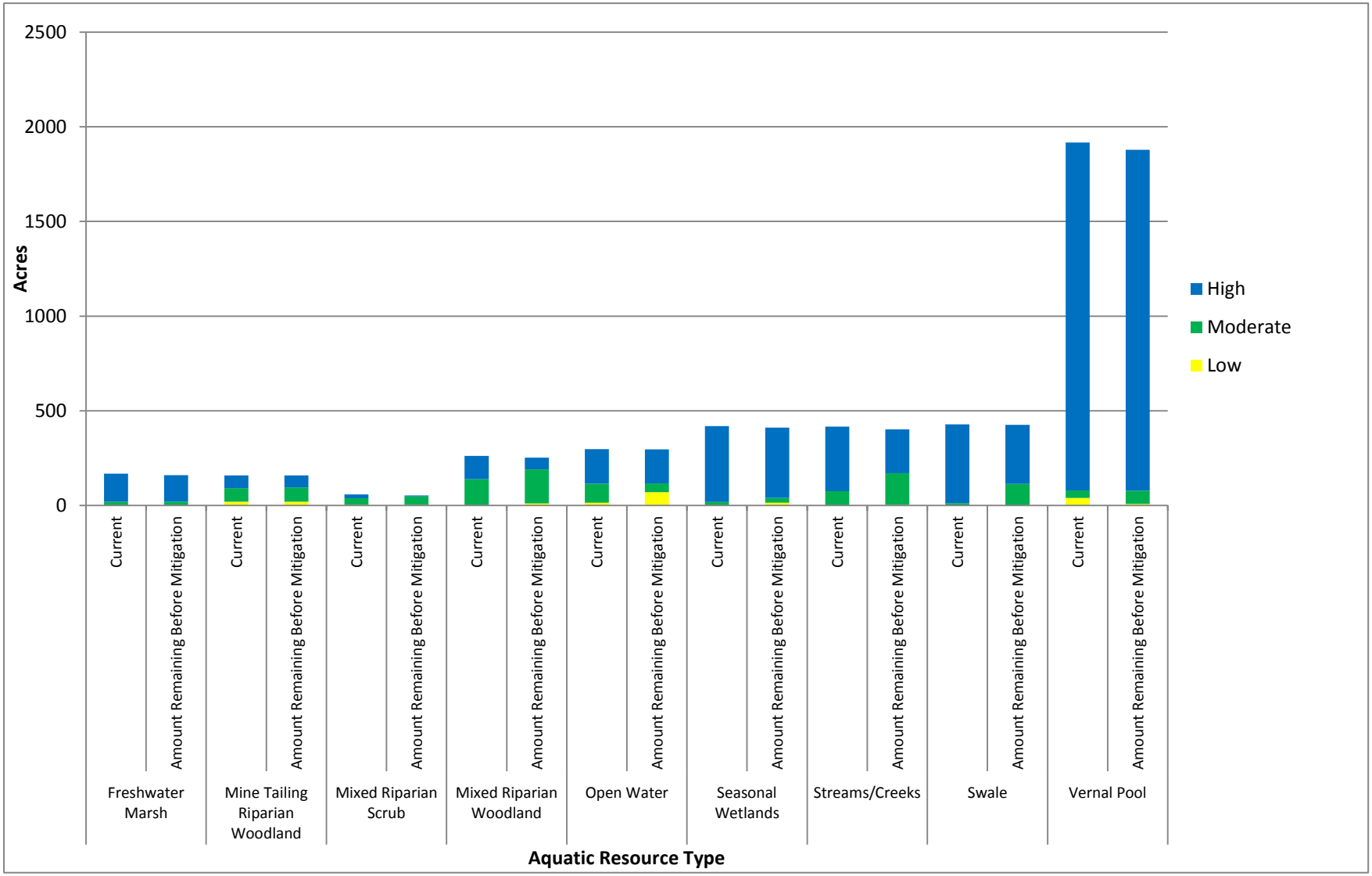


Table 19
Condition of Remaining Aquatic Resources in the Lower Cosumnes Watershed After Impacts and Before Accounting for Compensatory Mitigation

Wetland or Non-wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Remaining Aquatic Resources				Total (acres)
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	17.3	0	0	17.3
	Mixed Riparian Scrub	R2/R3	137.5	122.8	7.4	0	267.7
	Mixed Riparian Woodland	R2/R3	352.6	1,264.0	243.4	0	1,859.9
		Subtotal Riparian	*490.1*	*1,404.1*	*250.8*	*0*	*2,144.9*
Wetland Waters	Freshwater Marsh	PEM1	988.0	134.4	3.9	0	1,126.2
	Seasonal Wetland	PEM2	345.9	262.7	3.4	0	612.0
	Swale	R2/R3	99.4	41.0	1.2	0	141.6
	Vernal Pools	PEM2	335.6	230.7	38.1	0	604.5
		Subtotal Wetland Waters	*1,768.9*	*668.8*	*46.6*	*0*	*2,484.30*
Non-Wetland Waters	Open Water	POW	31.6	270.5	360.9	0	663.0
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	133.2	203.4	2.0	0	338.6
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
		Subtotal Non-Wetland Waters	*164.8*	*473.9*	*362.9*	*0*	*1,001.6*
		Subtotal Wetland Waters and Non-Wetland Waters	*1,933.70*	*1,142.70*	*409.5*	*0*	*3,485.90*
		Grand Total[1]	**2,423.8**	**2,546.80**	**660.3**	**0**	**5,630.80**

Note: [1] Table may not total precisely due to rounding.

Figure 31 Existing and Post-Impact Watershed Profiles of Aquatic Resources in the Lower Cosumnes Watershed

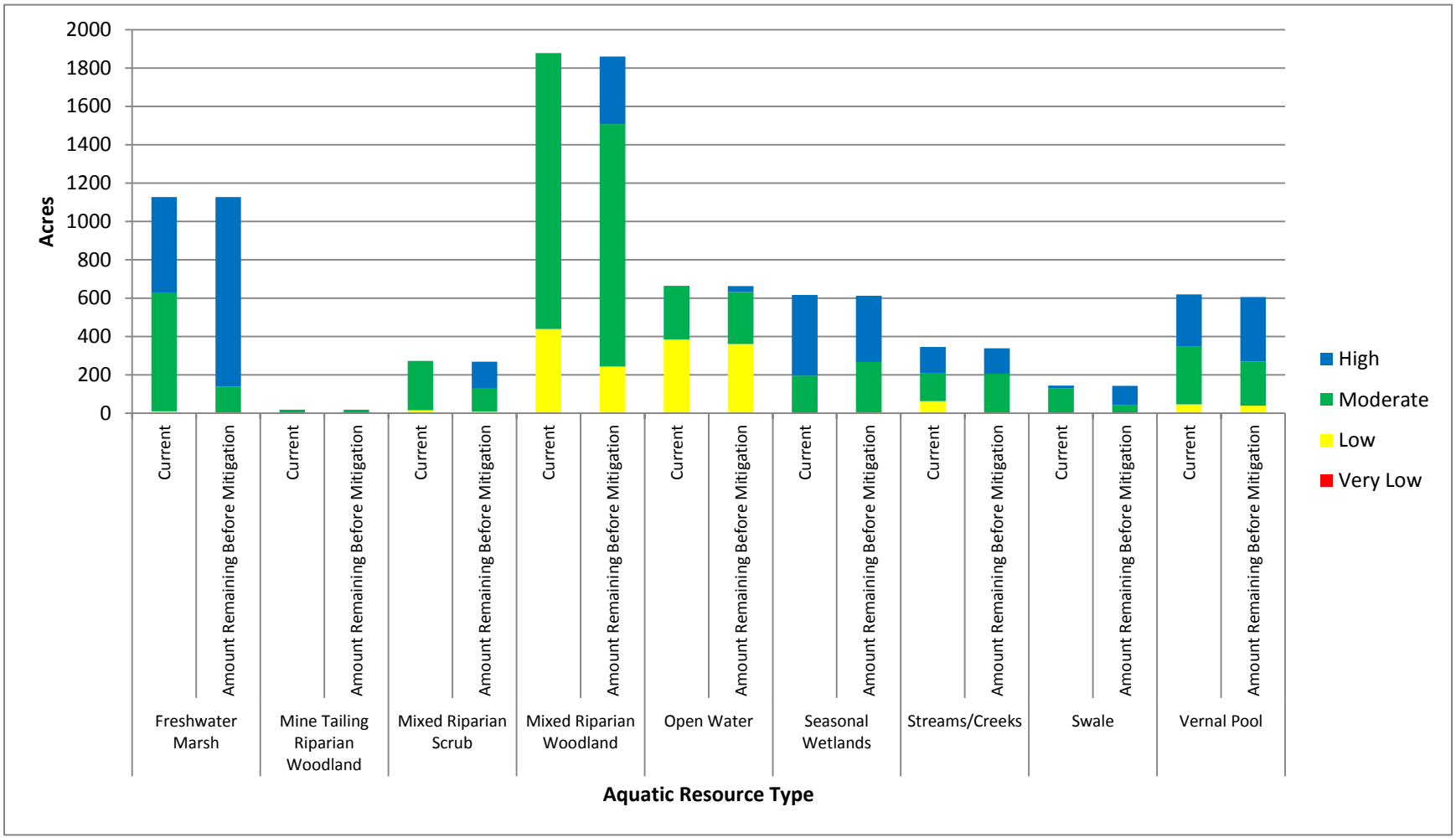


Table 20
Condition of Remaining Aquatic Resources in the Lower Dry Creek Watershed After Impacts and Before Accounting for Compensatory Mitigation

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Remaining Aquatic Resources				Total (acres)
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	0	31.8	5.4	0	37.2
	Mixed Riparian Woodland	R2/R3	0	269.9	52.3	0	322.3
Subtotal Riparian			*0*	*301.7*	*57.7*	*0*	*359.5*
Wetland Waters	Freshwater Marsh	PEM1	16.4	26.5	2.2	0	45.0
	Seasonal Wetland	PEM2	71.8	39.3	4.3	0	115.4
	Swale	R2/R3	10.8	53.4	<0.1	0	64.3
	Vernal Pools	PEM2	103.0	88.2	2.1	0	193.3
Subtotal Wetland Waters			*202*	*207.4*	*8.6*	*0*	*418*
Non-Wetland Waters	Open Water	POW	0	6.6	1.9	0	8.4
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	16.6	55.9	3.3	0	75.7
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*16.6*	*62.5*	*5.2*	*0*	*84.1*
Subtotal Wetland and Non-Wetland Waters			*218.6*	*269.9*	*13.8*	*0*	*502.1*
Grand Total[1]			**218.6**	**571.6**	**71.5**	**0**	**861.6**

Note: [1] Table may not total precisely due to rounding.

Figure 32 Existing and Post-Impact Watershed Profiles of Aquatic Resources in the Lower Dry Creek Watershed

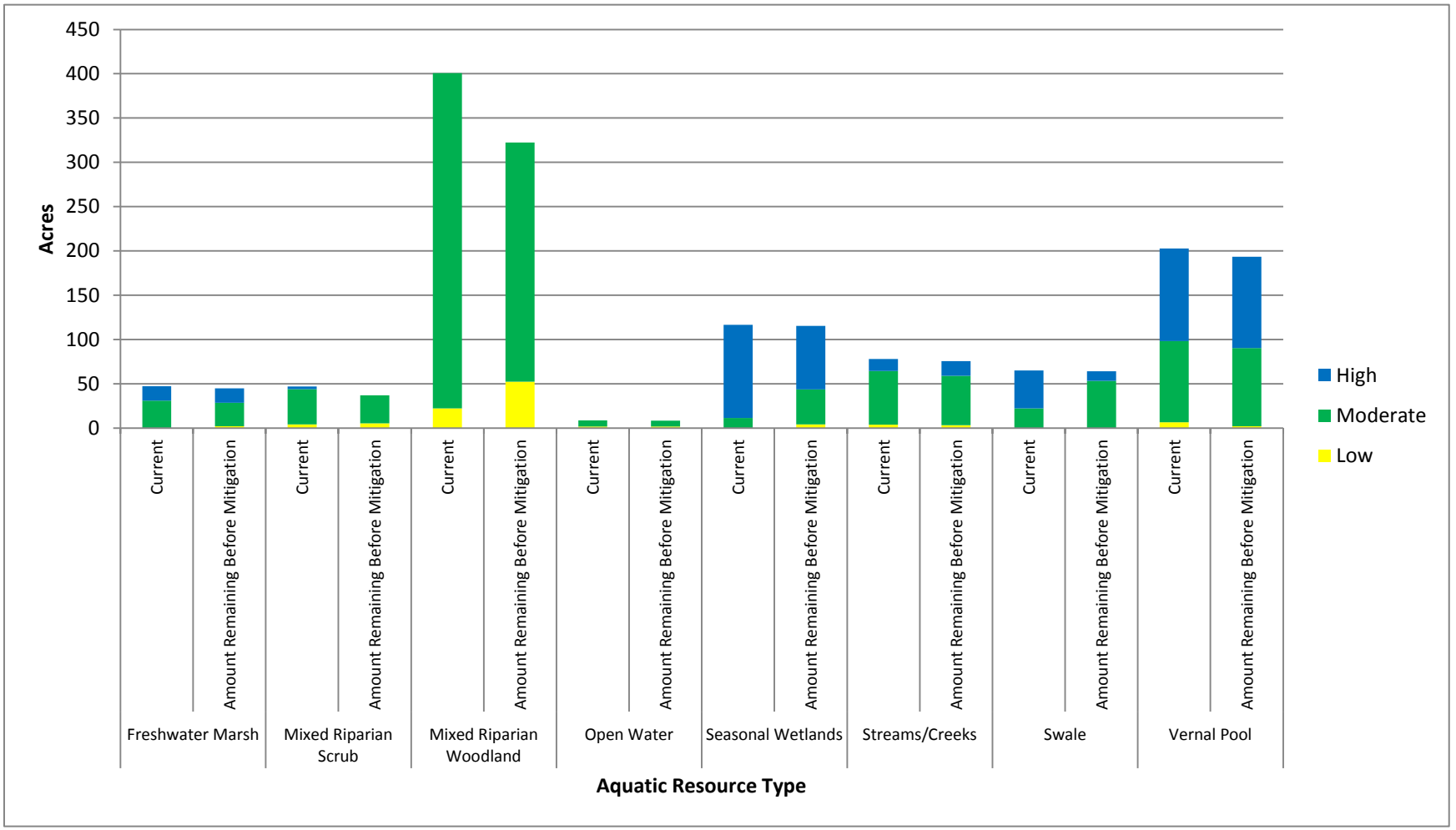


Table 21
Condition of Remaining Aquatic Resources in the Lower Mokelumne River Watershed After Impacts and Before Accounting for Compensatory Mitigation

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Remaining Aquatic Resources				Total (acres)
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	0	<0.1	2.4	0	2.4
	Mixed Riparian Woodland	R2/R3	0	14.0	182.2	0	196.2
Subtotal Riparian			*0*	*14*	*184.6*	*0*	*198.6*
Wetland Waters	Freshwater Marsh	PEM1	0	20.9	0	0	20.9
	Seasonal Wetland	PEM2	0	0	0	0	0
	Swale	R2/R3	0	0	0	0	0
	Vernal Pools	PEM2	0	0.1	0	0	0.1
Subtotal Wetland Waters			*0*	*21*	*0*	*0*	*21*
Non-Wetland Waters	Open Water	POW	0	0	3.1	0	3.1
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	0	65.1	2.2	0	67.4
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*0*	*65.1*	*5.3*	*0*	*70.5*
Subtotal Wetland Waters and Non-Wetland Waters			*0*	*86.1*	*5.3*	*0*	*91.5*
Grand Total[1]			**0**	**100.1**	**189.9**	**0**	**290.1**

Note: [1] Table may not total precisely due to rounding.

Figure 33 Existing and Post-Impact Watershed Profiles of Aquatic Resources in the Lower Mokelumne River Watershed

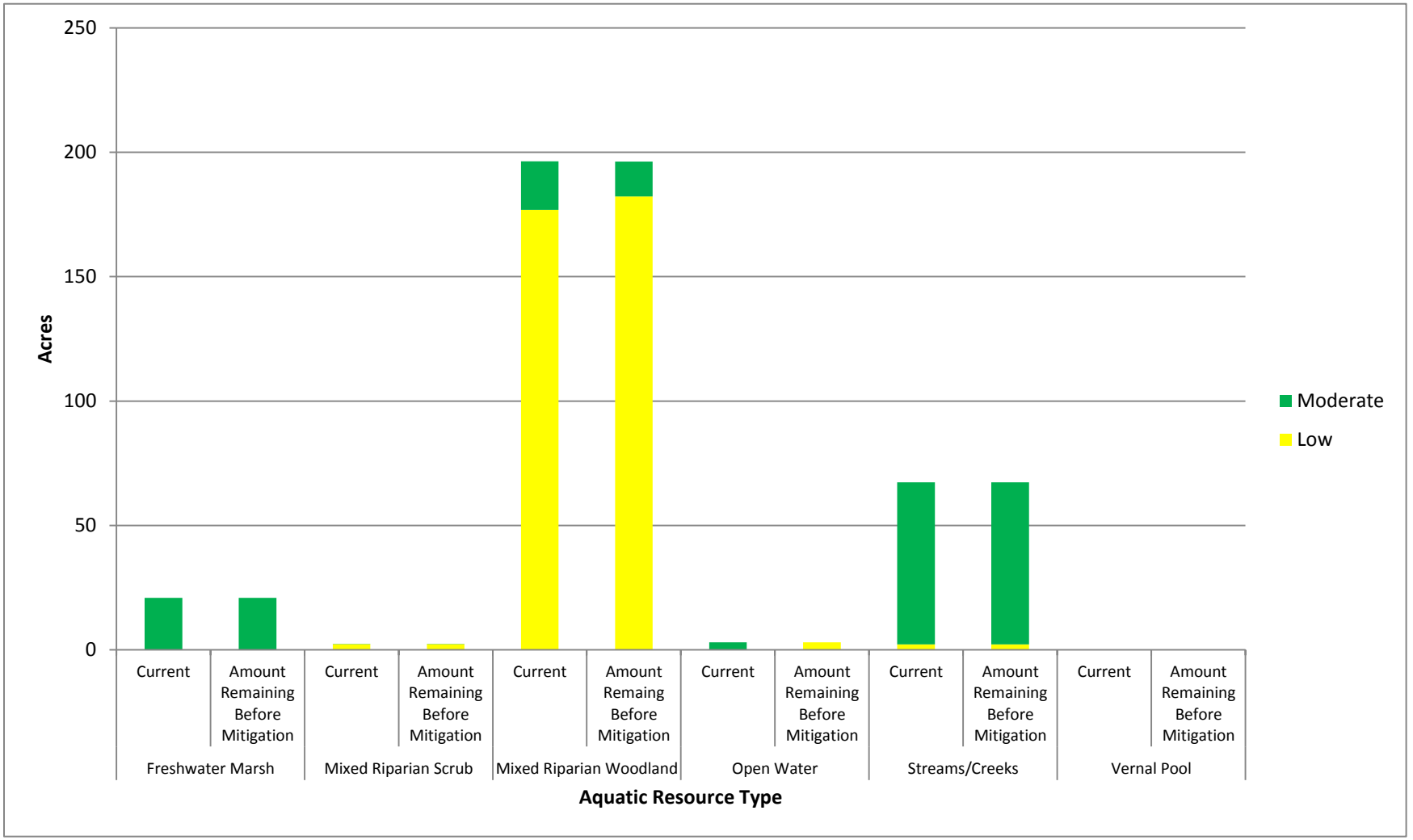


Table 22
Condition of Remaining Aquatic Resources in the Morrison Creek Watershed After Impacts and Before Accounting for Compensatory Mitigation

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Remaining Aquatic Resources				Total (acres)
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	1.6	0	1.6
	Mixed Riparian Scrub	R2/R3	3.2	11.2	6.3	0	20.7
	Mixed Riparian Woodland	R2/R3	0	54.5	48.1	0	102.6
		Subtotal Riparian	*3.2*	*65.7*	*56.0*	*0*	*124.9*
Wetland Waters	Freshwater Marsh	PEM1	13.8	228.5	22.8	0	265.2
	Seasonal Wetland	PEM2	0	24.5	14.4	0	38.9
	Swale	R2/R3	16.8	158.5	20.6	0	195.9
	Vernal Pools	PEM2	283.7	183.6	13.9	0	481.2
		Subtotal Wetland Waters	*314.3*	*595.1*	*71.7*	*0*	*981.2*
Non-Wetland Waters	Open Water	POW	0	19.4	59.0	0	78.4
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	0	30.2	35.2	0	65.4
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	30.8	4.7	0	35.6
		Subtotal Non-Wetland Waters	*0*	*80.4*	*98.9*	*0*	*179.4*
		Subtotal Wetland Waters and Non-Wetland Waters	*314.3*	*675.5*	*170.6*	*0*	*1,160.6*
		Grand Total[1]	**317.5**	**741.2**	**226.6**	**0**	**1,285.5**

Note: [1] Table may not total precisely due to rounding.

Figure 34 Existing and Post-Impact Watershed Profiles of Aquatic Resources in the Morrison Creek Watershed

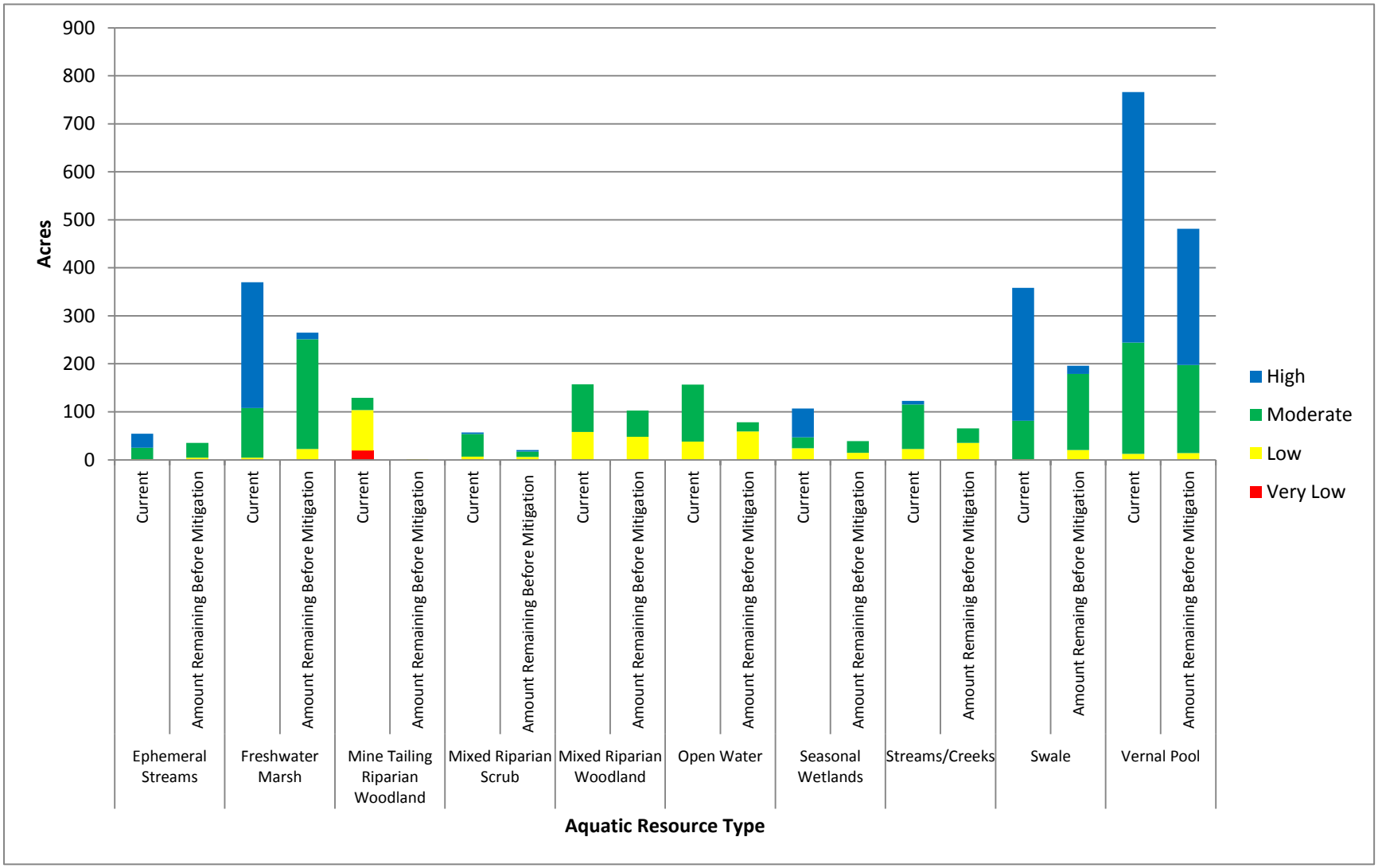


Table 23
Condition of Remaining Aquatic Resources in the Sherman Lake–Sacramento River Watershed After Impacts and Before Accounting for Compensatory Mitigation

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Remaining Aquatic Resources				Total (acres)
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	0	0	120.8	5.4	126.2
	Mixed Riparian Woodland	R2/R3	0	0	41.2	6.7	48.0
Subtotal Riparian			*0*	*0*	*162.0*	*12.1*	*174.2*
Wetland Waters	Freshwater Marsh	PEM1	0	39.3	0	0	39.3
	Seasonal Wetland	PEM2	0	0	0	0	0
	Swale	R2/R3	0	0	0	0	0
	Vernal Pools	PEM2	0	0	0	0	0
Subtotal Wetland Waters			*0*	*39.3*	*0*	*0*	*39.3*
Non-Wetland Waters	Open Water	POW	0	0	9.2	0	9.2
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	0	0.3	19.8	0	20.1
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*0*	*0.3*	*29.0*	*0*	*29.3*
Subtotal Wetland Waters and Non-Wetland Waters			*0*	*39.6*	*29.0*	*0*	*68.6*
Grand Total[1]			**0**	**39.6**	**191.0**	**12.1**	**242.8**

Note: [1] Table may not total precisely due to rounding.

Figure 35 Existing and Post-Impact Watershed Profiles of Aquatic Resources in the Sherman Lake–Sacramento River Watershed

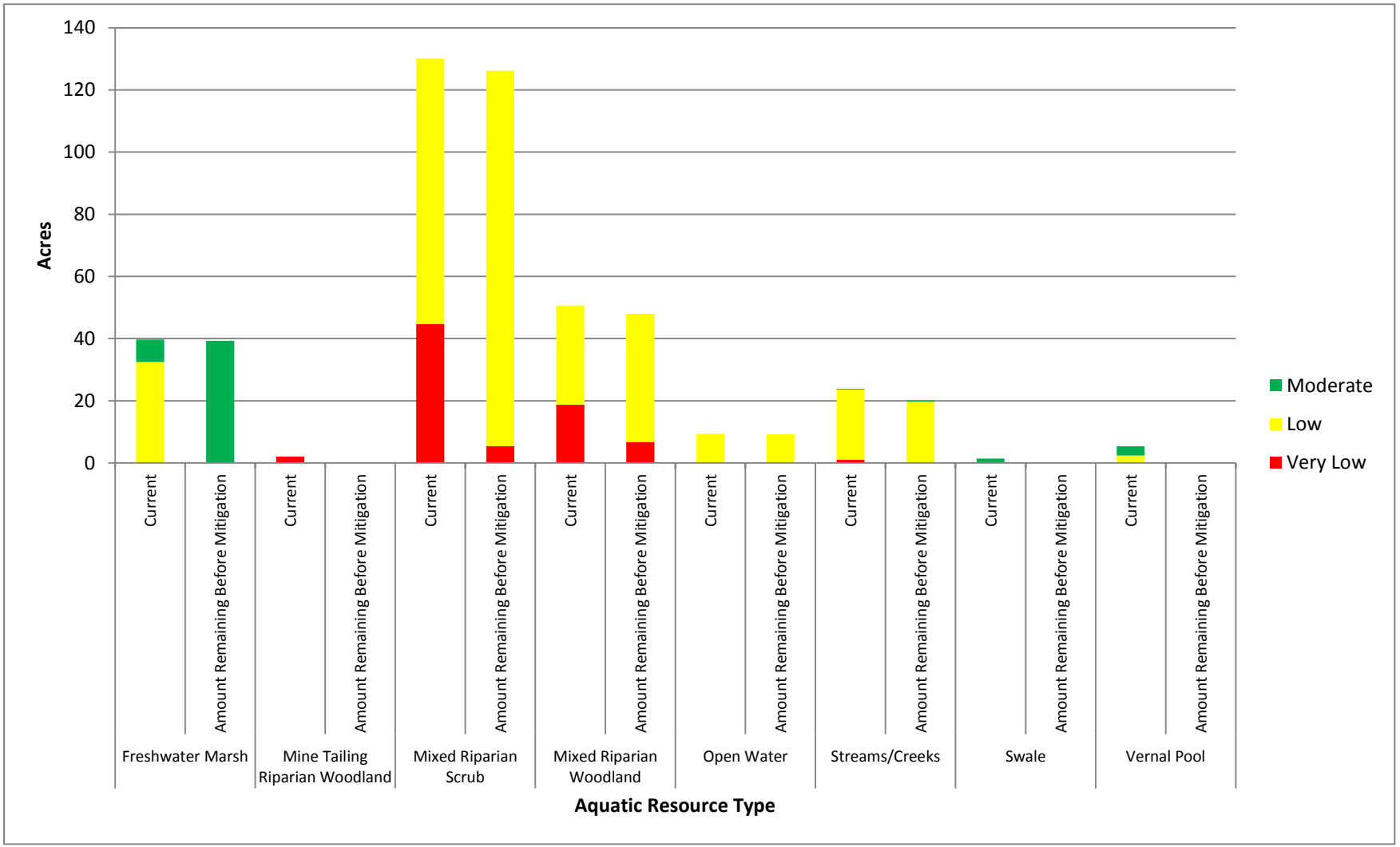


Table 24
Condition of Remaining Aquatic Resources in the Snodgrass Slough Watershed After Impacts and Before Accounting for Compensatory Mitigation

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Remaining Aquatic Resources				Total (acres)
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	0	350.7	176.9	0	527.5
	Mixed Riparian Woodland	R2/R3	0	488.1	802.5	0	1,290.6
Subtotal Riparian			*0*	*838.8*	*979.4*	*0*	*1818.1*
Wetland Waters	Freshwater Marsh	PEM1	0	871.7	150.7	0	1,022.4
	Seasonal Wetland	PEM2	0	590.8	184.5	0	775.2
	Swale	R2/R3	0	6.6	2.5	0	9.1
	Vernal Pools	PEM2	0	408.9	7.0	0	415.9
Subtotal Wetland Waters			*0*	*1,878.0*	*344.7*	*0*	*2,222.6*
Non-Wetland Waters	Open Water	POW	0	389.9	313.8	15.5	719.2
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	22.1	1,013.8	86.9	0	1,122.8
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	350.7	176.9	0	527.5
Subtotal Non-Wetland Waters			*22.1*	*1,754.4*	*577.6*	*15.5*	*2,369.5*
Subtotal Wetland Waters and Non-Wetland Waters			*22.1*	*3,632.4*	*922.3*	*15.5*	*4,592.1*
Grand Total[1]			**22.1**	**4,471.2**	**1,901.7**	**15.5**	**6,410.2**

Note: [1] Table may not total precisely due to rounding.

Figure 36 Existing and Post-Impact Watershed Profiles of Aquatic Resources in the Snodgrass Slough Watershed

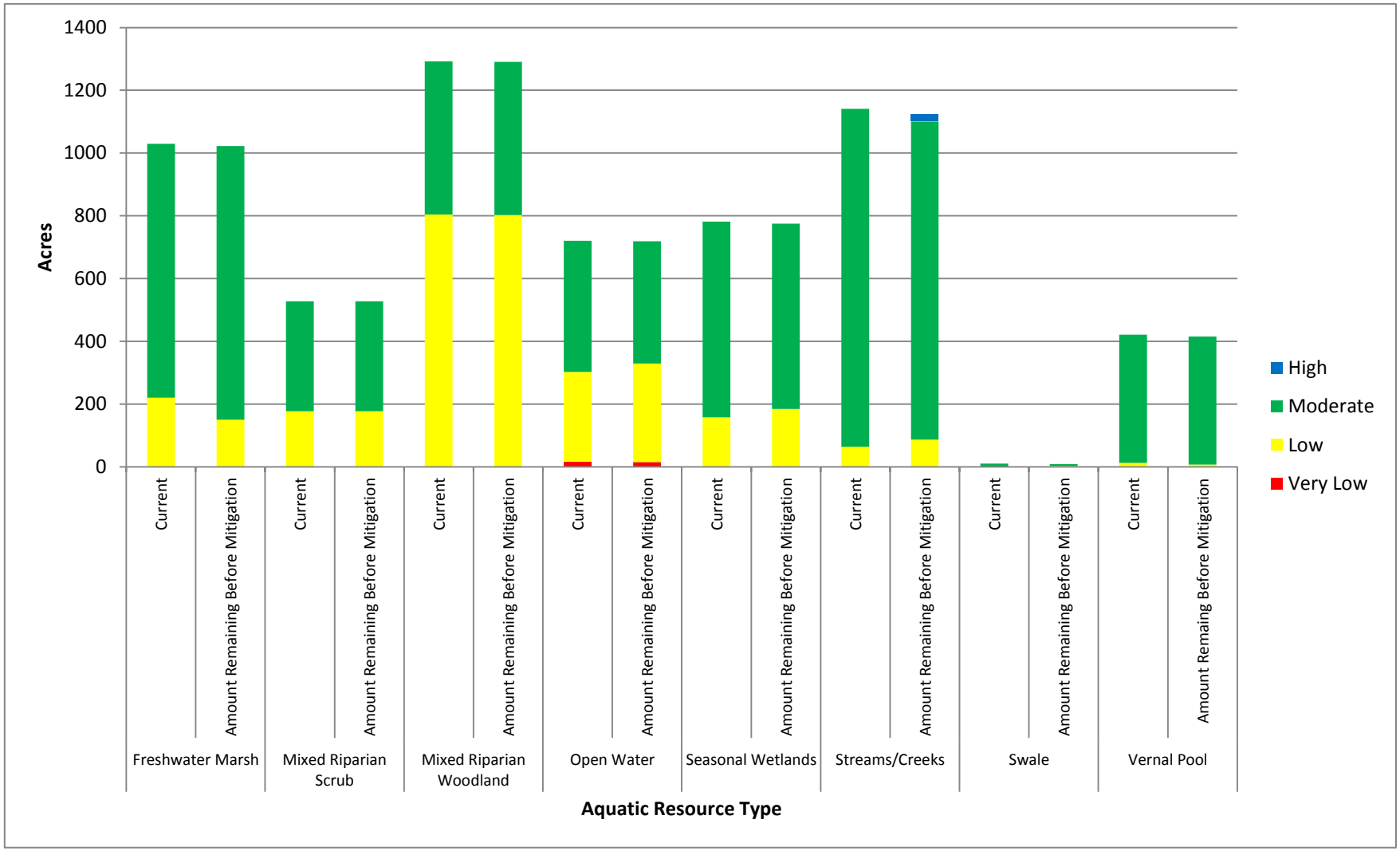


Table 25
Condition of Remaining Aquatic Resources in the Upper Cosumnes Watershed After Impacts and Before Accounting for Compensatory Mitigation

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Remaining Aquatic Resources				Total (acres)
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	67.2	148.7	29.7	0	245.5
	Mixed Riparian Scrub	R2/R3	31.8	67.9	0	0	99.7
	Mixed Riparian Woodland	R2/R3	355.6	368.1	4.0	0	727.7
		Subtotal Riparian	*454.6*	*584.7*	*33.7*	*0*	*1,072.9*
Wetland Waters	Freshwater Marsh	PEM1	87.8	22.6	1.3	0	111.7
	Seasonal Wetland	PEM2	360.2	42.7	5.7	0	408.6
	Swale	R2/R3	65.5	14.6	0.3	0	80.5
	Vernal Pools	PEM2	281.0	37.2	3.4	0	321.6
		Subtotal Wetland Waters	*794.5*	*117.1*	*10.7*	*0*	*922.4*
Non-Wetland Waters	Open Water	POW	133.8	65.6	80.7	0	280.2
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	175.6	172.6	0.4	0	348.6
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
		Subtotal Non-Wetland Waters	*309.4*	*238.2*	*81.1*	*0*	*628.8*
		Subtotal Wetland Waters and Non-Wetland Waters	*1,103.9*	*355.3*	*91.8*	*0*	*1,551.2*
		Grand Total[1]	**1,558.5**	**940.0**	**125.5**	**0**	**2,624.1**

Note: [1] Table may not total precisely due to rounding.

Figure 37 Existing and Post-Impact Watershed Profiles of Aquatic Resources in the Upper Cosumnes Watershed

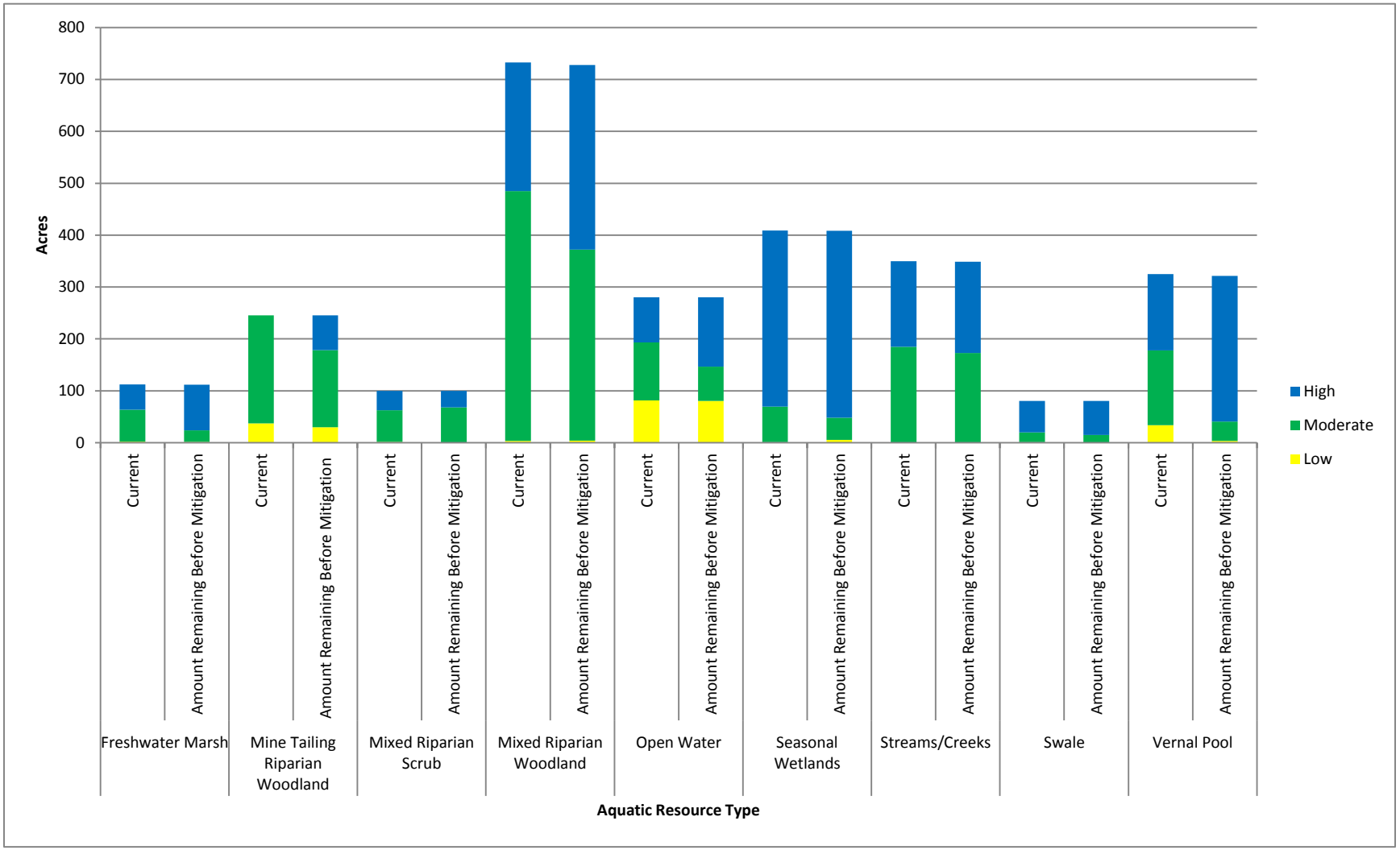


Table 26
Mather Core Recovery Area Existing and Post-Impact Vernal Pool Conditions (Acres)

Condition	High	Moderate	Low	Very Low	Total
Current	525.0	181.4	1.2	0	707.6
Remaining	425.2	144.5	0.5	0	570.1

In summary, the predicted impacts resulting from the SSHCP, prior to considering compensatory mitigation, show an impact on the abundance of aquatic resources. The diversity and condition of the resources largely remain intact, as none of the aquatic resource types are disproportionately impacted within the Plan Area, and the amount of high condition resources remains stable.

5 MITIGATION FRAMEWORK FOR AQUATIC RESOURCES

5.1 Mitigation Overview

The SSHCP and ARP would establish a network of conservation areas in the Plan Area that would preserve sensitive species and their natural communities in perpetuity. Preservation of these natural communities includes many types of waters of the United States and waters of the state, riparian buffer areas, and adjacent upland areas. The SSHCP Conservation Strategy would be an integral part of a more efficient regulatory permitting process implemented over a 50-year period. This more efficient permitting process implements a watershed perspective applied to a regional approach to avoidance, minimization, and compensatory mitigation for impacts to waters of the United States and waters of the state. This efficient permitting process would be different from the conventional permit-by-permit review process because it combines the mandates of the ESA with mandates of Section 404 of the CWA to allow for the formation of a singular, comprehensive state and federal regulatory framework for future projects that implements a more efficient permitting process for better decision-making and greater environmental benefits. It allows the regulated public the ability to comply as a whole and contribute to the overall larger SSHCP Conservation Strategy. It is envisioned that the alternative selected for the SSHCP would provide the greatest amount of avoidance and minimization at a regional level for 404 purposes. This approach would follow a process of landscape-level and project-level AMMs. These AMMs would be monitored during project implementation to assure they provide regional consistency across the Plan Area, and would be instrumental as a supporting basis for the SSHCP and ARP to avoid and minimize impacts to aquatic resources to the greatest extent practicable. It would also direct compensatory mitigation, when required, to be integrated on a watershed basis into a comprehensive system of larger, integrated and connected conservation areas. The SSHCP Conservation Strategy and associated state and federal regulatory framework approach would be superior to the existing permitting framework because it would pursue procedural goals that seek to reduce the likelihood of fragmentation of important landscapes, including aquatic resources, mixed into a matrix of urban development when administered over a 50-year period.

The Section 404(b)(1) Guidelines (40 CFR Part 230) require that all Department of the Army permits subject to Section 404 of the CWA comply with a strict sequencing approach: all appropriate and practical steps to avoid and minimize adverse impacts to waters of the United States must be taken before a permit can be issued by USACE. Additionally, compensatory mitigation for unavoidable impacts may be required to ensure that an activity requiring a CWA Section 404 permit complies with the 404(b)(1) Guidelines. The SSHCP would provide the regulated public access to greater environmental permitting certainty for development projects, while implementing a Conservation Strategy that incorporates a watershed-based approach. This is accomplished by achieving each of the stated SSHCP Biological Goals and Measureable

Objectives and conservation measures, including establishing a network of preserves with high-value resources while still providing for development. Under this strategy, the SSHCP and ARP are intended to protect watershed integrity, provide and maintain natural corridors, produce ample blocks of contiguous habitat, and provide necessary buffers for these natural areas. From a project-level standpoint, avoidance and minimization of impacts to aquatic resources by the regulated public would be consistent, robustly implemented, and would be subject to a comprehensive set of AMMs, including low-impact development (LID), best management practices (BMPs), siting and design requirements, Stream Setbacks, and Preserve Setbacks. All of the Covered Activity AMMs and the other components of the SSHCP Conservation Strategy synergistically combine to ensure maintenance of current functions and services within the Plan Area and provide avoidance and protection of thousands of acres of regulated aquatic resources and important habitats (see Section 5.4 in Chapter 5 of the SSHCP). Furthermore, compensatory mitigation for Covered Activity impacts to aquatic resources authorized under the SSHCP and ARP would be considered by using a watershed approach. The USACE/EPA "Mitigation Rule" requires the use of a watershed approach to the extent appropriate and practicable, stating "The ultimate goal of a watershed approach is to maintain and improve the quality and quantity of aquatic resources within watersheds through strategic selection of compensatory mitigation sites" (33 CFR 332.3[c]). The SSHCP and ARP would be consistent with the Mitigation Rule, by systematically prioritizing compensatory mitigation projects based on anticipated impacts to aquatic resources, considering both watershed- and function-based factors, and pursuant to the type (e.g., mitigation bank) and location preference hierarchy identified in the 2008 Mitigation Rule at 33 CFR 332.3(b)(2) through (b)(6). However, the preference hierarchy may be overridden where appropriate, for instance when the required compensatory mitigation involves larger, more ecologically valuable parcels; is subject to more rigorous scientific and technical analysis, planning, and implementation; involves advanced site identification and planning; and utilizes significant investment of financial resources for sites located to successfully replace lost functions and services, taking into account such watershed-scale features as aquatic habitat diversity, habitat connectivity, relationships to hydrologic sources, trends in land use, ecological benefits, compatibility with adjacent land uses; and in general, when practicable, to meet the aforementioned considerations in the same watershed.

5.2 Avoidance and Minimization

5.2.1 Landscape-Scale Avoidance

The Plan Area contains two specific regions: the UDA, where local jurisdictions anticipate urban growth and lands outside the UDA, which includes agricultural land and natural landscapes with natural intact sources of surface and sub-surface water influx and outflow (described in greater detail in Appendix A, Watershed Study for the SSHCP and ARP). The lands outside the UDA already include several large areas of conservation lands (described in Section 7.2.2 of the

SSHCP). Preservation and management requirements inside the UDA would differ from those outside the UDA because the areas adjacent to these Preserves would have very different land uses. However, the ARP (through implementation of the SSHCP by the Plan Permittees) would implement a comprehensive strategy to protect the functions and services of watersheds in the Plan Area. The strategy begins with avoidance and minimization of impacts to aquatic resources at a landscape scale using a watershed-based approach for the overall Plan Area.

The Plan Area aquatic resources avoidance strategy would be built upon AMMs, LID measures, and a framework of existing and proposed preserves and linkages. Implementation of these measures would achieve the SSHCP goals and objectives for vernal pools, maximize protection of intact hydrologic sub-basins, establish stream corridors and setbacks, protect aquatic resources, and connect existing preserves to proposed preserves. The Preserve System would implement avoidance, protection, and ultimately include a vast network of thousands of acres of vernal pool systems, seasonal wetlands, streams, adjacent riparian zones, grasslands and other ecologically important areas where further development of the watershed would not occur.

The vernal pool habitat Conservation Strategy was based in part upon a Vernal Wetland Acre/Density Index (VWADI) (Dittes et al. 2007) that described and classified the vernal pool complexes within the Plan Area (see Section 5.2, Appendix B-1 and Appendix B-2). The VWADI is based on variation in vernal pool acreage and density. Plan Area vernal pools were classified according to the VWADI into five categories of conservation value, with the highest conservation value placed on high-density vernal pool complexes (most wetted acres with densest vernal pool complexes and largest number of pools). Those vernal pool complexes with the highest conservation value scores were considered during the development of the SSHCP Conservation Strategy and the conceptual design of the SSHCP Preserve System described in SSHCP Section 7.5. The VWADI should not be confused with the FCAM described in Appendix C. While both processes were used to help determine which areas within the Plan Area have the highest-quality vernal pool resources, the VWADI was used to inform the SSHCP Conservation Strategy as it relates to the preservation of vernal pool resources primarily for the protection of endangered species. The FCAM was developed to evaluate all aquatic resource classifications, not just vernal pool, and to include measurements of value for habitat, water quality and hydrology. The VWADI and FCAM are independent of one another, but are complementary and both are used to direct conservation actions for vernal pool ecosystem conservation.

The result of SSHCP implementation would be a net gain of aquatic resources functions and services in the Plan Area, which is depicted in the ARP's pre- and post-watershed profiles (see Chapter 6). Implementation of the SSHCP's comprehensive balanced approach to aquatic resource conservation can provide a greater level of landscape- and watershed-scale protection of aquatic resources than is possible via the conventional project-by-project permitting approach under the CWA Sections 404 and 401, and the California Fish and Game Code 1600 programs.

5.2.1.1 Landscape-Scale Avoidance within the UDA Watersheds

Landscape-scale avoidance within the UDA watersheds would be implemented to include protection of wetlands and streams to minimize adverse effects from the construction of new impervious surfaces. Within the UDA, sufficient sub-watershed areas would be protected via a system of AMMs during project design and development, so that natural sources of surface and sub-surface water influx and outflow remain intact, and potential development-related increases in impervious surfaces, runoff, and sources of water pollution are avoided or minimized (e.g., runoff from roads, roofs, paved surfaces, utility pipes, landscaped areas). Landscape-scale avoidance within the UDA watersheds would involve implementation of Stream Setbacks, protection of wetlands adjacent to streams, and LID measures that would be incorporated into urban development project design (as described in the SSHCP in Chapter 5). Implementation of landscape-scale avoidance strategies on 6,941 acres of land within the UDA watersheds would mitigate negative impacts to water quality and surface water runoff that could occur with urban development.

Three HUC-10 sub-watersheds occur within the UDA (Morrison Creek, American River, and Sherman Lake–Sacramento River). For first- and second-order streams[6] that flow through the UDA, a 25-foot setback buffer on either side would be enforced. The primary objective of this 25-foot buffer is to reduce sediment and nutrient inputs from surface flows in urban areas to protect water quality and habitat downstream. Dense urban adjacent land covers provide low habitat potential for Covered Species; however, a minimal buffer would reduce sediment and nutrient inputs, retain some potential for stream restoration, and provide recreational opportunities. For Morrison Creek, Gerber Creek, and Elder Creek, a Stream Setback of 100 feet on either side would be enforced. For preserve linkages that include creeks or streams, avoidance measures would include the creek or stream plus a minimum 300-foot setback on either side of the creek (in accordance with the process outlined in the SSHCP in Chapter 5, Section 5.6). The protective setback from Laguna Creek would be 150 feet wide on either side.

The SSHCP would require a robust strategy of avoidance of aquatic resources for Covered Activity projects proposed in the UDA. Project proponents who seek incidental take coverage under the SSHCP would be required by Land Use Authority Permittees or the Implementing Entity, whoever has jurisdiction over the project, to demonstrate efforts that avoid direct and indirect impacts to mapped aquatic resources pursuant to a Determination of Environmentally Equivalent or Superior Alternative (DEESA) project design requirement (see Section 5.2.2.1). Complete avoidance would be selected, if practicable. Part of the SSHCP stream mitigation policy within the UDA involves comprehensive landscape-scale avoidance of streams. Stream

[6] The SSHCP uses the Strahler stream order system where stream order is based on hierarchy of tributaries.

buffer widths within UDA watersheds were developed to meet adequate stream protection with goals such as: stabilize streambanks with vegetation; reduce erosion by uncontrolled runoff; reduce nutrient, sediments, and other contaminants loads; provide a visually appealing greenbelt; and provide recreational opportunities.

5.2.1.2 Avoidance and Preserve Assembly within Watersheds Outside UDA

The SSHCP Preserve Assembly sets goals that would preserve and link the highest-quality natural land covers, cropland, and irrigated pasture-grassland within the Plan Area (described in detail in the SSHCP in Chapter 7, Section 7.2.2.1), with a Preserve System 36,282 acres in size, and 27,554 acres of which would be located outside the UDA. Avoidance and minimization of aquatic resources would be accomplished through preserve design and assembly, which includes protecting the rarest types and highest-functioning aquatic resources (e.g., vernal pools, streams, certain seasonal wetlands) and implementing inter-preserve connectivity. The SSHCP Preserve System would be designed to protect watershed function, and specifically hydrologic regimes. This preserve design would be important to aquatic resources and water quality and its many existing and potential beneficial uses, and an important determinant of certain aquatic resource-dependent/associated plants and wildlife. It would also be designed to preserve natural upland landscapes associated with streams and wetland features for maintaining aquatic resource dependent/associated species—a strategy of primary importance. Upland landscapes adjacent to aquatic resources provide greater environmental benefits to aquatic functions and services and become another advantage to the overall avoidance and protection package of the SSHCP Conservation Strategy.

5.2.1.3 AMMs at the Landscape Scale

The SSHCP contains numerous requirements for avoidance and minimization of adverse impacts to aquatic resources. At a landscape scale, the SSHCP provides a framework for supporting avoidance and minimization of adverse impacts to aquatic resources in combination with a systematic landscape-level compensatory mitigation strategy. The SSHCP Conservation Strategy and Goal 2 of the associated Biological Goals and Measureable Objectives (SSHCP Chapter 7) describe requirements for implementing Covered Activities under the SSHCP.

The framework of requirements constituting the SSHCP's regional/landscape avoidance strategy include, but are not limited to, the following measures:

- Consistent with the USB and sphere of influence boundaries, directing impacts within the 317,656-acre Plan Area to an approximate 33,497-acre impact area, 32,059 acres of which would be inside the UDA and 1,448 acres of which would be outside the UDA.

The envelope is linked to areas within the UDA and certain pre-defined infrastructure projects outside of the UDA.

- Considering watershed needs within the Plan Area, habitat/biological functions have been found to be of primary importance to protect, while still preserving water quality and hydrology (chemical and physical functions). The SSHCP and ARP include the following components, which result in landscape-level avoidance of 22,502 acres of existing aquatic resources in the Plan Area:
    - Preservation into perpetuity of 15% (3,539 acres) of the Plan Area's existing potentially jurisdictional aquatic resources within the 36,282-acre Preserve System. The areas selected for avoidance under the SSHCP must be those that demonstrate higher habitat functions, per the Conservation Actions included in Table 7-1 in Chapter 7 of the SSHCP. However, most of the aquatic resources with high habitat functions also have high water quality and hydrology functions. Aquatic resources situated within proposed preserves are also afforded extra protection via adjacent natural upland buffers (i.e., the Preserve Setbacks) of a minimum of 50 feet in width (minimum 25 feet each side of the stream) to reduce edge effects. Note that 9,136 acres (38%) of aquatic resources in the Plan Area are already protected in existing preserves, which would become linked together by new preserves established under the SSHCP Conservation Strategy.
    - Of the other 11,419 acres of existing potentially jurisdictional aquatic resources in the Plan Area, approximately 9,827 acres (86%) would *not* be directly impacted by Covered Activities.
- Goal 2 of the SSHCP Conservation Strategy includes a Measureable Objective requiring avoidance of creeks in the UDA (a minimum of 10% avoidance required). However, the Plan would actually avoid 30% of all creek acreage in the UDA.
- Requirement for project proponents to establish Stream Setbacks. Avoided creeks (including ephemeral streams) would have minimum setback requirements based on specific objectives of the overall mitigation strategy (Table 27).

Table 27
Stream Setback Minimum Requirements in the UDA

Stream	Minimum Setback on Each Side (from the Top of Bank Measured in Aerial Perspective)
Laguna Creek	150 feet
Elder Creek	100 feet
Frye Creek	100 feet or as depicted as part of the NewBridge development project hardline Preserve (see Appendix K of the SSHCP)
Gerber Creek	100 feet
Morrison Creek	100 feet

Table 27
Stream Setback Minimum Requirements in the UDA

Stream	Minimum Setback on Each Side (from the Top of Bank Measured in Aerial Perspective)
Central Paseo	100 feet or as depicted as part of the Cordova Hills development project hardline Preserve (Appendix K of the SSHCP)
Sun Creek	100 feet or as depicted as part of the Sun Creek development project hardline Preserve (see Appendix K of the SSHCP)
Avoided 1st and 2nd Order Tributaries to Above Streams	25 feet

- Roadway construction or widening Covered Activities within the Plan Area would be subject to stream avoidance or minimization requirements (see AMMs ROAD-1, STREAM-1, STREAM-2, STREAM-3, STREAM-4, and STREAM-5 in SSHCP Section 5.4).
- The majority (55%) of impacts to vernal pools would occur outside the Mather Core Recovery Area. Vernal pool preservation, re-establishment, and establishment would be heavily weighted toward areas inside the Mather Core Recovery Area and the Cosumnes/Rancho Seco Core Recovery Area. The SSHCP would establish large and interconnected preserves in these Recovery Areas to protect a contiguous network of vernal pool habitat. Existing project-by-project permitting tends to result in a larger number of preserved pools, but ones that are isolated and more vulnerable to edge effects. In this way, the SSHCP would provide superior benefits to a rare aquatic resource as compared to a project-by-project permitting approach.
- On-site project requirements to maintain hydrologic conditions, minimize effects on downstream hydrology through stormwater retention and other measures (LID), mandatory construction monitoring near Covered Species aquatic habitat, and mandatory implementation of erosion control measures during project construction "scale up" such that the overall Plan Area would not experience a net loss of aquatic resources functions and services.
- Compensatory mitigation Covered Activities (re-establishment, establishment, preservation of aquatic resources) would be strategically located within the preserved areas where they would provide maximum functional gain. This would occur programmatically within the Plan Area. This singular approach to compensatory mitigation is better than could be achieved by a project-by-project permitting approach.
- The USACE's General Permit (GP) general conditions and any updates to those conditions would be proposed to require compliance with appropriate SSHCP AMMs and be tailored for protection of the aquatic resources in the Plan Area.

- The Plan Permittees have requested that the USACE develop a GP(s) (RGP/PGP) that would propose a per-project impact thresholds (caps), which in addition to assuring minimal individual and cumulative environmental impacts, would provide incentive for individuals and organizations to avoid aquatic resources in project planning, in order to qualify for using a GP(s) (see Chapter 7).
- The proposed RGP/PGP may also require overall impact threshold caps to limit the overall amount of direct impacts (loss) of aquatic resources during any single 5-year span of the GP(s) so that impacts to aquatic resources can be monitored and adaptive management can be implemented as necessary.
- For impacts within the UDA, caps would be tailored to address protection of streams as they are crucial to implementation of corridors in the SSHCP Preserve System. As such, a minimum of 20% of first and second order tributaries to Elder Creek, Frye Creek, Gerber Creek, Morrison Creek, Paseo Central, and Sun Creek in the UDA would be avoided. Plan-wide, 90% of all streams would be avoided, and outside the UDA, all headwaters would be avoided.

AMMs applied across the entire Plan Area would quicken the permitting process for Covered Activities and would allow the regulated public as a whole to contribute to the implementation of the overall avoidance and minimization of aquatic resources within the development envelope and the formation of a large, connected conservation system. Such outcomes would not be possible under the project-by-project review process.

5.2.2 Project Scale

5.2.2.1 AMMs at the Project Scale

In addition to ensuring avoidance and minimization at a landscape scale, the SSHCP and ARP also require project-scale avoidance and minimization. Goal 2 of the SSHCP Conservation Strategy Biological Goals and Measurable Objectives is to "Maintain or improve physical, chemical and biological functions of aquatic resources within the Plan Area." Each project proposed within the Plan Area would need to conform to the following procedure to ensure that adequate avoidance and minimization requirements have been met.

As Covered Activity projects are proposed within the Plan Area, an assessment of the potential on-site effects of those Covered Activity projects on aquatic resources shall be performed using available information supplied by the SSHCP and ARP, augmented by project-specific mapping provided to and reviewed by the Plan Permittees prior to submittal to the USACE, RWQCB, and CDFW (see Section 10.4.3.3 in Chapter 10 of the SSHCP).

The documentation for the project-scale assessment shall include mapping (which for greatest accuracy in informing project-scale AMMs is suggested to utilize a project's aquatic resources delineation mapping prepared in accordance with the Sacramento District USACE's minimum standards for aquatic resources delineations), and a description of the functions and services of the mapped areas' aquatic resources. Factors to be considered to describe the functions and services include hydrologic regime, flood storage and flood flow modification, nutrient retention and transformation, sediment trapping and transport, toxicant trapping, and maintenance of plant and animal communities. Many of these factors would already have been given consideration, and existing information from the SSHCP and ARP can be utilized and augmented if necessary. The functions and services assessment would focus on the current functions and services being provided, particularly for those areas that should be considered for priority acquisition for the SSHCP Preserve System, as well as those functions that may affect aquatic resource diversity, abundance, and condition; and/or conservation of Covered Species within the SSHCP Preserve System.

For aquatic resources proposed to be impacted, applicable mitigation shall be required by the Plan Permittees, as follows. To ensure that these standards are met, Land Use Authority Permittees or the Implementing Entity, depending on who has jurisdiction over the project, shall require that project proponents develop on-site project alternatives demonstrating efforts that first avoid, and then minimize direct and indirect effects to the aquatic resources mapped pursuant to this section. A complete on-site avoidance alternative shall be selected by the Land Use Authority Permittees or Implementing Entity, depending on who has jurisdiction over the project, and if practicable, while taking into account the SSHCP and ARP Conservation Strategy.

If a complete avoidance alternative is not practicable as determined by the Implementing Entity or Land Use Authority Permittees, depending on who has land use jurisdiction over the project, an alternative that minimizes direct and indirect impacts to aquatic resources and associated functions and services to the greatest extent practicable shall be selected. Those impacts that are unavoidable shall be mitigated (minimized and compensated) such that the lost functions and services are replaced as set forth below under the DEESA.

Determination of Environmentally Equivalent or Superior Alternative

Consistent with the regional Conservation Strategy of the SSHCP, the following is an approach that gives consideration to on-site avoidance and minimization. The guiding principles for the SSHCP Conservation Strategy (Section 7.1 of Chapter 7 of the SSHCP) emphasize establishment of large and interconnected preserves, which is not compatible with the typical approach of on-site avoidance. That existing approach tends to result in many small, isolated aquatic resources that are subject to edge effects and provide reduced habitat value compared to large preserves. If a complete avoidance alternative is not practicable and an alternative is selected as set forth

above, a DEESA shall be made by the Land Use Authority Permittees or the Implementing Entity, depending on who has land use jurisdiction over the project, to ensure replacement of any lost functions and services to aquatic resources. The DEESA shall be submitted with the Project Application and shall include the following information to be supplied by the proponent and reviewed by the Land Use Authority Permittees or the Implementing Entity, depending on who has jurisdiction over the project, for accuracy and consistency with the SSHCP and ARP:

- A defined project area boundary and project area acreage.
- A detailed project description, including an overall project purpose statement, that demonstrates: (1) why an avoidance alternative is not practicable;[7] and (2) that the Covered Activity project minimizes direct and indirect effects to aquatic resources to the greatest extent practicable. This description would include information regarding any aquatic resources on site that are proposed to be avoided. It would also include information regarding any impacted aquatic resources in the context of the regional Conservation Strategy of the SSHCP (e.g., a statement that the project proposal is consistent with the requirements of the SSHCP and any terms and conditions of the SSHCP ITPs).
- Amount (acres and linear feet and cubic yards) of unavoidable impacts (permanent, causing loss of waters, and temporary) to aquatic resources associated with the project, and amount of indirect impacts.
- A detailed description of project design features and mitigation measures that reduce impacts, including but not limited to, impact minimization; on-site first-order stream realignment (as opposed to removal); and SSHCP BMPs, AMMs, and LID AMMs.
- A description and amount of SSHCP-required compensatory mitigation through re-establishment, establishment, and/or preservation. Compensatory mitigation must conform to the SSHCP Conservation Strategy and the minimum mitigation ratios required by the ARP and must be consistent with the USACE/EPA Mitigation Rule (33 CFR Part 332). The primary way development project Covered Activities would accomplish the required mitigation is the purchase of credits from an ILF program that would be used for the Plan Area. (See Section 5.3 for specific compensatory mitigation requirements.)
- A finding that demonstrates that although the proposed Covered Activity project would not completely avoid impacts to aquatic resources, with proposed design and compensation measures, the project would be environmentally equivalent or superior to

[7] Practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purpose.

that which would occur under a complete avoidance alternative without these measures, based on one or more of the following factors:

- Effects on designated Critical Habitat and Core Recovery Areas
- Effects on the diversity of aquatic resources within the Plan Area
- Effects on vernal pool and other habitat connectivity and function of the SSHCP Preserve System
- Effects on the condition of aquatic resources within the Plan Area
- Effects on the abundance of aquatic resources within the Plan Area
- Effects on Covered Species.

A written record of DEESAs shall be maintained by the Land Use Authority Permittees or Implementing Entity, depending on who has land use jurisdiction over the project. When a PGP (and/or other type of general permit, e.g., RGP) is verified, a written record of DEESA shall be included in the annual reporting documentation prepared by the Implementing Entity and submitted to the regulatory agencies. If a project is authorized using a LOP or SP, then a written record of DEESA would be provided as part of the application that is submitted to the USACE for review.

In addition to the avoidance and minimization requirements associated with the above DEESA procedure, the SSHCP has a number of other resource protection measures that help avoid and minimize impacts to aquatic resources. These objectives are set forth in the SSHCP Conservation Strategy Measureable Objectives W-1 through W-6 for SSHCP Biological Goal 2, *Maintain or improve physical, chemical, and biological function of aquatic resources within the Plan Area* (Table 7-1 in SSHCP Chapter 7) and the SSHCP AMMs (ARP Table 28 and SSHCP Section 5.4).

An avoidance measure of primary importance to the hydrologic and ecological connectivity of the SSHCP Preserve System is the requirement for establishment of Stream Setbacks, as described in this section of the ARP and in SSHCP Section 5.4. SSHCP Stream setbacks only apply to streams that are within the UDA. Setbacks have not been established for any of the rivers in the Plan Area as they are all located outside of the UDA. Some reaches of the Cosumnes River would be protected via implementation of the SSHCP Conservation Strategy.

A cohesive strategy of Stream Setback avoidance (the landscape adjacent to the aquatic resource) is an added measure of stream protection afforded under the framework of the SSHCP that would not be possible under the conventional review process. Width of specific Stream Setbacks would be determined by SSHCP AMM STREAM-2. In addition, a 150-foot setback measured from the top of the bank on both sides of the stream would be applied to Laguna Creek within the UDA (minimum 300-foot corridor width). If trails are located within the wildlife corridor, the nearest

edge of the trail would be located at least 80 feet from the top of bank. Laguna Creek's setback width is larger, set at 300 feet, because it serves as a buffer to absorb pollutants and as a corridor to preserve and protect habitat for the movement of plants and animals between otherwise separated preserves. A 100-foot setback measured from the top of the bank on either side of the stream channel would be required for the following creeks located within the UDA: Elder Creek, Frye Creek, Gerber Creek, Morrison Creek, Paseo Central, and Sun Creek. Within the UDA, the setback for these creeks would generally protect habitat of plant and animal species, filter sediments and other contaminants and allow for maintenance and restoration of riparian vegetation. While not specifically designed as a wildlife corridor in the same manner as Laguna Creek, these creeks have the potential to function as movement corridors for many native species, and to provide habitat functions within the UDA. In addition to Laguna Creek, Elder Creek, Frye Creek, Gerber Creek, Morrison Creek, Paseo Central, and Sun Creek, a setback width of 25 feet would be required for all first and second order streams that are avoided. These streams are smaller, typically ephemeral but still play a role in overall water quality protection. When an avoided stream reach in the UDA supports riparian vegetation, the setback would be equal to the riparian edge plus 25 feet or the setback defined above, whichever is greater. If trails are located within the Stream Setback, the nearest edge of the trail would be located at least 50 feet from the top of bank. This would protect downstream reaches by reducing loads of sediment and other contaminants.

The limits and uses of the Stream Setback system would be well defined by the Implementing Entity or local Land Use Authority Permittees, depending on who has jurisdiction over the project, during the preservation and urban development process. Stream protection provided by the setback system would preserve and link the highest-quality natural land covers.

Temporary and permanent re-routing of stream channel or activities involving channel widening or deepening as part of the Urban Development Covered Activity would incorporate a suite of AMMs designed to maintain biological, physical, and chemical integrity of streams in the Plan Area. These measures include the utilization of BMPs for construction equipment, bioengineering practices, and actions to maintain overall stream function. These practice details are listed in SSHCP Section 5.4.1, the BMP AMMs, and STREAM-4 and STREAM-5. These measures are more stringent than current standards within the Plan Area.

Table 28
Summary of SSHCP Aquatic Resources Protection

Measure	Description of Measure Applicable to Aquatic Resources	Applicability				Above Existing Requirements?	How General Permit Conditions are Addressed, If Any
		UDA	*Non-UDA*	*HCP*	*ARP*		
SSHCP Conservation Strategy Biological Goals (Table 7-1 of SSHCP)							
SSHCP Goal 2	Maintain or improve physical, chemical, and biological functions of aquatic resources within the Plan Area.	●	●	●	●	Yes	—
SSHCP Conservation Strategy Measurable Objectives (Table 7-1 of SSHCP)							
Objective W1 of Goal 2	Ensure that during implementation of Objective L2 (establishing 11 linkage preserves), the linkages that include creeks or streams will include the creek plus a minimum 300-foot setback on each side of the creek, in accordance with the process outlined in Section 5.6.	●	●	●	●	Yes	Addresses OGC-5.
Objective W2 of Goal 2	Covered Activities shall implement stream setback requirements in the UDA for creeks and streams as described in Section 5.6.	●		●	●	Yes	Addresses OGC-5.
Objective W3 of Goal 2	Covered Activities shall implement the following, as outlined in Section 5.4.2: Design AMMs (Low-Impact Development (LID) and ROAD Measures) Ground disturbance AMMs (Best Management Practices (BMPs) and ROAD Measures)	●	●	●	●	No (County/USACE)	Addresses RGC-12 and NWP-12
Objective W4 of Goal 2	Ensure that aquatic resources are preserved and managed during preserve assembly (see Objectives VP1, VG1, VG2, VP3, SW1, FWM1, ES1, SC1, OW1, RIP1, and RIP3).	●	●	●	●	Yes	—
Objective W5 of Goal 2	Ensure that aquatic resources are established or re-established during preserve assembly (see Objectives VP2, SW2, FWM2, OW2, RIP2, and RIP4).	●	●	●	●	Yes	—
Objective W6 of Goal 2	Avoid a minimum of 10% of the SSHCP land cover type Streams/Creeks (Invertebrate Habitat) in the UDA.	●		●	●	Yes	Addresses OGC-5.
SSHCP AMMs for Covered Activities (Section 5.4 of SSHCP)							
LID-1: Stormwater Quality	Incorporate stormwater management into site designs to satisfy requirements of the Stormwater Quality Design Manual for the Sacramento and South Placer Regions.	●	●	●	●	No (County/RWQCB)	—
LID-2: Groundwater Recharge	When siting preserves, consider locations that are also suitable for groundwater recharge.	●		●	●	No (County)	—
LID-3: Natural Site Features	Preserve and use natural site features (e.g., creeks, streams) to retain existing hydrologic patterns and retain Covered Species habitat.	●	●	●	●	No (County)	—
STREAM-1: Laguna Creek Wildlife Corridor	150-foot setback from top of bank along Laguna Creek within the UDA.	●		●	●	Yes	—
STREAM-2: UDA Stream Setbacks	100-foot setbacks from top of bank along Elder Creek, Frye Creek, Gerber Creek, Morrison Creek, Paseo Central, Sun Creek.	●		●	●	Yes	—
STREAM-3: Minor Tributaries to UDA Streams	Apply 12.5-foot setback from each side of top of bank along avoided first- and second-order tributaries to Elder Creek, Frye Creek, Gerber Creek, Morrison Creek, Paseo Central, Sun Creek, and Laguna Creek.	●		●	●	Yes	—
STREAM-4: Minimize Effects from Temporary Channel Re-Routing	When diverting water from a stream channel via coffer dams or other means, minimize impacts to existing habitat through specific design and construction best management practices.	●	●	●	●	Yes	—
STREAM-5: Design for Stream Channel Re-Routing, Widening or Deepening	When altering a stream channel, incorporate design features that re-establish natural conditions (hydrology, surface flow, substrate, vegetation, etc.).	●	●	●	●	Yes	—
BMP-1: Construction Fencing	Temporarily stake out and identify all aquatic resources and setback areas between development and protected areas as non-disturbance areas during construction.	●	●	●	●	No (County/USACE)	Addresses RGC-12
BMP-2: Erosion Control	Install acceptable erosion control barriers to protect aquatic resources from any Covered Activities that may cause erosion.	●	●	●	●	No (County/USACE)	Addresses NWP-12
BMP-3: Equipment Storage and Fueling	Site equipment storage, fueling, and staging areas avoid and minimize discharge into aquatic resources.	●	●	●	●	No (County)	—

Table 28
Summary of SSHCP Aquatic Resources Protection

Measure	Description of Measure Applicable to Aquatic Resources	Applicability				Above Existing	How General Permit Conditions are Addressed, If Any
BMP-4: Erodible Materials	Avoid deposition of erodible materials in waterways during construction or maintenance (e.g., cleaning culverts, subdrains, roadsides, or other road/flood control facility). Do not stockpile brush, loose soils, or other debris material within stream channels or on adjacent banks. Dispose of materials so that they cannot enter an aquatic resource. If water and sludge must be pumped from a subdrain or other structure, convey the material to a settling basin to prevent sediment from entering a waterway.	●	●	●	●	No (County/USACE)	Addresses NWP-12
BMP-5: Dust Control	Minimize aerial drift of sediments and airborne pollutants into aquatic resources.	●	●	●	●	No (County)	—
BMP-6: Construction Lighting	Not relevant to aquatic resources.	●	●	●		No (County)	—
BMP-7: Biological Monitor	Construction monitoring by qualified biologist to ensure compliance with BMPs.	●	●	●	●	No (County)	—
BMP-8: Training of Construction Staff	Training of construction staff to avoid aquatic resources.	●	●	●	●	No (County)	—
BMP-9: Soil Compaction	Treat all temporarily disturbed areas following construction to remove compaction and restore infiltration capacity, soil chemistry, and hydrologic characteristics similar to natural conditions.	●	●	●	●	No (County)	Addresses NWP-11
BMP-10: Revegetation	Cover and revegetate repaired surfaces of earthen flood-control channels, except in cases where soil would be expected to erode rapidly, such as during the rainy season or in channels with hardened bank.	●	●	●	●	No (County/USACE)	Addresses NWP-12 and NWP-13
EDGE-1: Compatible Land Uses	Site parkways, detention basins, and designated open space adjacent to setbacks and preserve/linkage boundaries to provide storage of stormwater flows and additional buffering.	●		●	●	Yes	—
EDGE-2: Single-Loaded Streets	Not relevant to aquatic resources.	●		●		Yes	—
EDGE-3: Preserve Setbacks	Reduce changes to surface hydrology and perched aquifer supporting vernal pools, and other types of disturbance from adjacent development on preserves, including aquatic resources.	●		●	●	Yes	—
EDGE-4: Locate Stormwater Control Outside Preserves	Stormwater flows must be directed away from preserves and preserve setbacks, and directed into stormwater control facilities inside the development.	●		●	●	Yes	—
EDGE-5: Stormwater Control in Preserve Setbacks	Design bioretention swales and other methods to prevent stormwater flows into preserves/linkages with aquatic resources.	●	●	●	●	Yes	—
EDGE-6: Detention Basins in Linkage Preserves	Detention basins within Linkage Preserves designed and constructed so as not to impact the duripan or hardpan. Basins would capture storm flows and summer runoff and discharge to stormwater facilities or bio-swales and through percolation and discharge to the perched aquifer.	●		●	●	Yes	—
EDGE-7: Hardpan/ Duripan Protection	Minimize indirect impacts to aquatic resources by limiting disruption of the soil duripan.	●	●	●	●	Yes	—
EDGE-8: Outdoor Lighting	Not relevant to aquatic resources.	●	●	●		Yes	—
EDGE-9: Livestock Access to Preserves	Design preserve access in such a way that livestock used for vegetation management don't damage aquatic resources.	●	●	●	●	Yes	—
EDGE-10: Prevent Invasive Species Spread	Maintain areas near Preserves to prevent spread of invasive non-native species that could reduce aquatic habitat function.	●	●	●	●	Yes	—
ROAD-1: Road Project Location	Site roads to minimize impacts on aquatic resources.	●	●	●	●	Yes	—
ROAD-2: Wildlife Crossing Structures	Design of culverts would be increased in diameter to allow for movement of wildlife; would also allow for increased flood flows.	●	●	●	●	Yes	Addresses NWP-3
ROAD-3: Roadside Pesticide Use	Use herbicides and pesticides only when necessary (e.g., to control invasive organisms that threaten covered species or their habitats). Application in strict compliance with label requirements and state and federal regulations, and only when weather conditions minimize drift and impacts on non- target sites.	●	●	●	●	Yes	—

Table 28
Summary of SSHCP Aquatic Resources Protection

Measure	Description of Measure Applicable to Aquatic Resources	Applicability				Above Existing	How General Permit Conditions are Addressed, If Any
NATURE TRAIL-1: Trail Plan	Nature Trails would be designed and sited to avoid impacts to aquatic resources.	●		●	●	Yes	—
NATURE TRAIL-2: Trail Protection of Duripan	Nature Trails would not interfere with the perched aquifer supporting the existing hydrologic regime of the vernal pool-grassland, and would not interfere with existing pool hydrology.	●		●	●	Yes	—
NATURE TRAIL-3: Trail Location	Nature Trails would be located away from sensitive aquatic resources.	●		●	●	Yes	—
NATURE TRAIL-4: Biological Studies Prior to Trail Design	Studies (e.g., wetland delineations) prior to trail design to identify sensitive aquatic resources that must be avoided.	●		●	●	Yes	—
NATURE TRAIL-5: Monitoring of Trail Impacts	Use of Nature Trails would be discontinued if monitoring indicates aquatic resources are being adversely impacted.	●		●	●	Yes	—
RE-ESTABLISHMENT/ ESTABLISHMENT-1: Vernal Pool	Created vernal pools would be designed to replicate historical density and range of vernal pool sizes, and must not impact the hydrology of existing vernal pools.	●	●	●	●	Yes	—
RE-ESTABLISHMENT/ ESTABLISHMENT-2: Vernal Pool Inocula Bank)	A vernal pool inocula bank would be established that stores soils removed from impacted vernal pools; these soils would be used when re-establishing/establishing vernal pools to maximize colonization by native vernal pool plants and invertebrates.	●	●	●	●	Yes	—
UTILITY-1: Avian Collision Avoidance	Not relevant to aquatic resources.	●	●	●		Yes	—
UTILITY-2: Utility Maintenance on Preserves	Avoid creating new disturbance to aquatic resources when accessing utilities for maintenance.	●	●	●	●	Yes	—
UTILITY-3: Trenchless Construction Methods	Avoidance of direct impacts to surface waters and indirect impacts to aquatic resources on existing or conceptual preserves by limiting disruption of the soil duripan.	●	●	●	●	Yes	—
UTILITY-4: Siting of Entry and Exit Location	Entry and exit locations for the trenchless construction method would be sited to avoid impacts to vernal pools and riparian woodland.	●	●	●	●	Yes	—
LEVEE-1: Preparation of Hydrologic Analysis	Prior to approving a draft Preserve management plan that (1) includes modifying or breaching an existing levee, or (2) would place a potential impedance to high-water event flood-flows on the water side of an existing levee (including new riparian vegetation plantings, or other new preserve facilities), a hydrologic analysis would be conducted. The Preserve activity would only be implemented if the hydrologic analysis concludes that the activity would not result in a substantial increase in flood stage elevations or flood risk on lands outside the Preserve.	●	●	●	●	Yes	NWP-10
2012 Nationwide Permit General Conditions							
NWP-2	Avoid activities in spawning areas during spawning seasons.	●	●	●	●	No (USACE/NMFS)	—
NWP-3	All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of indigenous aquatic species.	●	●	●	●	No (USACE)	Addressed by ROAD-2: UDA Wildlife Crossing Structures
NWP-4	Avoid activities in waters of the United States that serve as breeding areas for migratory birds to the maximum extent practicable.	●	●	●	●	No (MBTA)	Added to SSHCP Chapter 10, Project Application Process
NWP-5	Avoid shellfish populations (Not Applicable)					—	—
NWP-6	No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts.	●	●	●	●	No (County/USACE)	Addressed by BMP-4: Erodible Materials and also added to SSHCP Chapter 10, Project Application Process.
NWP-7	Avoid activity near a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-8	Minimize adverse effects from impoundments.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-9	Maintain the pre-construction course, condition, capacity, and location of open waters for each activity, including stream channelization and stormwater management activities.	●	●	●	●	No (USACE/CDFW)	Added to SSHCP Chapter 10, Project Application Process

Table 28
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Measure	Description of Measure Applicable to Aquatic Resources	Applicability				Above Existing	How General Permit Conditions are Addressed, If Any
NWP-10	Comply with applicable FEMA-approved state or local floodplain management requirements.	●	●	●	●	No (USACE/FEMA/ County)	LEVEE-1, Added to SSHCP Chapter 10, Project Application Process
NWP-11	Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-12	Use and maintain appropriate soil erosion and sediment controls during construction, and stabilize as early as practicable all exposed soil and other fills, as well as any work below the ordinary high-water mark. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.	●	●	●	●	No (County/USACE)	Addressed by BMP-2: Erosion Controls, BMP-4: Erodible Materials, BMP-10: Revegetation
NWP-13	Remove all temporary fills and return affected areas to pre-construction elevations. The affected areas must be revegetated, as appropriate.	●	●	●	●	No (County/USACE)	Addressed by BMP-4: Erodible Materials, BMP-10: Revegetation
NWP-14	Any authorized structure or fill shall be properly maintained.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-15	The activity must be a single and complete project. The same permit cannot be used more than once for the same single and complete project.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-16	No activities in Wild and Scenic Rivers or in a river under study for possible inclusion.	●	●	●	●	No (USACE, California Resources Agency, others)	Added to SSHCP Chapter 10, Project Application Process
NWP-17	No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-18	Compliance with the Endangered Species Act.	●	●	●	●	No (USFWS)	Inherent to an SSHCP
NWP-19	Compliance with the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Projection Act.	●	●	●	●	No (MBTA/USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-20	Compliance with Section 106 of the National Historic Preservation Act.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-21	Required response to the discovery of unknown historic or archeological remains.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-22	Requirements related to Critical Resource Waters (Not Applicable)					—	—
NWP-23	Description of project mitigation (avoidance, minimization, compensation). Evidence of an appropriate in-lieu fee.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-24	Demonstrate that all impoundment structures are safely designed.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-25	Requirement for Section 401 Water Quality Certification.	●	●	●	●	No (USACE/RWQCB)	Added to SSHCP Chapter 10, Project Application Process
NWP-26	Coastal Zone Management Zone consistency (Not Applicable)					—	—
NWP-27	Comply with any Regional Conditions (see below) or Specific Conditions added by the USACE or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification.	●	●	●	●	No (USACE/RWQCB)	Added to SSHCP Chapter 10, Project Application Process
NWP-28	Use of more than one permit for a single and complete project is prohibited.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-29	Requirements associated with transferring the permit verification if the permittee sells the property associated with the permit. Requirements for the contents of a letter from the permittee along with transference of the permit verification.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-30	Provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
NWP-31	Pre-Construction Notification (Not Applicable)					—	—
Sacramento District Regional General Conditions to the 2012 Nationwide Permits							
RGC-1	Include with PCN demonstration of compliance with all General and Regional Conditions. (Not Applicable)					—	Not Applicable
RGC-2	Pre-Construction Notification (Not Applicable)					—	Not Applicable

Table 28
Summary of SSHCP Aquatic Resources Protection

Measure	Description of Measure Applicable to Aquatic Resources	Applicability				Above Existing	How General Permit Conditions are Addressed, If Any
RGC-3	Record NWP Permit verification with Registrar of Deeds or other appropriate official. (Not Applicable)					—	Not Applicable
RGC-4	Preserve all avoided waters of the United States in legally protected preserves and maintain in perpetuity.	•	•	•	•	No (USACE)	Inherent to the SSHCP, also added to SSHCP Chapter 10, Project Application Process
RGC-5	For all activities resulting in temporary fill in waters of the United States a) Use fill materials consisting of cleaned and washed gravel; b) Clearly delineate the existing ground elevation of waters temporarily filled during construction; c) Remove all temporary fill within 30 days of completion of construction activities.	•	•	•	•	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
RGC-6	Apply the following to all road crossings: a) for all activities in waters of the United States that are suitable habitat for federally listed fish species, road crossings must not hinder passage or spawning of fish; b) road crossings shall be designed to ensure that no more than minor impacts would occur to fish and wildlife passage or expected high flows; no construction activities within standing or flowing waters; d) bank stabilization for road crossings must comply with Regional Condition 19. In no case shall stream crossings result in a reduction in the pre-construction bankfull width or depth of perennial streams or negatively alter the flood control capacity of perennial streams.	•	•	•	•	No (USACE)	Addressed by ROAD-2: UDA Wildlife Crossing Structures
RGC-7	Lead federal agency shall provide all relevant documentation to the USACE demonstrating any previous consultation efforts, as it pertains to the USACE Regulatory permit area (for Section 7 and EFH compliance) and the USACE Regulatory area of potential effect (APE) (for Section 106 compliance).	•	•	•	•	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
RGC-8	Additional documentation required for NWPs that require Pre-Construction Notification (Not Applicable).					—	Not Applicable
RGC-9	For permittee responsible mitigation, develop and submit to the USACE for review and approval, a final comprehensive mitigation and monitoring plan for all permittees responsible mitigation prior to commencement of construction activities within waters of the United States.	•	•	•	•	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
RGC-10	The permittee shall complete the construction of any compensatory mitigation required by special condition(s) of the NWP verification before or concurrent with commencement of construction of the authorized activity,	•	•	•	•	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
RGC-11	The permittee is responsible for all authorized work.	•	•	•	•	No (USACE)	Already addressed in SSHCP Implementation Chapter and built into the SSHCP
RGC-12	Requirements to clearly identify the limits of disturbance in the field.	•	•	•	•	No (County/USACE)	Addressed by BMP-1: Construction Fencing
RGC-13	When a Pre-Construction Notification is required, the permittee shall notify the appropriate district office of the start date for the authorized work within 10 days prior to initiation of construction activities. (Not Applicable)					—	Not Applicable
RGC-14	Requirement to allow Corps representatives to inspect the project site.	•	•	•	•	No (USACE)	Added to HCP Chapter 10, Project Application Process
RGC-15	Revocation of NWPs for activities located in the Mather Core Recovery Area that may affect vernal pools. (Not Applicable)					—	Not Applicable
RGC-16	Revocation of NWPs for activities located in the Primary or Secondary Zone of the Legal Delta. (Not Applicable)					—	Not Applicable
RGC-17	For all activities within the Secondary Zone of the Legal Delta, the permittee shall conduct compensatory mitigation for unavoidable impacts within the Secondary Zone of the Legal Delta. (Not Applicable)					—	Not Applicable
RGC-18	Requirements for construction of utility lines under NWP 12. (Not Applicable)					—	Not Applicable
RGC-19	Requirements for bank stabilization activities under NWP 13 and 14. (Not Applicable)					—	Not Applicable

Table 28
Summary of SSHCP Aquatic Resources Protection

Measure	Description of Measure Applicable to Aquatic Resources	Applicability				Above Existing	How General Permit Conditions are Addressed, If Any
RGC-20	Requirements for Pre-Construction Notification under NWP 23. (Not Applicable)					—	Not Applicable
RGC-21	Requirements for Pre-Construction Notification under NWP 27. (Not Applicable)					—	Not Applicable
RGC-22	Restrictions on channelization or relocation of intermittent or perennial drainages under NWPs 29 and 39. (Not Applicable)					—	Not Applicable
RGC-23	Requests to waive linear foot limitations for intermittent and ephemeral streams under NWPs 1, 13, 29, 39, 40, 42, 43, 44, 50, 51, or 52. (Not Applicable)					—	Not Applicable
RGC-24	Requirements for upland vegetated buffers under NWPs 29, 39, 40, 42, and 43. (Not Applicable)					—	Not Applicable
RGC-25	Under NWP 46, the discharge shall not cause the loss of greater than 0.5 acre of waters of the United States or the loss of more than 300 linear feet of ditch, unless specifically waived in writing by the USACE. (Not Applicable)					—	Not Applicable
RGC-26	All NWPs except 3, 6, 20, 27, 32, and 38 are revoked for activities in histosols, fens, bogs and peatlands and in wetlands contiguous with fens. (Not Applicable)					—	Not Applicable
Other General Conditions							
OGC-1	The PGP expiration date.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
OGC-2	Plan Permittees shall require that project applicants develop on-site project alternatives demonstrating efforts that first avoid, and then minimize direct and indirect effects to the aquatic resources mapped pursuant to this section and shall review these alternatives with the Plan Permittee. A complete on-site avoidance alternative shall be selected, if practicable, while taking into account the regional alternatives analysis completed through the SSHCP and ARP.	●	●	●	●	No (USACE)	SSHCP Chapter 12 addresses to some extent, but is also added to Project Application Process (Chapter 10)
OGC-3	Drawings, including plan and cross-section views, clearly depicting the location, size and dimensions of the proposed activity, as well as the location of delineated waters of the United States on the site.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
OGC-4	Numbered and dated pre-project color photographs.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
OGC-5	Linear foot impact limitations to particular streams.	●	●	●	●	No (USACE)	Derived from new Goal 2 Objective W-6.
OGC-6	Dewatering plan, if applicable.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process, but requirements are specified for Covered Species.
OGC-7	Proposed construction schedule.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
OGC-8	Any other information pertinent to the stream channel or wash involved.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
OGC-9	A list of all other permits and authorizations as required by law, ordinance, or regulation.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
OGC-10	Acreage and linear foot impacts triggering an LOP or SP with the USACE.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
OGC-11	Requirements for as-built drawings post-construction.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
OGC-12	Requirement for a Department of the Army Standard Permit where the District Engineer determines impacts to aquatic resources may be more than minimal, individually or cumulatively, as a result of the proposed work.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
OGC-13	Annual inspections to ensure activities authorized under this permit do not result in more than minimal impacts to waters of the United States.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process
OGC-14	No activity is authorized under this permit which is not in conformance with the SSHCP.	●	●	●	●	No (USACE)	Added to SSHCP Chapter 10, Project Application Process

5.3 Compensatory Mitigation

The central goal of compensatory mitigation for Covered Activities authorized under the SSHCP permitting framework is to maintain and improve the aquatic resources diversity, abundance, condition, and ecological connectivity across the Plan Area's differing landscape and geomorphic settings. A comprehensive preserve system would be assembled thorough protocols, described in detail in Appendix D, and outlined in 33 CFR Part 325 Sections 332.4(c)(2) through (c)(14) of the USACE's Mitigation Rule.

All Covered Activity projects proposed under the SSHCP and ARP would conform to a systematic mitigation strategy that includes the avoidance and minimization requirements of the previous subsections as well as the comprehensive compensatory mitigation strategy. Table 13 summarizes the potential maximum impacts. These potential impacts to aquatic resources over the 50-year term of the SSHCP (1,613 acres including 262 linear miles of non-wetland waters) would be compensated through the following: re-establishment/establishment of 1,613 acres of aquatic resources including re-establishment/establishment of 262 linear miles or 294 acres of non-wetland waters[8], 855 acres of wetland waters, and 464 acres of riparian habitat . Riparian establishment or re-establishment would occur that would be CDFW jurisdictional and may also be CWA 404/401 jurisdictional; and 2,248 acres of aquatic resources would be preserved.

A key component of the SSHCP's Conservation Strategy is the SSHCP Preserve System that would establish a network to systematically protect natural areas inside and outside of the UDA. Approximately 36,282 acres of new SSHCP Preserve lands would be established within the Plan Area by the end of the 50-year SSHCP. This is approximately 11% of the overall Plan Area. When considered together with the existing preserved lands in the Plan Area, the total amount of preserved land would total 99,030 acres, or 31.0%, of the Plan Area. The SSHCP Conservation Strategy is based on guiding principles of conservation biology and landscape ecology with goals and objectives to: minimize habitat fragmentation by forming large preserves and maintaining habitat linkages between preserves, protect watersheds and their ecosystem functions through sub-watershed preservation and conservation of streams and associated water quality, preserve irreplaceable and threatened resources, minimize indirect edge effects, utilize setbacks, and maintain Plan Area land cover heterogeneity within preserves. The SSHCP and ARP's proposed aquatic resources preservation would occur within the conceptual SSHCP Preserve System. All preservation would meet the standards and requirements of the Mitigation Rule (33 CFR 332.3[h]).

[8] The 262 linear miles on non-wetland waters includes Streams/Creeks (Intermittent and Perennial) and Streams/Creeks VPIH (Ephemeral). The 262 linear miles equates to 294 acres.

Compensatory mitigation in the form of aquatic resource re-establishment and establishment would also be placed within the SSHCP Preserve System. The Re-establishment and Establishment Guidelines (Appendix D) describe protocols for restoring and establishing aquatic resources within the Plan Area. These guidelines provide the outline, (consistent with SPD's 2015 Regional Compensatory Mitigation and Monitoring Guidelines), for how compensatory mitigation projects would be planned, designed, implemented, and managed such that the projects would be viable into perpetuity and would adequately compensate for unavoidable impacts to aquatic resources. In order to determine the re-establishment and establishment potential in the Plan Area and in each watershed, the SSHCP Permittees took an inventory available land suitable for re-establishment and/or establishment in order to maximize the amount of mitigation replaced within the watershed. This inventory was based upon the future state of the Plan Area, accounting for impacts from SSHCP Covered Activities.

Costs for the aquatic resources compensatory mitigation projects would be covered through the Covered Activity project mitigation fees collected under the SSHCP. Fees under the SSHCP are set at levels that fully offset the cost of compensating for the unavoidable impacts to aquatic resources. The SSHCP includes a fee structure that is distinguished by land cover type. This approach accounts for variations in costs associated with the particular requirements for each land cover type. Each new project would pay fees based on the land cover types affected by the development project and the fee schedule. The SSHCP fees were estimated on a per-acre-of-development basis, i.e., the fee represents the payment required to compensate for 1 acre of development of that land cover type. Re-establishment and establishment costs were estimated by taking into account costs associated with site reconnaissance, soil testing, engineering and preparation of construction drawings and specifications, land acquisition, staking, earthwork, plant and seed procurement, planting/seeding, and installation of irrigation system. Additionally, re-establishment and establishment projects must also account for costs associated with short-term monitoring and maintenance (5 to 10 years after projects are in the ground), as well as less intensive monitoring and management in perpetuity. Contingency costs were also accounted for in the fee calculations. Chapter 12 of the SSHCP describes the funding calculations and funding program.

Fees collected for compensatory mitigation would be routed to a proposed ILF program that is consistent with the federal Mitigation Rule (33 CFR Part 332) so that project proponents can satisfy their obligations under Section 404 of the CWA and the SSHCP. See Section 5.3.2.

Another key component of the SSHCP Conservation Strategy is the Jump-Start and Stay-Ahead provisions (described in detail in the SSHCP in Chapter 9, Section 9.5.5). These provisions require impacts to be mitigated in advance of Covered Activity project implementation, and ensure that Preserve System assembly would keep pace with development and make steady progress towards assembling the entire SSHCP Preserve System.

To satisfy this requirement, the Implementing Entity[9] would, prior to implementation of SSHCP Covered Activities, protect SSHCP land cover types and Covered Species habitat in advance of impacts—the "Jump-Start" provision (described in the SSHCP in Chapter 9, Section 9.5.5.2). The Jump-Start provision would ensure that there is enough Preserve area and habitat benefits are provided to fully offset the initial habitat loss and species take expected when the Plan is first implemented. The Jump-Start provision applies to all SSHCP land cover types (Table 29).

Table 29
Jump-Start Provision Acreage Requirements (at Permit Issuance)

Land Cover Grouping	Total Acres of Required Preservation by Land Cover Grouping[a]	Initial Acreage Required (before Permit Issuance) to Meet Jump-Start Provision (i.e., 5% of Required Preservation)
Valley Grassland	22,014	1,100[b]
Vernal Pool	966	48
Other Vernal Pool Invertebrate Wetland Habitat[c]	304	15
Other Wetland[d]	504	25
Agricultural	9,696	484
Riparian	964	48
Oak Woodland	47	2

Notes:
[a] Based on the sum of required preservation for each land cover type (refer to SSHCP Table 7-2) that is composed by the land cover grouping.
[b] This 1,100 acres must be preserved within the Vernal Pool Ecosystem (Chapter 3, Section 3.2.3, of SSHCP).
[c] Includes all Swale and Stream/Creek (VPIH) habitat that is considered invertebrate habitat.
[d] Includes Seasonal Wetland, Freshwater Marsh, Stream/Creek, and Open Water.

Over the term of the permit, the Implementing Entity would maintain a "cushion" of mitigation that is established in advance of impacts—the "Stay-Ahead" provision (described in the SSHCP in Chapter 9, Section 9.5.5.3). The stay-ahead provision requires that the Implementing Entity maintain enough Preserve land to be at least 2% ahead of the remaining preservation required for each SSHCP land cover grouping by the SSHCP Conservation Strategy at all times. This means that each project proposing to use the SSHCP must be checked against the stay-ahead provision prior to issuing ITPs to ensure that the project does not result in stay-ahead preserve land dropping below the 2% threshold. The Stay-Ahead provision would avoid temporal impacts to Covered Species that occur when mitigation is delayed from the time that impacts occur to when the associated mitigation benefits are available to the species (e.g., environmental benefits resulting from preserve management, habitat enhancement, and habitat re-establishment activities).

[9] The Implementing Entity is the body that is responsible for implementation of a permitted HCP. The SSHCP Implementing Entity consists of a Governing Board, Implementation Commission, and various committees and staff who oversee management and administration of the Plan.

Under the Jump-Start and Stay-Ahead provisions, compensatory mitigation for project proposals would exist ahead of impacts, thus eliminating the temporal loss factor of consideration under the federal Mitigation Rule. This would ensure consistency with USACE and RWQCB guidelines pursuant to Sections 404 and 401 of the CWA, and would satisfy California Fish and Game Code Section 2081(b), which requires impacts to state-listed species to be mitigated in advance of the impacts. It would also satisfy requirements under the federal ESA.

The purpose of the compensatory mitigation strategy proposed under the SSHCP and ARP is to implement a systematic mitigation strategy that individual Covered Activity projects can conform and contribute to as a means to offset unavoidable impacts to aquatic resources. It is a strategy that integrates the compliance procedures of several federal and state resource agencies to provide a long-term vision for environmental protection and monitoring, which enables greater environmental benefits and greater efficiency and certainty in environmental permitting for Plan Permittees and project proponents that implement Covered Activities under the jurisdiction of a Land Use Authority Permittee or the Implementing Entity. It is a strategy that benefits from the opportunities provided by regional conservation planning, offering a vision that is more challenging to achieve in a project-by-project review setting.

5.3.1 Compensatory Mitigation Requirements

5.3.1.1 Impact Threshold Measures

Under the SSHCP and ARP, there would be no minimum threshold of proposed acreage loss of aquatic resources for compensatory mitigation to be required. That is, all permanent loss of aquatic resources incurred by a project would require compensatory mitigation[10]. This is in contrast to the USACE's discretion to waive the compensatory mitigation requirement for loss of waters of the United States less than one-tenth of an acre (General Condition 23 of the 2012 Nationwide Permits).

5.3.1.2 Compensatory Mitigation Ratios

The compensatory mitigation ratios listed in the ARP are based upon a landscape-level assessment of the diversity, abundance, and condition of all aquatic resources types that occur in the Plan Area. The compensatory mitigation ratios listed in Table 30 represent the amount of compensatory mitigation required to maintain or improve the physical, chemical, and biological functions of aquatic resources within the Plan Area (as outlined in the SSHCP in the Biological Goals and Measureable Objectives in Table 7-1) when such impacts to aquatic resources are

[10] As discussed in Section 4.1, it is assumed that all impacts are permanent and would result in the loss of aquatic resources.

unavoidable. The compensatory mitigation ratios are also designed to be consistent with USACE's Mitigation Rule and to consider the factors used for determining compensatory mitigation requirements as required for processing Department of the Army permits under Section 404 of the CWA (USACE South Pacific Division Regulatory Program Standard Operating Procedure for Determination of Mitigation Ratios [Mitigation Ratios Procedure]).

Table 30 describes compensatory mitigation ratios provided by the SSHCP Conservation Strategy for each aquatic resource type that would be impacted by Covered Activities within the Plan Area. All ratios are in terms of (combined) re-establishment/establishment/preservation to impact. Vernal pools, mixed riparian scrub, and mixed riparian woodland would be mitigated at a ratio of at least 3:1, where a minimum 1:1 of that mitigation is provided by re-establishment or establishment. For all other aquatic resource land cover types (mine tailing riparian woodland, seasonal wetland, freshwater marsh, swale, streams/creeks [VPIH], open water, and streams/creeks) compensatory mitigation would occur at a ratio of at least 2:1, where again, a minimum ratio of 1:1 is accomplished by re-establishment or establishment. The final column of Table 30 lists the actual amount of each land cover type projected to be provided by the SSHCP. For certain land cover types, such as vernal pools, the projected amounts exceed the required amounts.

Table 30
Compensatory Mitigation Ratios

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Direct Impacts *Acres*	Required Re-establishment/ Establishment + Preservation Ratios	Required Re-estab/ Estab/ Preserve (acres)	Projected Amounts (acres)
Riparian	Mine Tailing Riparian Woodland	R2/R3	218	2:1 (min re-estab/estab 1:1)[a]	0 [a]	0 (0 re-estab/estab)[a]
	Mixed Riparian Scrub and Mixed Riparian Woodland	R2/R3	246	3:1 (min re-estab/estab 1:1)	1,174 [a]	1,174 total (464 re-estab/estab)[a]
Subtotal Riparian			*464*	-	*1,174*	*1,765 (464 re-estab/estab)*
Wetland Waters	Freshwater Marsh	PEM2	127	2:1 (min re-estab/estab 1:1)	254	254 total (127 re-estab/estab)
	Seasonal Wetland	PEM2	105	2:1 (min re-estab/estab 1:1)	210	210 total (105 re-estab/estab)
	Swales	PEM2	234	2:1 (min re-estab/estab 1:1)	468	468 total (234 re-estab/estab)
	Vernal Pools	PEM2	389	3:1 (min re-estab/estab 1:1)	1,167	1,167 total (389 re-estab/estab)
Subtotal Wetland Waters			*855*	-	*2,099*	*2,099 total (855 re-estab/estab)*
Non-Wetland	Open Water	POW	155	2:1 (min re-estab/estab 1:1)	310	310 total (155 re-estab/estab)

Table 30
Compensatory Mitigation Ratios

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Direct Impacts *Acres*	Required Re-establishment/ Establishment + Preservation Ratios	Required Re-estab/ Estab/ Preserve (acres)	Projected Amounts (acres)
Waters	Streams/Creeks (Intermittent and Perennial)	R2UB/R3UB	117	2:1 (min restor 1:1 linear foot)	234	234 total (117 restor)
	Streams/Creeks VPIH (Ephemeral)	R4SB	22	2:1 (min restor 1:1 linear foot)	44	44 total (22 restor)
Subtotal Non-Wetland Waters			*294*	—	*588*	*588*
Subtotal Wetland Waters and Non-Wetland Waters			*1,149*	—	*2,687*	*2,687*
Total[b]			**1,613**	**—**	**3,861**	**4,452**

Notes:

[a] Mine Tailing Riparian Woodland will be mitigated by preserving and re-establishing or establishing Mixed Riparian Scrub or Mixed Riparian Woodland.

[b] Table may not total precisely due to rounding.

Acreage totals in the ARP may not match precisely with acreage totals in the SSHCP. Factors that may result in differences between acreage figures in the ARP as compared to the SSHCP include: 1) The ARP only considers direct impacts where the SSHCP considers both direct and indirect impacts; 2) The ARP only includes jurisdictional wetlands for some land cover types where the SSHCP includes all wetlands; and 3) Slightly different Geographical Information System processes that result in small differences in totals.

The ARP compensatory mitigation ratios are based upon factors consistent with the federal mitigation rule. The ARP compensatory mitigation ratios utilize the FCAM that was developed for the Plan Area that is aquatic resource-based, standardized, and comparable from site to site (the Functional Assessment for the SSHCP and ARP is described in detail in Appendix C). The FCAM can be implemented to determine a before-after-mitigation-impact procedure to assess aquatic resource functional gain. Compensatory mitigation ratios described in the ARP also take into consideration mitigation site location, enhancement or preservation of an aquatic resource that doesn't result in a net gain in aquatic resource area, aquatic resource type conversion need from a watershed perspective, risk and uncertainty, and temporal loss of aquatic resource functions (as described in Appendix C). The purpose of the ARP compensatory mitigation ratios strategy is to proactively offset unavoidable impacts to aquatic resources and maintain or improve physical, chemical, and biological functions of aquatic resources within the Plan Area.

As previously mentioned, two key components of the SSHCP Conservation Strategy are the Jump-Start and Stay-Ahead provisions (described in detail in the SSHCP in Chapter 9, Section 9.5.5). These components of the SSHCP Conservation Strategy were developed to address the temporal loss consideration described in the Mitigation Ratios Procedure. Jump-Start and Stay-Ahead provisions require impacts to be mitigated in advance of Covered Activity project implementation and ensure that SSHCP Preserve System assembly would

keep pace with urban development and make steady progress towards assembling the entire conceptual SSHCP Preserve System (see SSHCP Section 7.5). Implementation of these provisions would ensure that lost aquatic resource functions are replaced ahead of Covered Activity project impacts, avoiding temporal loss.

5.3.1.3 Monitoring and Management

Aquatic resources within the Plan Area would be monitored throughout SSHCP implementation as part of the SSHCP Monitoring Program and SSHCP Preserve System Management Program, which would be implemented to ensure that the requirements of the SSHCP and ARP are being met. The purposes of these programs are to ensure compliance with all elements of the SSHCP and associated permits (compliance monitoring) and to evaluate the beneficial effects of the SSHCP Conservation Strategy (mitigation program) to make sure all SSHCP goals and objectives are being met (effectiveness monitoring). Compliance monitoring would focus on ensuring all actions implemented under the SSHCP and ARP are in compliance with all requirements of their associated permits and that impacts do not exceed the amounts authorized under the permits. Effectiveness monitoring would focus on ensuring mitigation (i.e., required avoidance, minimization, and compensatory mitigation) carried out under the SSHCP and ARP is achieving the SSHCP's goals and objectives, such as ensuring the overall aquatic resource abundance, diversity, and condition of the Plan Area is maintained or improved in perpetuity. The Plan Permittees are collectively responsible for conducting all the required monitoring and reporting under the SSHCP and ARP. Annual monitoring reports from the Plan Permittees would be consolidated through the Implementing Entity, who would serve as the main point of contact.

A fully developed monitoring program would be finalized within 1 year of permit issuance with input and coordination among the SSHCP Implementing Entity, Land Use Authority Permittees, the regulatory and Wildlife Agencies, and a Technical Advisory Committee (TAC). Chapter 8 of the SSHCP describes the programmatic approach and monitoring questions that would be addressed by the SSHCP monitoring program. It is envisioned that monitoring of aquatic resources would be best achieved by implementing the California Wetland and Riparian Area Monitoring Plan (WRAMP) framework (CWMW 2010).

The WRAMP framework is commonly used to assess the compliance and effectiveness of development projects affecting aquatic resources. The WRAMP framework is suited to natural resources monitoring in general, including terrestrial wildlife and habitat, but has primarily been focused on aquatic resources. The WRAMP framework uses standardized mapping and assessment methods that combine to provide a comprehensive assessment of aquatic resource abundance, diversity, and condition within a watershed context.

Assessments are conducted at three levels, as described by the EPA's three-level data classification system:

1. **Level 1 – Landscape Assessment**

   Uses GIS, remote sensing data, and field surveys to inventory aquatic resources at a planning level. The data layers used to create the SSHCP's land cover maps are an example of Level 1 data.

2. **Level 2 – Rapid Assessment**

   Uses visible field diagnostics, semi-quantitative rapid assessment methods, and existing data to assess conditions. The California Rapid Assessment Method (CRAM) is an example of a Level 2 assessment method.

3. **Level 3 – Intensive Site Assessment**

   Provides quantitative field data to give more precise answers to management questions. Examples of a Level 3 assessment include intensive bioassessment sampling (e.g., benthic macroinvertebrates or algae), protocol-level or otherwise systematic surveys for Covered Species, and collecting biological and abiotic data such as plant species abundance or percent cover.

The monitoring requirements for aquatic resources in the Plan Area are a subset of the requirements of the SSHCP and are tied to the Biological Goals and Measureable Objectives of Chapter 7 of the SSHCP. Tables 31 through 33 are derived from Tables 8-1 through 8-4 in Chapter 8 of the SSHCP, and they summarize the measurable objectives to be achieved, the monitoring questions associated with each measurable objective, and the potential monitoring approach (Level 1, 2, or 3) for each question.

Table 31
Compliance Monitoring

Related Objectives or SSHCP Commitment (from SSHCP Chapter 7)	Monitoring Question	Compliance Monitoring Approach
The SSHCP requests take of land cover types (impacts to aquatic resources)	How many acres of land cover types have been impacted by Covered Activities?	Map impacted areas and quantify area of disturbance. Input impacts into tools such as the Project Tracking System in EcoAtlas. Ensure that impacts do not exceed amount authorized. (Level 1)
Objectives VPP1, VPP2, VPP3, VPP4, VPP5, VPP6, VPP7.	Are plant Covered Species populations being protected within Preserves?	Conduct assessment of take and preservation and protection of covered plant species to ensure preservation amounts are keeping up with impact amounts for vernal pools. (Level 1)
Objectives L1, L2, W4, W5, VPG1, VP1, VP3, SW1, FWM1,	Are SSHCP land cover acquisition goals being met in the Preserve System, including	Mapping of acquired Preserve lands using aerial surveys and GIS and verification that

Table 31
Compliance Monitoring

Related Objectives or SSHCP Commitment (from SSHCP Chapter 7)	Monitoring Question	Compliance Monitoring Approach
ES1, SC1, OW1, RIP1, RIP3, VG1, BOW1, AG1.	acquisition of linkages to existing Preserves?	landscape-scale Preserve selection criteria for land cover types have been met. (Level 1)
Objectives W1, W2.	Are the vernal pool land covers and the Creeks/Stream land covers being adequately protected from adjacent Covered Activities? Does each proposed project design include appropriate setbacks for creeks and streams? Are requisite Stream Setbacks and Preserve being established?	During project design review, compare design against checklist that includes setbacks (Level 1). Map the preserves, corridors, and habitats of concern using aerial surveys and GIS mapping (with particular attention to buffer widths from vernal pools, streams, and creeks). Compare GIS mapping against conditions of approval. (Level 1)
Objectives VPI1, VPI2, VPI3, VPI4, CTS2, WS1, WPT1, GGS1, CH1, CH2, TB1, TB2, TB3, TB4, BO1, BO2, FH1, SH1, SH2, SH3, NH1, NH2, NH3, WK1, WK2, WK3, WK4, GS1, GS2, LS1, LS2, , WR1, WR2, WR3, WR4, AB1, AB2.	Are preserved, re-established, or established aquatic resources being adequately maintained/managed for the benefit of Covered Species?	SSHCP Annual Reports submitted by Implementing Entity, with field verification by Implementing Entity or designee. (Level 2)
Objectives VP2, SW2, RIP2, RIP4, OW2, FWM2.	Do established or re-established aquatic resources meet success criteria (performance standards)?	Monitor aquatic habitat success criteria as defined by permit conditions (Level 2).
Objectives RIP 2, RIP4	Does re-established or established riparian habitat meet success criteria (performance standards)?	Monitor success criteria as defined by permit conditions (Level 2).
Objective W3.	Were the appropriate AMMs always implemented? Is each AMM being implemented according to requirements described in Chapter 5 of the SSHCP?	Design review and comparison with checklist of AMMs. Field verification by permit compliance staff of relevant jurisdiction. (Level 2)
Objective W4, W5	Are preserved, re-established, or established aquatic resources acreage goals/requirements being met?	SSHCP Annual Reports submitted by Implementing Entity, specifying locations and amounts of compensatory mitigation implemented. (Level 1)
Objective W4, W5	Are preserved, re-established, or established aquatic resources functional/condition performance standards being met?	SSHCP Annual Reports submitted by Implementing Entity, with field verification by Implementing Entity or designee. (Level 2)
Objective CTS1.	Is the required number of occupied breeding ponds within designated Critical Habitat for California tiger salamander (*Ambystoma californiense*) being protected?	Conduct survey for occupied California tiger salamander breeding ponds and map results. Field verification of pond preservation and comparison against maps. (Level 3)

Table 32
AMM Compliance Monitoring

AMM	Monitoring Questions	Compliance Monitoring Approach
LID-1 (Stormwater Quality):	Are projects incorporating appropriate stormwater management into designs to satisfy the requirements outlined in the Stormwater Quality Design Manual for the Sacramento and South Placer Regions?	Design review by Land Use Authority Permittee or Implementing Entity.
LID-2 (Groundwater Recharge):	Has the proponent identified areas in the project site that could be appropriate for groundwater recharge? Has the drainage design incorporated groundwater recharge?	Design review by Land Use Authority Permittee or Implementing Entity.
LID-3 (Natural Site Features):	Has the proponent identified important natural site features within the project site? Has the project design avoided or preserved these natural site features?	Design review by Land Use Authority Permittee or Implementing Entity.
RE-ESTABLISHMENT/ ESTABLISHMENT-1 (Vernal Pool)	Are entities conducting vernal pool re-establishment/establishment on SSHCP Preserves following the guidelines identified in the AMM?	Implementing Entity review of vernal pool re-establishment/establishment plans. Field verification by Implementing Entity of vernal pool conditions and consistency with stated guidelines and plans. (Level 1 and Level 2)
RE-ESTABLISHMENT/ ESTABLISHMENT-2 (Vernal Pool Inocula Bank)	Are soils from converted vernal pools being excavated and stored using the appropriate protocols? Are inocula placed in re-established or established pools being sourced from the appropriate geologic formation and soil type?	Land Use Authority Permittee review of plans for projects converting vernal pools to ensure that they clearly state the disposition of vernal pool soils. Implementing Entity coordination with entities re-establishing or establishing vernal pools on preserves to ensure that inocula are correct. (Level 2)
STREAM-1 (Laguna Creek Wildlife Corridor)	Are proponents establishing the appropriate setback on Laguna Creek? Are trails being placed in the correct location within the setbacks?	Review of project plans by Land Use Authority or Implementing Entity to confirm that Stream Setbacks are designed according to requirements, including locations of trails. Field verification by Land Use Authority Permittee or Implementing Entity to confirm that Stream Setbacks are correctly established. (Level 1 and Level 2)
STREAM-2 (UDA Stream Setbacks)	Are proponents establishing appropriate setbacks on Elder Creek, Frye Creek, Gerber Creek, Morrison Creek, Paseo Central, and Sun Creek? Are trails being placed in the correct location within the setbacks?	Review of project plans by Land Use Authority Permittee or Implementing Entity to confirm that Stream Setbacks are designed according to requirements, including locations of trails. Field verification by Land Use Authority Permittee or Implementing Entity to confirm that Stream Setbacks are correctly established. (Level 1 and Level 2)

Table 32
AMM Compliance Monitoring

AMM	Monitoring Questions	Compliance Monitoring Approach
STREAM-3 (Minor Tributaries to UDA Streams)	Are proponents establishing appropriate setbacks on first and second order tributaries that are credited as avoided? Are trails being placed in the setbacks?	Review of project plans by Land Use Authority Permittee or Implementing Entity to confirm that Stream Setbacks are designed according to requirements, including locations of trails. Field verification by Land Use Authority Permittee or Implementing Entity to confirm that Stream Setbacks are correctly established. (Level 1 and Level 2)
STREAM-4 (Minimize Effects from Temporary Channel Re-routing)	If stream channels are being re-routed during construction, are the measures identified in the AMM being implemented to avoid hydrologic impacts?	Local Land Use Authority Permittee or Implementing Entity review of plans for temporary stream channel re-routing. Periodic inspection of the project site by Land Use Authority Permittee Permit Compliance staff or the Implementing Entity to confirm required measures are being implemented and maintained.(Level 1 and Level 2)
STREAM-5 (Design for Stream Channel Re-Routing, Widening, or Deepening)	Do designs for stream channel re-routing, widening, or deepening include the considerations outlined in the AMM?	Local Land Use Authority Permittee or Implementing Entity review of plans for stream channel re-routing. Local Land Use Authority Permittee or Implementing Entity field verification of project implementation. (Level 1 and Level 2)

Table 33
Effectiveness Monitoring

Related Objectives	Preserve Monitoring Question	Effectiveness Monitoring Approach
Objectives W4, W5	Are aquatic resources abundance, diversity, and condition being maintained or improved within the Plan Area as the SSHCP is implemented?	Monitor and track overall aquatic resource abundance and diversity annually over the life of the SSHCP (Level 1). Implement random or probabilistic sampling design throughout Plan Area at recommended intervals over the life of the SSHCP to track trends in condition; likely incorporating CRAM (Level 2).
Objectives VPI1, VPI2, VPI3, VPI4	What vernal pool invertebrate species are occupying preserved vernal pools?	Statistically valid status and trends sampling of all preserved pools in permanent and impermanent plots, conducted annually for the first 10 years after vernal pool preservation (Level 3).

Table 33
Effectiveness Monitoring

Related Objectives	Preserve Monitoring Question	Effectiveness Monitoring Approach
Objectives CTS2, WS1, WPT1, GGS1, CH1, TB1, TB2, TB3, TB5, FH1, SH1, SH2, SH3, NH1, NH2, WK1, WK2, GS1, GS2, LS1, LS2, BO1, BO2, WR1, WR2, AB1	Are Covered Species using preserved modeled-habitat? Is there a positive correlation between preserved nesting/roosting/foraging sites?	Conduct presence/absence surveys at appropriate timing for each Covered Species within preserved, established, or re-established habitat (Level 2).
Objectives VPI1, VPI2, VPI3, VPI4, CTS2, WS1, WPT1, GGS1, CH1, CH2, TB1, TB2, TB3, TB4, BO1, BO2, FH1, SH1, SH2, SH3, NH1, NH2, NH3, WK1, WK2, WK3, WK4, GS1, GS2, LS1, LS2, WR1, WR2, WR3, WR4, AB1, AB2	Is preserved, re-established, or established habitat being adequately maintained/managed for the benefit of Covered Species?	Annual SSHCP reports submitted by Implementing Entity, with field verification by Implementing Entity or designee (Level 2).
Objectives WS2, WPT2, GGS2, CH2, TB4, TB6, BO1, BO2, SH4, NH3, WK3, WK4, GS3, GS4, LS3, WR3, WR4, AB2	Are Covered Species occupying re-established or established habitat?	Compliance monitoring reports submitted annually by Implementing Entity. Field verification by Implementing Entity or designee. Presence/absence surveys at appropriate timing for each species (Level 2).
Objective HAB2	Are the physical conditions on the Preserves meeting the breeding feeding or sheltering needs of all Covered Species?	Rapid monitoring (CRAM or similar) for subset of Preserves, on at least an annual basis, compared against reference sites (Level 2).
Objective HAB4	Where are non-native weeds occurring in the Preserve System, and what species? Are they being eradicated in a timely fashion? Are the monitoring and management methods being updated to account for changed conditions?	Weed assessment and mapping within the Preserves on at least an annual basis, with other opportunistic assessment. Annual reporting of weed eradication efforts. TAC review of the SSHCP Conservation Strategy every 5 years (Level 2).
Objective HAB7	What is the biomass of vegetation within vernal pool-grassland, valley grassland, blue oak savanna, and other grasslands?	Annually monitor using residual dry matter (RDM) or another rapid monitoring technique at the end of the growing season; use a consistent time each year (Level 2).
Objective RIP5	What is the depth to groundwater within Preserves and how is it changing?	Annually measure depth to water table on Preserve parcels with existing wells (Level 2).
Objective GGS3	What is the hydrologic condition along Badger Creek? How much supplemental water would be required to maintain baseline conditions during summer? Is supplemental water maintaining appropriate hydrologic conditions in perpetuity?	Conduct hydrologic study for Badger Creek. Review hydrologic conditions every 5 years to ensure continued habitat suitability for giant garter snake (*Thamnophis gigas*) (Level 3). Annually review aerial imagery of Badger Creek to observe the ratio of open water and emergent vegetation (Level 1).

In order to properly manage the suite of monitoring data that would be collected for the SSHCP and ARP, the Implementing Entity would establish a GIS-linked database for use in compliance

monitoring, effectiveness monitoring, adaptive management, and annual reporting requirements. To the extent feasible, the database would be linked with other statewide or regional data repositories, such as the Regional Data Center of the California Environmental Data Exchange Network (CEDEN) and the California EcoAtlas Information System. The California EcoAtlas provides free public access to information about the quantity and quality of California wetlands. EcoAtlas enables integration of information to provide landscape context for consideration of wetland extent and condition.

The Implementing Entity would prepare annual reports summarizing the previous year's Covered Activities and provide a summary of all activities that have been implemented since SSHCP issuance, including all preserve monitoring results. Final reports are due to the regulatory agencies by January 31 following the end of the previous year's reporting cycle, which runs from October 1 to September 30.

5.3.2 Development of an ILF Program to Fulfill Compensatory Mitigation Requirements

The SSHCP Plan Permittees recognize the importance of a successful compensatory mitigation strategy accomplished in a timely fashion and nested in the overall conservation plan of the SSHCP. The Jump-Start and Stay-Ahead Provision (described in detail in the SSHCP in Chapter 9, Section 9.5.5) was developed to offset the potential for temporal loss of aquatic resources diversity, abundance, and condition at a sub-watershed landscape level in the Plan Area. Under this provision, the Plan Permittees would implement the compensatory mitigation requirement (pursuant to standards set forth in the 2008 federal Mitigation Rule [33 CFR Part 332]) prior to the authorized project impacts (the "Jump Start" portion of the provision). The Plan Permittees would use the "stay ahead" provisions required by the SSHCP in satisfying compensatory mitigation needs of Covered Activity projects. Thus, the importance of the "Jump-Start and Stay-Ahead" Provision is that compensatory mitigation acreage would always be ahead of impacted acreage (as opposed to similar stay-ahead programs that are based on "rough proportionality" and can actually fall behind from an acre-to-acre standpoint).

To meet the requirements of the 2008 federal Mitigation Rule (33 CFR Part 332), the Plan Permittees anticipate development of their own ILF program. The Plan Permittees would submit an ILF program proposal to the USACE (and Interagency Review Team) for review and subsequent approval by the USACE's District Engineer. The ILF would have technical consistency with the proposed restoration/creation approaches contained in Appendix D of this document. Because of the robust Jump-Start and Stay-Ahead Provision described above, a common challenge approached in many ILFs, temporal loss, is not anticipated to be an issue with the SSHCP's proposed ILF program.

Draft SSHCP Aquatic Resources Program

The Plan Area is within the service area of several existing mitigation banks with credit availability, which may be a viable option to allow early implementation of the SSHCP compensatory mitigation strategy. Compensatory mitigation carried out via purchase of mitigation bank credits is preferred in the hierarchy set forth by the federal mitigation rule to offset impacts for authorized impacts to waters of the United States. However, an ILF program may override the USACE's mitigation bank preference when credits become available for ecologically valuable parcels identified in advance and based upon the rigorous scientific and technical analysis as part of a project-specific ILF planning framework. ILF programs can achieve important ecological and societal benefits by focusing primarily on watershed needs and by siting multiple compensatory mitigation projects in strategic locations of a watershed to meet specific needs and goals. It is for these reasons Plan Permittees believe an ILF program would best suit the long-term compensatory mitigation needs of the SSHCP regulatory framework.

6 AQUATIC RESOURCES PROFILE POST-MITIGATION

As was summarized for existing conditions (Chapter 3) and conditions post-impact without mitigation (Chapter 4), the final status of aquatic resources within the Plan Area (following impacts and mitigation) is summarized here in terms of the aquatic resources' resulting diversity, abundance, and condition. Diversity is again described in terms of the variety of aquatic resources by land cover type (common name) and Cowardin class that would remain following impacts and mitigation. Abundance is described in terms of acreage of each aquatic resource type within the Plan Area and per watershed (at the HUC-10 level) that would exist following impacts and mitigation. Condition is described using a landscape-level functional assessment to determine the relative capacity of the aquatic resources to perform various functions and services related to hydrology, water quality, and habitat.

6.1 Aquatic Resources Abundance and Diversity After Impacts and Mitigation

Within the Plan Area, of the currently existing 24,256 acres of mapped potentially jurisdictional aquatic resources, there are projected impacts to approximately 1,613 acres. However, following implementation of the SSHCP's compensatory mitigation strategy, all impacted acreage of aquatic resources would be replaced, resulting in no net loss of acres of aquatic resources (i.e., no impact on abundance). Furthermore, there would not be a disproportionate loss of any particular aquatic resource type, so aquatic resources diversity would also be maintained. The only aquatic resource types that show moderate decreases in abundance are Mine Tailing Riparian Woodlands and Open Water, both of which consist largely of unnatural or man-made features. As the intent of the SSHCP compensatory mitigation program is to establish and/or re-establish natural, high-quality aquatic resources, all of the required mitigation acreage to offset losses of Mine Tailing Riparian Woodlands is shifted to either Mixed Riparian Scrub or Mixed Riparian Woodland; and some of the required mitigation acreage to offset losses of Open Water is shifted to either Freshwater Marsh or Seasonal Wetlands.

See Table 34 for a summary of future aquatic resources abundance by type (diversity) per watershed.

Table 34
Future Abundance (Acres) of Aquatic Resources in the Plan Area, by Aquatic Resource Type

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Watershed (acres)										Total
			American River	*Deer Creek*	*Laguna*	*Lower Cosumnes River*	*Lower Dry Creek*	*Lower Mokelumne*	*Morrison Creek*	*Sherman Lake – Sac River*	*Snodgrass Slough*	*Upper Cosumnes River*	
Riparian	Mine Tailing Riparian Woodland	R	0	0.2	158.3	17.3	0	0	1.6	0	0	245.5	422.9
	Mixed Riparian Scrub	R	0	80.4	58.1	290.0	47.1	2.4	20.7	130.1	546.4	99.7	1,274.9
	Mixed Riparian Woodland	R	0.4	959.5	261.7	1,908.9	400.6	196.4	102.6	52.7	1,324.5	815.7	6,023.0
Subtotal Riparian			*0.4*	*1,040.1*	*478.1*	*2,216.2*	*447.7*	*198.8*	*124.9*	*182.8*	*1,870.9*	*1,160.9*	*7,720.8*
Wetland Waters	Freshwater Marsh	PEM1	2.0	38.3	167.2	1,194.5	47.5	20.9	315.2	39.7	1,097.2	112.3	3,034.5
	Seasonal Wetland	PEM2	22.6	199.7	444.5	616.3	134.0	<0.0	38.9	0.2	799.9	427.0	2,189.0
	Swales	R2/R3	2.9	160.4	518.0	144.2	141.0	0	225.9	1.4	10.3	80.6	1,284.7
	Vernal Pools	PEM2	6.9	274.3	2,026.7	618.6	319.4	0.1	531.2	5.3	420.9	324.7	4,528.2
Subtotal Wetland Waters			*34.4*	*672.7*	*3,156.4*	*2,573.6*	*641.9*	*21.0*	*1,111.2*	*46.6*	*2,328.3*	*944.6*	*11,036.4*

Table 34

Future Abundance (Acres) of Aquatic Resources in the Plan Area, by Aquatic Resource Type

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Watershed (acres)										Total
			American River	*Deer Creek*	*Laguna*	*Lower Cosumnes River*	*Lower Dry Creek*	*Lower Mokelumne*	*Morrison Creek*	*Sherman Lake – Sac River*	*Snodgrass Slough*	*Upper Cosumnes River*	
Non-Wetland Waters	Open Water	POW	2.7	129.4	295.4	663.0	8.4	3.1	78.4	9.	719.2	280.2	2,189.0
	Perennial or Intermittent Streams/ Creeks	R2UB/ R3UB	5.6	228.3	416.3	345.0	92.5	67.4	65.4	23.9	1,155.7	362.0	2,762.9
	Streams/ Creeks (VPIH) Ephemeral	R4SB	0	18.7	0	0	0	0	35.6	0	0	0	54.2
Subtotal Non-Wetland Waters			*8.3*	*376.4*	*711.7*	*1,008.0*	*1,00.9*	*70.5*	*179.4*	*32.9*	*1,874.9*	*642.2*	*5,006.1*
Subtotal Wetland Waters and Non-Wetland Waters			*42.7*	*1,049.1*	*3,868.1*	*3,581.6*	*641.9*	*91.5*	*1,290.6*	*79.5*	*4,203.2*	*1,586.8*	*16,042.5*
Grand Total[1]			**43.1**	**2,089.2**	**4,346.2**	**5,797.8**	**1,089.6**	**290.3**	**1,415.5**	**262.3**	**6,074.1**	**2,747.7**	**23,763.3**

Note: [1.] Table may not total precisely due to rounding.
Acreage totals in the ARP may not match precisely with acreage totals in the SSHCP. Factors that may result in differences between acreage figures in the ARP as compared to the SSHCP include: 1) The ARP only considers direct impacts where the SSHCP considers both direct and indirect impacts; 2) The ARP only includes jurisdictional wetlands for some land cover types where the SSHCP includes all wetlands; and 3) Slightly different Geographical Information System processes that result in small differences in totals.

6.2 Estimated Future Condition of Aquatic Resources in the Plan Area

The effects of implementation of the SSHCP on the condition of aquatic resources are estimated by projecting the future condition of aquatic resources within the Plan Area, including consideration of mitigation as prescribed by the SSHCP. The projected future condition is obtained from the results of the Functional Assessment Report (Appendix C), which categorizes the Plan Area's aquatic resources into high, moderate, low, or very low condition.

6.2.1 Future Condition of Aquatic Resources

The landscape-level assessment that was used to describe the existing aquatic resource conditions (Chapter 3) and conditions with projected impacts (Chapter 4) was also used to predict the future condition of the aquatic resources accounting for both impacts and mitigation. The overall quality of future aquatic resources was predicted based on the same factors: area of the aquatic resource, HUC-10 watershed, primary adjacent land cover, secondary adjacent land cover, and aquatic resource type. Function scores were assigned for each of these factors, per aquatic resource feature, based upon ability to maintain or improve the following functions: habitat, water quality, and hydrology. The second factor, HUC-10 watershed, was updated based on the predicted future state of each of the watersheds, with the same scoring measures as were used for the impact-only conditions (see Chapter 4). The results of the analysis provided an overall functional score of very low, low, moderate, or high for each aquatic resource.

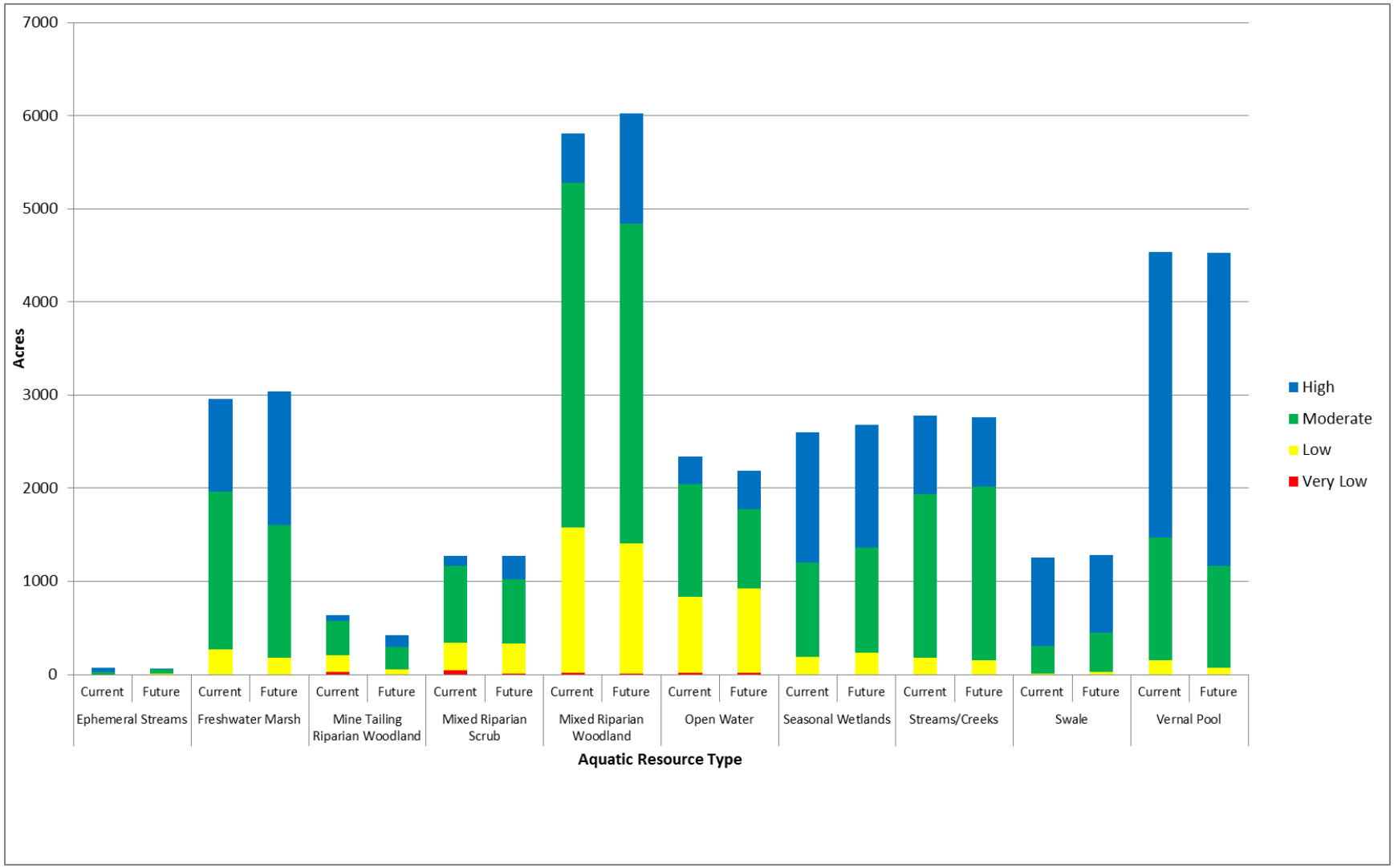
Table 35 summarizes the future condition of aquatic resources in the overall Plan Area following implementation of the SSHCP, including the mitigation program, and Figure 38 is a graphical depiction of those data, showing how the future Plan Area compares to the existing conditions. Compared to the existing conditions, the future Plan Area conditions show that the amount of high condition resources would increase (increase of 1,391 acres) as a result of the strategic and coordinated approach to mitigation implementation. This means that the future state of aquatic resources in the Plan Area would benefit from implementation of the SSHCP, as the established and re-established aquatic resources would be appropriately sited as required by Conservation Actions in Table 7-1, such that the overall conditions of Plan Area aquatic resources would be improved.

Table 35
Future Condition of Aquatic Resources in the Overall Plan Area

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Future Condition of Resources				Total
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	131.0	241.0	50.9	0	422.9
	Mixed Riparian Scrub	R2/R3	257.1	688.1	324.2	5.4	1,274.9
	Mixed Riparian Woodland	R2/R3	1,178.62	3,434.15	1,403.50	6.73	6,023.0
		Subtotal Riparian	*1,566.7*	*4,363.3*	*1,778.6*	*12.1*	*7,720.8*
Wetland Waters	Freshwater Marsh	PEM1	1,425.3	1,427.6	181.6	0	3,034.5
	Seasonal Wetland	PEM2	1,318.7	1,132.6	231.8	0	2,683.1
	Swales	R2/R3	839.2	419.1	26.4	0	1,284.7
	Vernal Pools	PEM2	3,362.52	1,093.38	72.26	0	4,528.1
		Subtotal Wetland Waters	*6,945.7*	*4,072.7*	*512.1*	*0*	*11,530.5*
Non-Wetland Waters	Open Water	POW	413.6	856.3	903.6	15.5	2,189.0
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	742.0	1,866.1	154.7	0	2,762.9
	Streams/Creeks (VPIH) Ephemeral	R4SB	2.6	46.1	5.5	0	54.2
		Subtotal Non-Wetland Waters	*1,158.2*	*2,768.5*	*1,063.8*	*15.5*	*5,006.1*
		Subtotal Wetland Waters and Non-Wetland Waters	*8,103.9*	*6,841.2*	*1,575.9*	*15.5*	*16,536.6*
		Grand Total[1]	**9,670.6**	**1,1204.4**	**3,354.4**	**27.6**	**24,257.3**

Note: 1. Table may not total precisely due to rounding.
Acreage totals in the ARP may not match precisely with acreage totals in the SSHCP. Factors that may result in differences between acreage figures in the ARP as compared to the SSHCP include: 1) The ARP only considers direct impacts where the SSHCP considers both direct and indirect impacts; 2) The ARP only includes jurisdictional wetlands for some land cover types where the SSHCP includes all wetlands; and 3) Slightly different Geographical Information System processes that result in small differences in totals.

Figure 38 Existing and Future Watershed Profiles of Aquatic Resources in the Plan Area



Tables 36 through 45 summarize the future condition of aquatic resources in each HUC-10 watershed following implementation of the SSHCP and Figures 39 through 48 are graphical depictions, comparing the existing to the future watershed conditions.

The watersheds with the largest amounts of impacts are the American River, Morrison Creek, and Sherman Lake–Sacramento River watersheds. Following SSHCP implementation of the prescribed mitigation program, the American River watershed would retain approximately the same amounts of aquatic resources, with only a loss of mine tailing riparian woodland. Mine tailing riparian woodland mitigation acreages would be compensated for in the form of mixed riparian woodland or mixed riparian scrub in watersheds outside the UDA, primarily within, but not limited to, the adjacent Deer Creek and Upper Cosumnes watersheds. Re-establishment and establishment requirements for all other aquatic resource types in the American River watershed would occur within the portion of its watershed that is outside the UDA. Despite the American River watershed having the largest proportion of expected impacts, aquatic resource abundance and diversity would be maintained and remain stable.

The Morrison Creek watershed in its future state would have an overall decrease in abundance of aquatic resources, as it would experience the largest amount of development within the UDA portion of the Plan Area. An inventory was taken of available land suitable for re-establishment and/or establishment within the Morrison Creek watershed in order to maximize the amount of mitigation replaced within watershed. This inventory identified approximately 50 acres of vernal pool, 30 acres of swale, and 50 acres of freshwater marsh re-establishment/establishment that is ecologically feasible within the Morrison Creek watershed. Remaining requirements for aquatic resource impacts within the watershed would be mitigated for in-kind within other adjacent watersheds. There would be a hierarchy of preference such that mitigation would be exhausted within the Morrison Creek watershed first. Mitigation would occur closest to the impact sites before exploring mitigation farther away.

The Sherman Lake–Sacramento River watershed in its future state would maintain the same aquatic resource abundance and diversity and would have a slight increase in condition. Re-establishment and/or establishment types of compensatory mitigation would occur within the portion of the watershed that is outside the UDA for all aquatic resource types.

The Deer Creek, Lower Cosumnes, Lower Dry Creek, and Upper Cosumnes watersheds in their future states all show increases in aquatic resource condition, resulting from the properly targeted preservation and compensatory mitigation strategy implemented through the SSHCP.

Table 36
Future Condition of Aquatic Resources in the American River Watershed

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Future Condition of Resources				Total
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	0	0	0	0	0
	Mixed Riparian Woodland	R2/R3	0	0	0.4	0	0.4
Subtotal Riparian			*0*	*0*	*0.4*	*0*	*0.4*
Wetland Waters	Freshwater Marsh	PEM1	0	1.6	0.4	0	2.0
	Seasonal Wetland	PEM2	0	22.6	0	0	22.6
	Swale	R2/R3	0	2.4	0.5	0	2.9
	Vernal Pools	PEM2	0	6.9	<0.1	0	6.9
Subtotal Wetland Waters			*0*	*33.5*	*0.9*	*0*	*34.4*
Non-Wetland Waters	Open Water	POW	0	0.48	2.17	0	2.65
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	0	2.72	2.88	0	5.60
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*0*	*3.2*	*5.1*	*0*	*8.3*
Subtotal Wetland Waters and Non-Wetland Waters			*0*	*36.7*	*6.0*	*0.0*	*42.7*
Grand Total[1]			**0**	**36.7**	**6.4**	**0**	**43.1**

Note: 1. Table may not total precisely due to rounding.

Figure 39 Existing and Future Watershed Profiles of Aquatic Resources in the American River Watershed

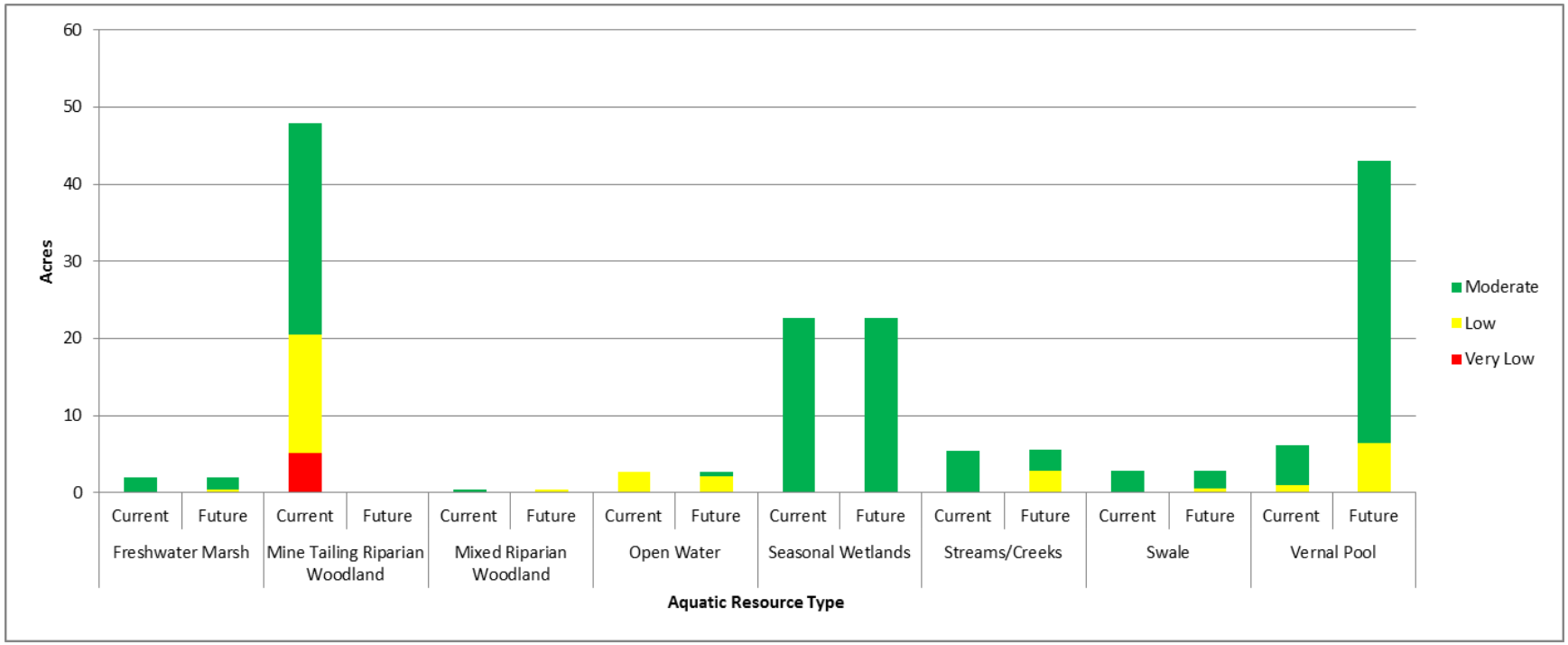


Table 37
Future Condition of Aquatic Resources in the Deer Creek Watershed

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Future Condition of Resources				Total
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0.20	<0.1	0	0.2
	Mixed Riparian Scrub	R2/R3	42.0	35.4	3.0	0	80.4
	Mixed Riparian Woodland	R2/R3	245.9	694.6	19.3	0	959.5
Subtotal Riparian			*287.9*	*730.2*	*22.3*	*0*	*1,040.1*
Wetland Waters	Freshwater Marsh	PEM1	24.0	14.3	0	0	38.3
	Seasonal Wetland	PEM2	94.6	100.1	5.0	0	199.7
	Swale	R2/R3	133.2	26.3	0.9	0	160.4
	Vernal Pools	PEM2	216.9	57.2	0.3	0	274.3
Subtotal Wetland Waters			*468.7*	*197.9*	*6.2*	*0*	*672.7*
Non-Wetland Waters	Open Water	POW	69.4	56.4	3.6	0	129.4
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	106.8	121.5	<0.1	0	228.3
	Streams/Creeks (VPIH) Ephemeral	R4SB	2.6	15.3	0.8	0	18.7
Subtotal Non-Wetland Waters			*178.8*	*193.2*	*4.4*	*0*	*376.4*
Subtotal Wetland Waters and Non-Wetland Waters			*647.5*	*391.1*	*10.6*	*0*	*1,049.10*
Grand Total[1]			**935.4**	**1,121.3**	**32.9**	**0**	**2,089.2**

Note: 1. Table may not total precisely due to rounding.

Figure 40 Existing and Future Watershed Profiles of Aquatic Resources in the Deer Creek Watershed

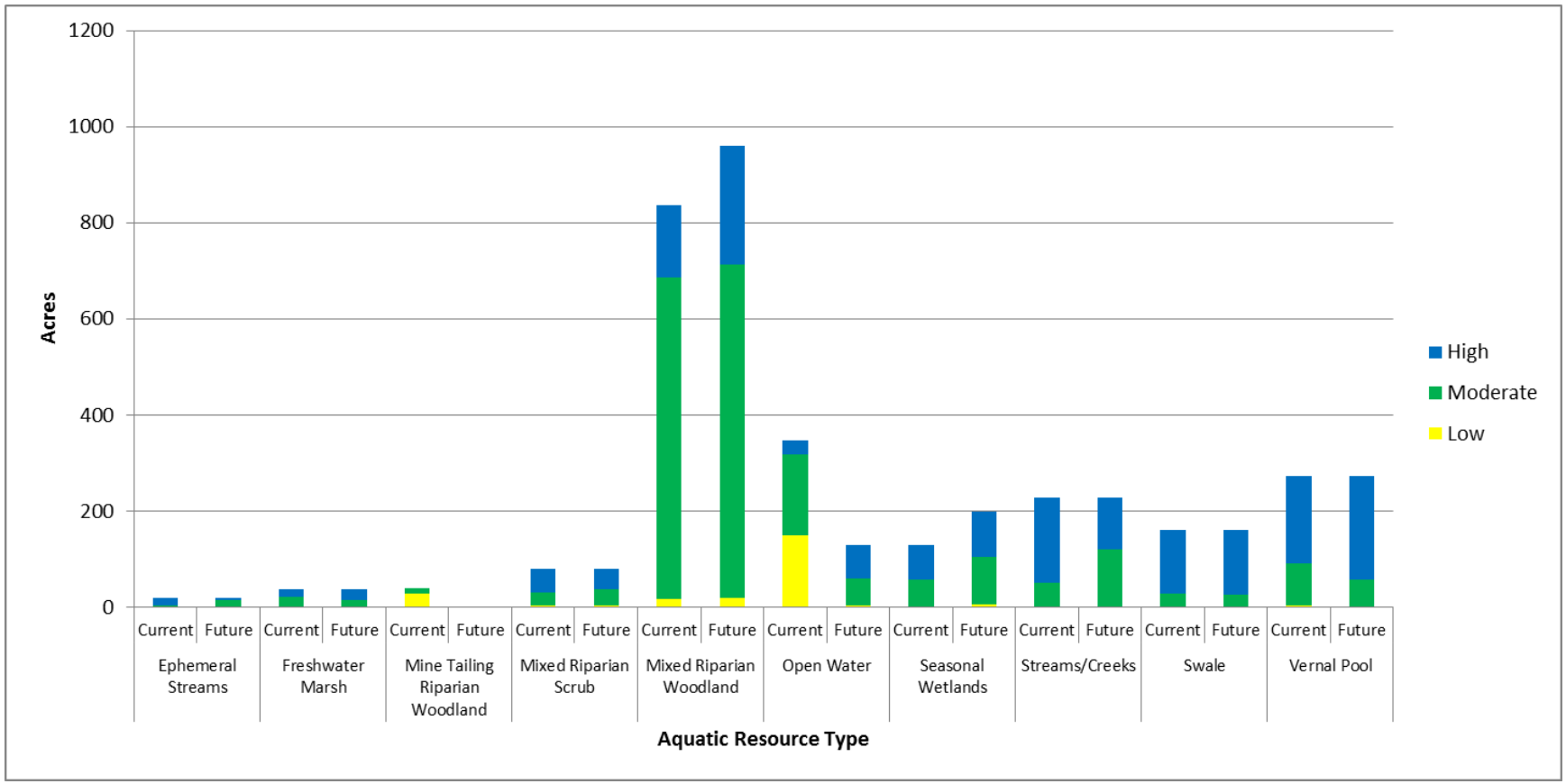


Table 38
Future Condition of Aquatic Resources in the Laguna Watershed

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Future Condition of Resources				Total
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	63.8	74.8	19.7	0	158.3
	Mixed Riparian Scrub	R2/R3	10.4	45.6	2.1	0	58.1
	Mixed Riparian Woodland	R2/R3	72.2	179.5	10.0	0	261.7
		Subtotal Riparian	*146.4*	*299.9*	*31.8*	*0*	*478.1*
Wetland Waters	Freshwater Marsh	PEM1	147.1	19.6	0.4	0	167.2
	Seasonal Wetland	PEM2	404.8	25.1	14.5	0	444.5
	Swale	R2/R3	404.1	113.7	0.3	0	518.0
	Vernal Pools	PEM2	1,949.0	70.3	7.4	0	2,026.7
		Subtotal Wetland Waters	*2,905.0*	*228.7*	*22.6*	*0*	*3,156.4*
Non-Wetland Waters	Open Water	POW	178.8	47.5	69.2	0	295.4
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	246.6	167.6	2.0	0	416.3
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
		Subtotal Non-Wetland Waters	*425.4*	*215.1*	*71.2*	*0*	*711.7*
		Subtotal Wetland Waters and Non-Wetland Waters	*3,330.4*	*443.8*	*93.8*	*0*	*3,868.1*
		Grand Total[1]	**3,476.8**	**743.7**	**125.6**	**0**	**4,346.2**

Note: 1. Table may not total precisely due to rounding.

Figure 41 Existing and Future Watershed Profiles of Aquatic Resources in the Laguna Watershed

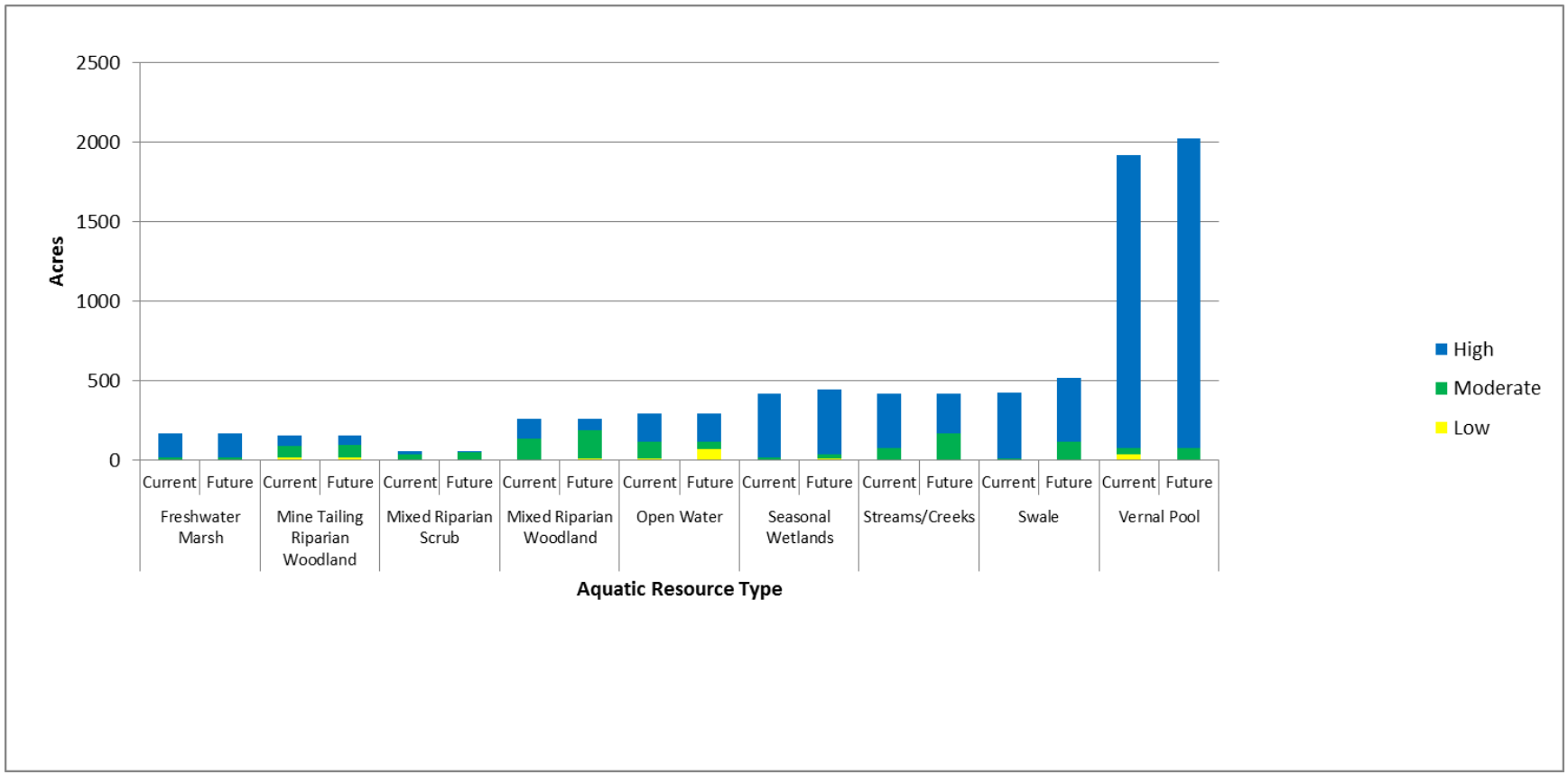


Table 39
Future Condition of Aquatic Resources in the Lower Cosumnes Watershed

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Future Condition of Resources				Total
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	17.3	0	0	17.3
	Mixed Riparian Scrub	R2/R3	159.8	122.8	7.4	0	290.0
	Mixed Riparian Woodland	R2/R3	401.5	1,264.0	243.4	0	1,908.9
		Subtotal Riparian	*561.3*	*1,404.1*	*250.8*	*0*	*2,216.2*
Wetland Waters	Freshwater Marsh	PEM1	1,056.2	134.4	3.9	0	1,194.5
	Seasonal Wetland	PEM2	350.2	262.7	3.4	0	616.3
	Swale	R2/R3	102.0	41.0	1.2	0	144.2
	Vernal Pools	PEM2	349.8	230.7	38.1	0	618.6
		Subtotal Wetland Waters	*1,858.2*	*668.8*	*46.6*	*0*	*2,573.60*
Non-Wetland Waters	Open Water	POW	31.6	270.4	360.9	0	663.0
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	139.6	203.4	2.0	0	345.0
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
		Subtotal Non-Wetland Waters	*171.2*	*473.8*	*362.9*	*0*	*1,008.0*
		Subtotal Wetland Waters and Non-Wetland Waters	*2,029.4*	*1,142.6*	*409.5*	*0*	*3,581.6*
		Grand Total[1]	**2,590.7**	**2,546.7**	**660.3**	**0**	**5,797.8**

Note: 1. Table may not total precisely due to rounding.

Figure 42 Existing and Future Watershed Profiles of Aquatic Resources in the Lower Cosumnes Watershed

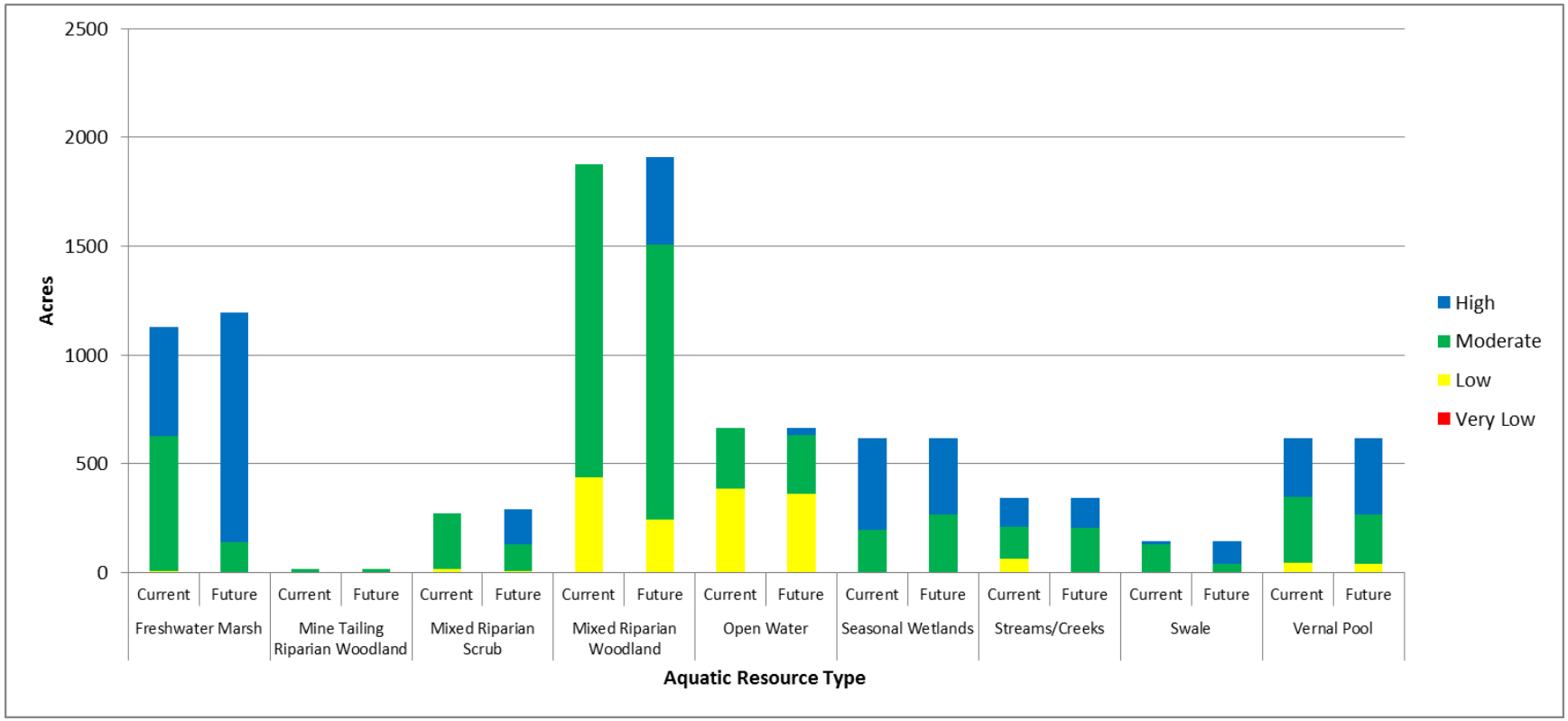


Table 40
Future Condition of Aquatic Resources in the Lower Dry Creek Watershed

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Future Condition of Resources				Total
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	9.9	31.8	5.4	0	47.1
	Mixed Riparian Woodland	R2/R3	15.7	332.6	52.3	0	400.6
		Subtotal Riparian	*25.6*	*364.4*	*57.7*	*0*	*447.7*
Wetland Waters	Freshwater Marsh	PEM1	18.8	26.5	2.2	0	47.5
	Seasonal Wetland	PEM2	90.4	39.3	4.3	0	134.0
	Swale	R2/R3	87.5	53.4	<0.1	0	141.0
	Vernal Pools	PEM2	229.1	88.2	2.1	0	319.4
		Subtotal Wetland Waters	*425.8*	*207.4*	*8.6*	*0*	*641.9*
Non-Wetland Waters	Open Water	POW	0	6.57	1.86	0	8.43
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	33.4	55.9	3.3	0	92.5
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
		Subtotal Non-Wetland Waters	*33.4*	*62.5*	*5.2*	*0*	*100.93*
		Subtotal Wetland Waters and Non-Wetland Waters	*459.2*	*269.9*	*13.8*	*0*	*742.8*
		Grand Total[1]	**484.8**	**634.3**	**71.5**	**0**	**1,190.5**

Note: 1. Table may not total precisely due to rounding.

Figure 43 Existing and Future Watershed Profiles of Aquatic Resources in the Lower Dry Creek Watershed

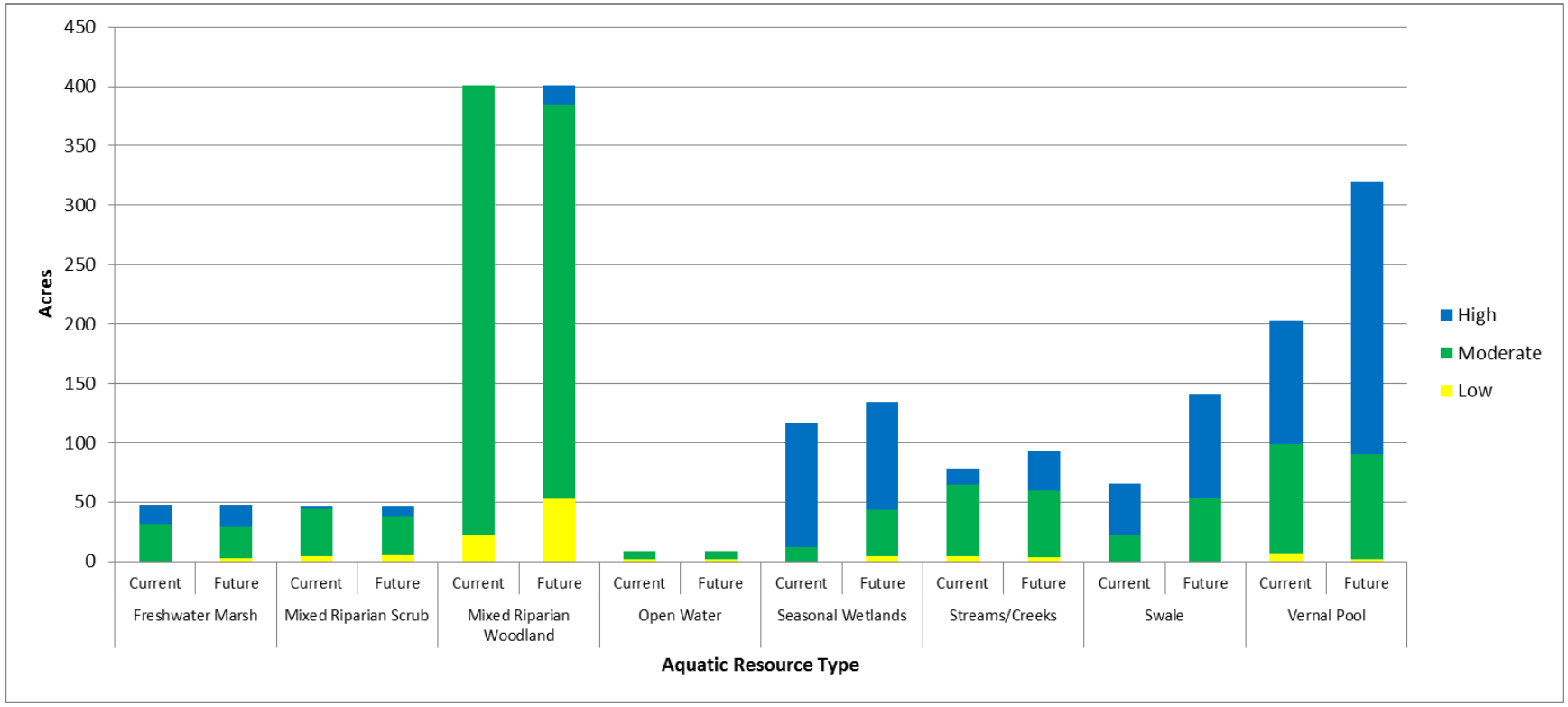


Table 41
Future Condition of Aquatic Resources in the Lower Mokelumne River Watershed

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Future Condition of Resources				Total
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	0	0.02	2.4	0	2.4
	Mixed Riparian Woodland	R2/R3	0	14.1	182.2	0	196.4
Subtotal Wetland Riparian			*0*	*14.1*	*184.6*	*0*	*198.8*
Wetland Waters	Freshwater Marsh	PEM1	0	20.9	0	0	20.9
	Seasonal Wetland	PEM2	0	0.01	0	0	0.01
	Swale	R2/R3	0	0	0	0	0
	Vernal Pools	PEM2	0	0.1	0	0	0.1
Subtotal Wetland Waters			*0*	*21.0*	*0*	*0*	*21.0*
Non-Wetland Waters	Open Water	POW	0	0	3.1	0	3.1
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	0	65.1	2.2	0	67.4
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
Subtotal Non-Wetland Waters			*0*	*65.1*	*5.3*	*0*	*70.5*
Subtotal Wetland Waters and Non-Wetland Waters			*0*	*86.1*	*5.3*	*0*	*91.5*
Grand Total[1]			**0**	**100.2**	**189.9**	**0**	**290.3**

Note: 1. Table may not total precisely due to rounding.

Figure 44 Existing and Future Watershed Profiles of Aquatic Resources in the Lower Mokelumne Watershed

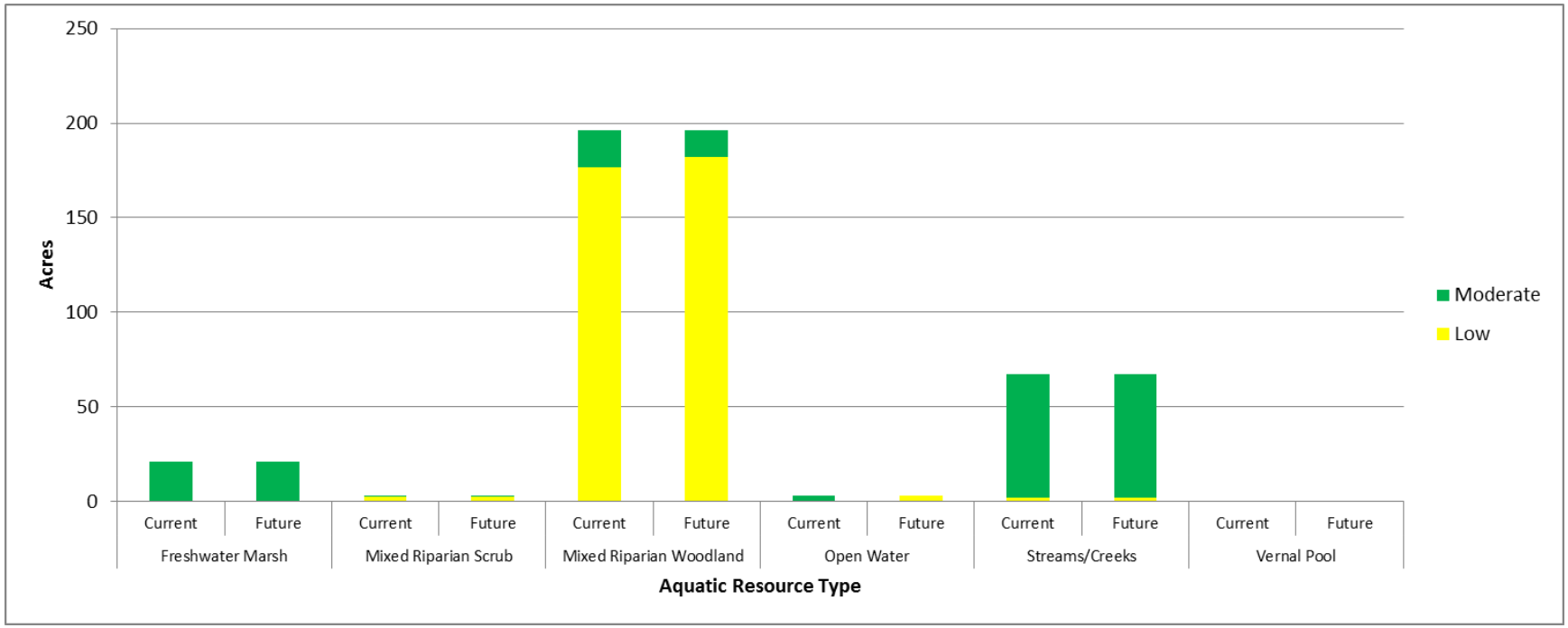


Table 42
Future Condition of Aquatic Resources in the Morrison Creek Watershed

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Future Condition of Resources				Total
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	1.61	0	1.61
	Mixed Riparian Scrub	R2/R3	3.2	11.2	6.3	0	20.7
	Mixed Riparian Woodland	R2/R3	0	54.5	48.1	0	102.6
		Subtotal Riparian	*3.2*	*65.7*	*56.0*	*0*	*124.9*
Wetland Waters	Freshwater Marsh	PEM1	63.8	228.5	22.8	0	315.2
	Seasonal Wetland	PEM2	0	24.5	14.4	0	38.9
	Swale	R2/R3	46.8	158.5	20.6	0	225.9
	Vernal Pools	PEM2	333.7	183.6	13.9	0	531.2
		Subtotal Wetland Waters	*444.3*	*595.1*	*71.7*	*0*	*1,111.2*
Non-Wetland Waters	Open Water	POW	0	19.4	59.0	0	78.4
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	0	30.2	35.2	0	65.4
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	30.8	4.7	0	35.6
		Subtotal Non-Wetland Waters	*0*	*80.4*	*98.9*	*0*	*179.4*
		Subtotal Wetland Waters and Non-Wetland Waters	*444.3*	*675.5*	*170.6*	*0*	*1,290.6*
		Grand Total[1]	**447.5**	**741.2**	**226.6**	**0**	**1,415.5**

Note: 1. Table may not total precisely due to rounding.

Figure 45 Existing and Future Watershed Profiles of Aquatic Resources in the Morrison Creek Watershed

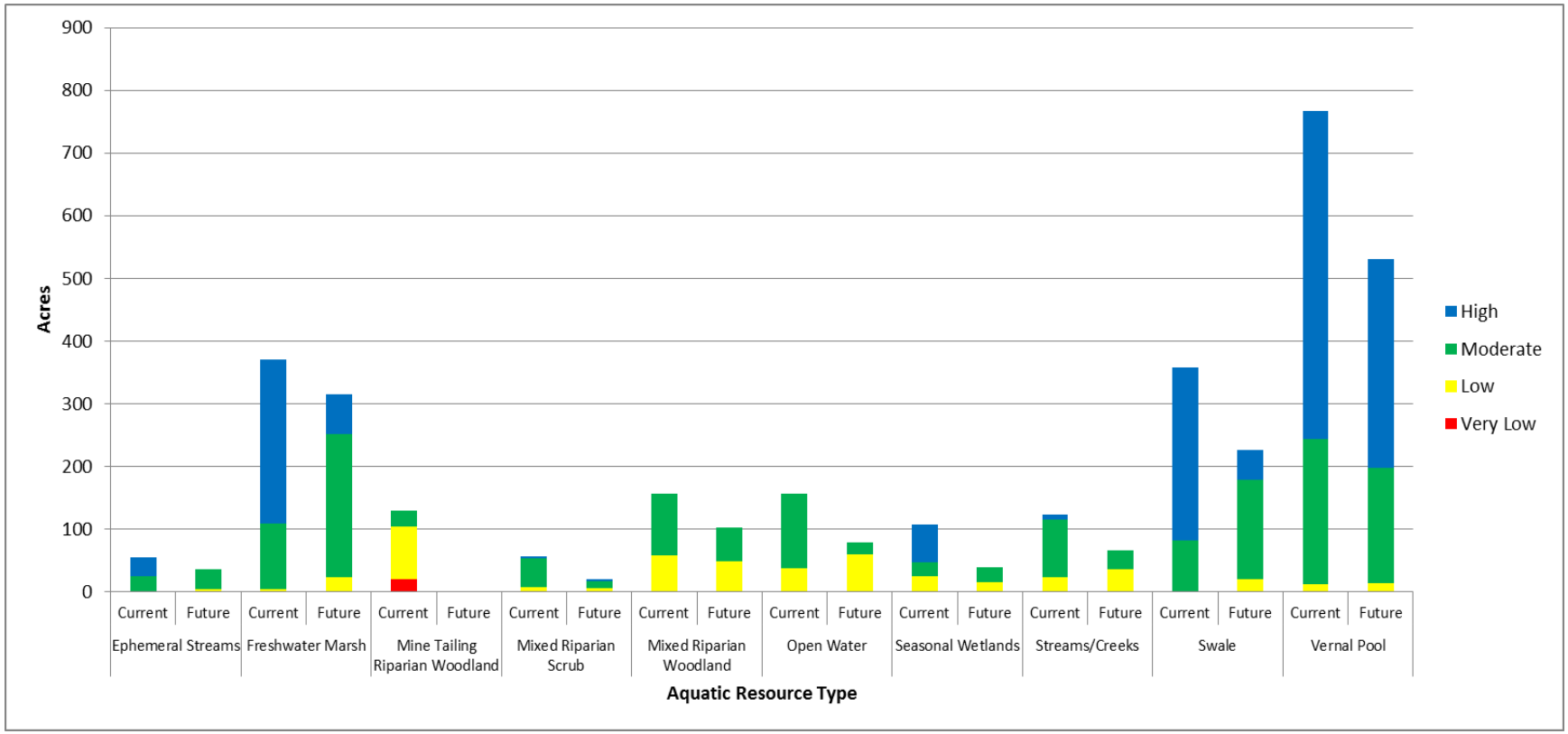


Table 43
Future Condition of Aquatic Resources in the Sherman Lake–Sacramento River Watershed

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Future Condition of Resources				Total
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	0	3.9	120.8	5.4	130.1
	Mixed Riparian Woodland	R2/R3	0	4.7	41.2	6.7	52.7
		Subtotal Riparian	*0*	*8.6*	*162.0*	*12.1*	*182.8*
Wetland Waters	Freshwater Marsh	PEM1	0	39.7	0	0	39.7
	Seasonal Wetland	PEM2	0	0.2	0	0	0.2
	Swale	R2/R3	0	1.4	0	0	1.4
	Vernal Pools	PEM2	0	5.3	0	0	5.3
		Subtotal Wetland Waters	*0*	*46.6*	*0*	*0*	*46.6*
Non-Wetland Waters	Open Water	POW	0	0	9.2	0	9.2
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	0	4.1	19.8	0	23.9
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
		Subtotal Non-Wetland Waters	*0*	*4.1*	*29.0*	*0*	*33.1*
		Subtotal Wetland Waters and Non-Wetland Waters	*0*	*50.7*	*29*	*0*	*79.7*
		Grand Total[1]	**0**	**59.3**	**191.0**	**12.1**	**262.5**

Note: 1. Table may not total precisely due to rounding.

Figure 46 Existing and Future Watershed Profiles of Aquatic Resources in the Sherman Lake–Sacramento River Watershed

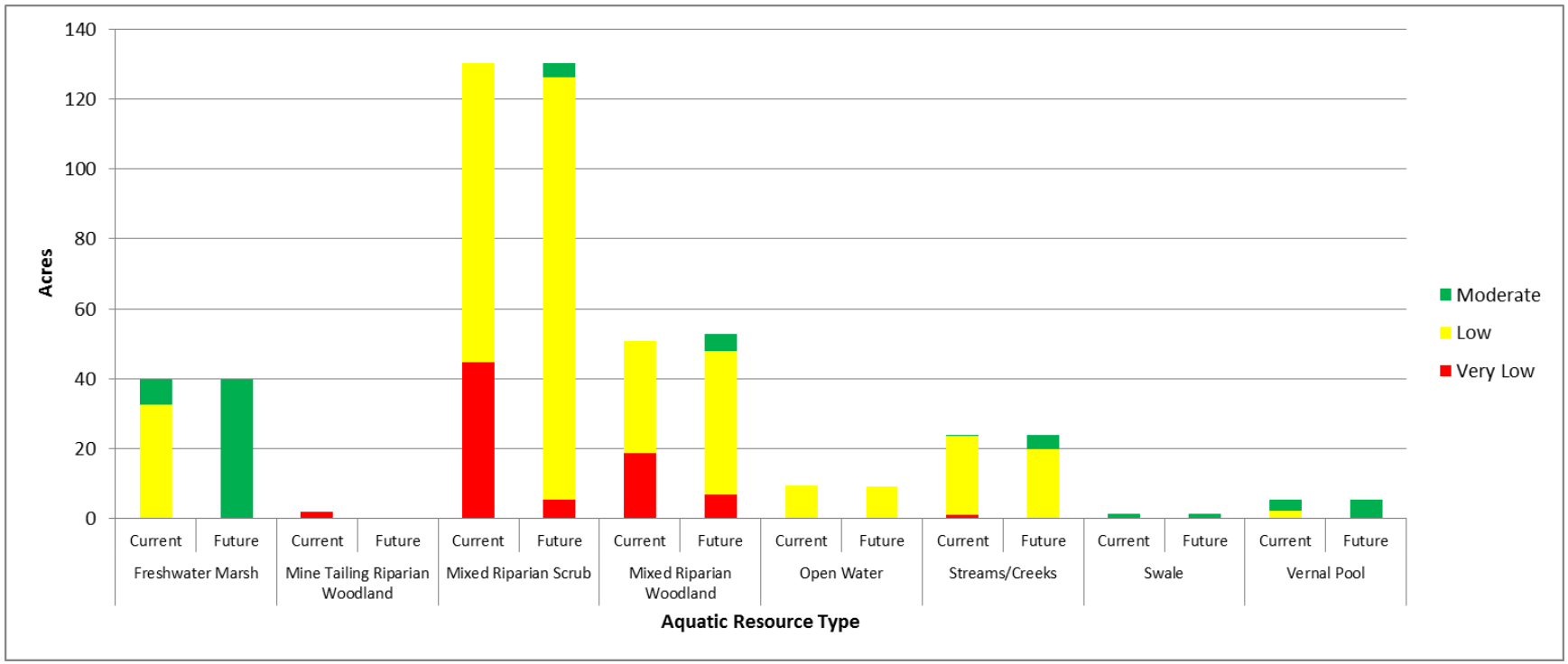


Table 44
Future Condition of Aquatic Resources in the Snodgrass Slough Watershed

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Future Condition of Resources				Total
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	0	0	0	0	0
	Mixed Riparian Scrub	R2/R3	0	369.6	176.9	0	546.4
	Mixed Riparian Woodland	R2/R3	0	522.0	802.5	0	1,324.5
		Subtotal Riparian	*0*	*891.6*	*979.4*	*0*	*1,870.9*
Wetland Waters	Freshwater Marsh	PEM1	27.0	919.5	150.7	0	1,097.2
	Seasonal Wetland	PEM2	0	615.4	184.5	0	799.9
	Swale	R2/R3	0	7.8	2.5	0	10.3
	Vernal Pools	PEM2	0	413.9	7.0	0	420.9
		Subtotal Wetland Waters	*27.0*	*1,956.6*	*344.7*	*0*	*2,328.3*
Non-Wetland Waters	Open Water	POW	0	389.9	313.8	15.5	719.2
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	25.7	1,043.0	86.9	0	1,155.7
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
		Subtotal Non-Wetland Waters	*25.7*	*1,432.9*	*400.7*	*15.5*	*1,874.9*
		Subtotal Wetland Waters and Non-Wetland Waters	*52.7*	*3,389.5*	*745.4*	*15.5*	*4,203.2*
		Grand Total[1]	**52.7**	**4,281.1**	**1,724.8**	**15.5**	**6,074.1**

Note: 1. Table may not total precisely due to rounding.

Figure 47 Existing and Future Watershed Profiles of Aquatic Resources in the Snodgrass Slough Watershed

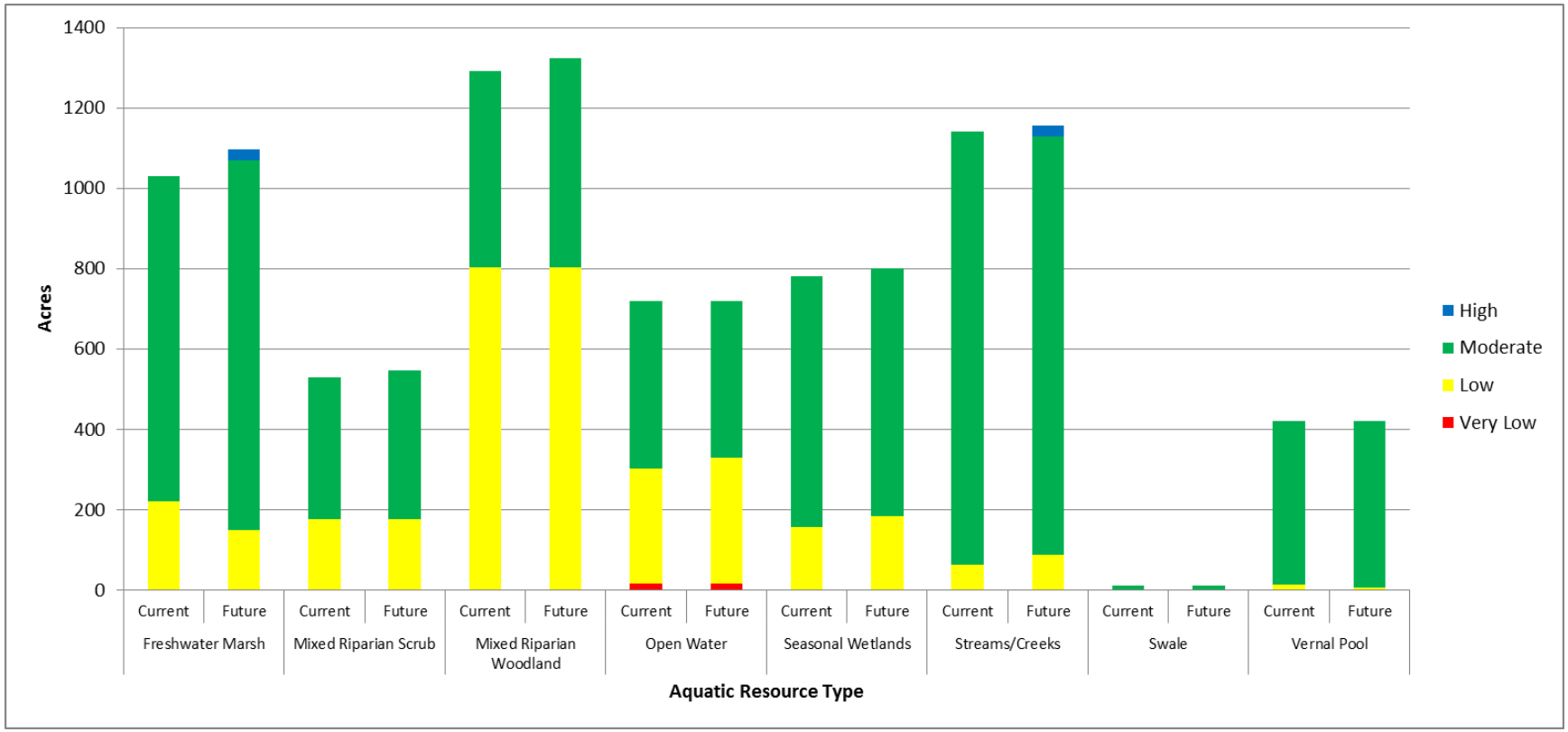
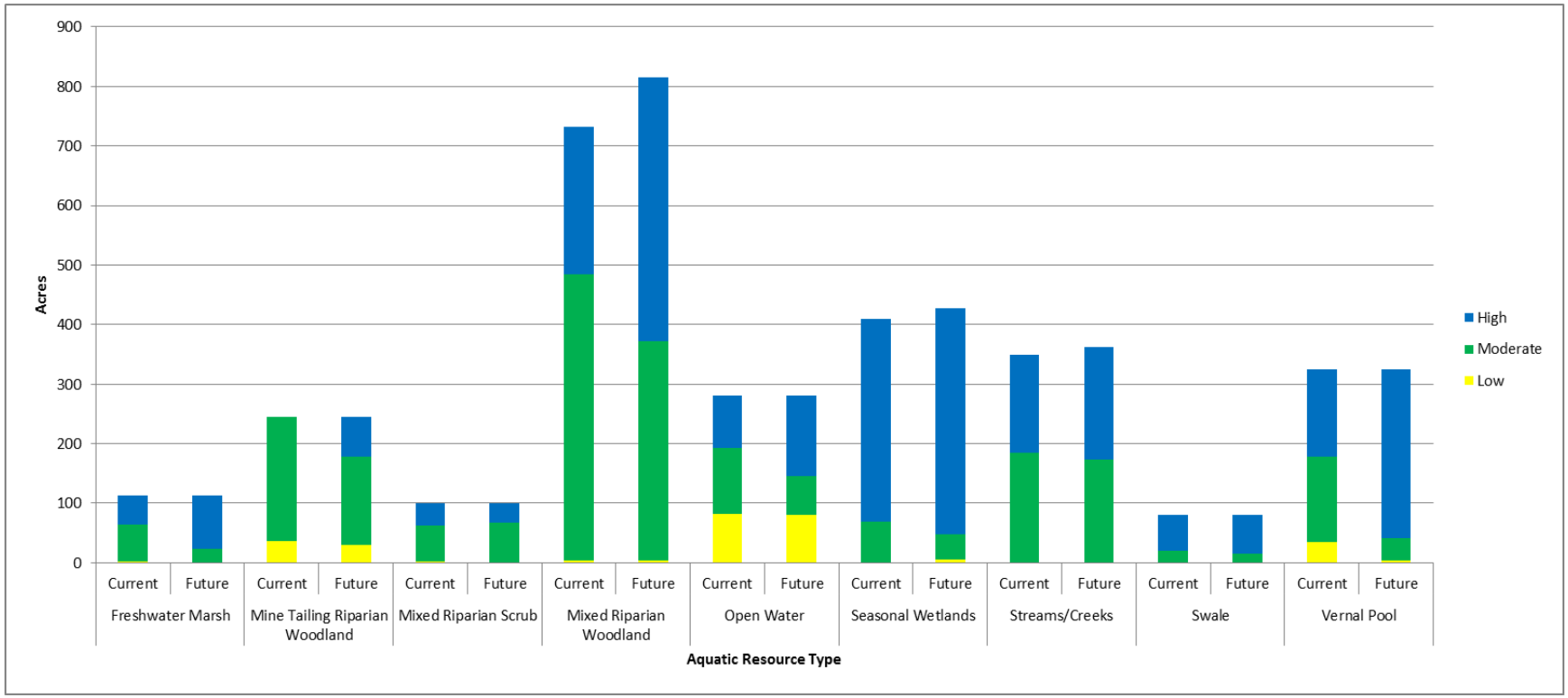


Table 45
Future Condition of Aquatic Resources in the Upper Cosumnes Watershed

Wetland or Non-Wetland Waters	SSHCP Land Cover Type (Common name)	Cowardin Class	Future Condition of Resources				Total
			High	*Moderate*	*Low*	*Very Low*	
			Acres	*Acres*	*Acres*	*Acres*	
Riparian	Mine Tailing Riparian Woodland	R2/R3	67.2	148.7	29.7	0	245.5
	Mixed Riparian Scrub	R2/R3	31.8	67.9	0	0	99.7
	Mixed Riparian Woodland	R2/R3	443.6	368.1	4.0	0	815.7
		Subtotal Riparian	*542.6*	*584.7*	*33.7*	*0*	*1,160.9*
Wetland Waters	Freshwater Marsh	PEM1	88.4	22.6	1.3	0	112.3
	Seasonal Wetland	PEM2	378.7	42.7	5.7	0	427.0
	Swale	R2/R3	65.7	14.6	0.3	0	80.6
	Vernal Pools	PEM2	284.1	37.2	3.4	0	324.7
		Subtotal Wetland Waters	*816.9*	*117.1*	*10.7*	*0*	*944.6*
Non-Wetland Waters	Open Water	POW	133.8	65.6	80.7	0	280.2
	Perennial or Intermittent Streams/Creeks	R2UB/R3UB	190.0	172.6	0.4	0	362.9
	Streams/Creeks (VPIH) Ephemeral	R4SB	0	0	0	0	0
		Subtotal Non-Wetland Waters	*323.8*	*238.2*	*81.1*	*0*	*643.1*
		Subtotal Wetland Waters and Non-Wetland Waters	*1,140.7*	*355.3*	*91.8*	*0*	*1,587.70*
		Grand Total[1]	**1,683.3**	**940.0**	**125.5**	**0**	**2,748.6**

Note: 1. Table may not total precisely due to rounding.

Figure 48 Existing and Future Watershed Profiles of Aquatic Resources in the Upper Cosumnes Watershed



In summary, the predicted future watershed profiles resulting from implementation of the SSHCP demonstrate aquatic resource abundance, diversity, and condition within the Plan Area would be maintained or improved. There would not be a net loss of aquatic resources in terms of acreage, aquatic resource diversity would be maintained, and the amount of high-condition resources within the Plan Area would be increased.

7 LOCAL AQUATIC RESOURCES IMPACT PERMIT APPLICATION PROCESS

7.1 Introduction

This section explains the local jurisdictions' Aquatic Resource Impact (ARI) Permit process and provides an overview of how Land Use Authority Permittees will issue ARI Permits to third-party project proponents under the ARP. This section also describes the permit application process for Plan Permittees, an explanation of specific requirements that must be satisfied by a project proponent prior to obtaining a permit, and in-lieu fee and land dedication requirements.

7.2 Submittal of Aquatic Resources Impact Permit Applications

7.2.1 Aquatic Resources Impact Permit Applications for Third-Party Project Proponents

Third-party project proponents are private project applicants that are seeking ministerial[11] or discretionary[12] permits from a Land Use Authority Permittee. Third-party project proponents shall submit their ARI Permit Application Package, the contents of which are described in Section 7.4.2, to the Land Use Authority Permittee with land use jurisdiction over their proposed project. Only the Land Use Authority Permittee with land use jurisdiction over a proposed project may issue ARI Permits to that project. For example, a project proposed by a third-party project proponent within the city limits of Rancho Cordova may only obtain an ARI Permit through the City of Rancho Cordova. The Land Use Authority Permittee will review the ARI Permit Application for consistency with all of the requirements that are described in this section and will provide the Implementing Entity, USACE, and RWQCB with a copy for tracking purposes.

Land Use Authority Permittees issue land use approval permits for a wide range of projects. Project applicants typically approach the information desk of the local jurisdiction (Land Use Authority Permittee) to inquire about land use approval permit requirements for their activity and the Land Use Authority Permittee will direct the customer to prepare the appropriate application. The Land Use Authority Permittee will review all local permitting applications to determine whether an activity will result in impacts to aquatic resources. If an activity would result in impacts to aquatic resources and

[11] A ministerial permit is a permit that requires little to no judgment on behalf of the Land Use Authority Permittee. An example of a ministerial permit is a building permit where as long as a parcel is zoned to allow the building of a structure the applicant only needs to follow building codes to construct their project.

[12] A discretionary permit is a permit that requires the use of judgement by a Land Use Authority Permittee before the permit can be issued. An example of a discretionary permit is a permit for a general plan amendment.

is otherwise not exempt, as defined by local aquatic resource protection ordinances, the applicant will be required to complete and submit an ARI Permit Application Package.

Potential CEQA Review

Many private third-party project proponent Covered Activities will require a land use approval and be subject to the California Environmental Quality Act (CEQA). For such activities, review of ARI Permit Applications should generally be undertaken concurrently with the CEQA environmental review. To facilitate this approach, the Land Use Authority Permittee should generally request that third-party project proponents submit an ARI Permit Application Package as part of the land use approval application and CEQA process.

There are many benefits to preparing the ARI Permit Application Package early in the planning process. First, submitting an ARI Permit Application Package during the land use approval/CEQA process will illustrate the various requirements required of the proposed project, and provide time for the project proponent to change the project description or to identify alternatives for CEQA analysis. Second, it will enable the CEQA document to refer to the project-specific requirements as identified in the ARI Permit Application. Finally, it will enable the local jurisdiction to provide early review of the ARI Permit Application for completeness. Based on a review of this initial information and a determination of ARI Permit requirements, the Land Use Authority Permittee can establish conditions of approval specifying ARI Permit conditions and fee requirements.

Each Land Use Authority Permittee is responsible for ensuring that an activity, upon issuance of an ARI Permit, fully complies with the terms of the permit.

7.2.2 Pre-Application Procedures

Prior to submitting an ARI Permit Application Package, third-party project proponents are encouraged to meet with the appropriate Land Use Authority Permittee. The purpose of the pre-submittal meeting is to allow the Land Use Authority Permittees to explain what information must be assembled for a specific project in support of the ARI Permit Application.

Pre-application meetings are also recommended to discuss AMMs and to determine if an applicant is proposing or is required to provide land dedication to offset all or a portion of their mitigation. Land dedications must be designed so that they comply with SSHCP/ARP AMMs as described in Chapter 5 of the SSHCP. Meeting early in the application process to discuss these criteria is strongly recommended to avoid delays in project approvals should land dedications not meet the criteria set forth in the SSHCP/ARP. A Land Use Authority Permittee may require a fee for these pre-submittal meetings and/or pre-submitted project proposal review.

7.2.3 Aquatic Resources Impact Permit Applications for Local Land Use Authority Permittees

Each local Land Use Authority Permittee that is participating in the SSHCP will adopt an aquatic resources protection ordinance requiring that permits be obtained by any party that is impacting aquatic resources within the SSHCP Plan Area. As such, all Land Use Authority Permittees are also required to comply with local aquatic resources protection ordinances and will complete an ARI Permit Application Package following the permit application process explained in Section 7.4. Each Land Use Authority Permittee will need to establish an internal process for ensuring that their projects are in compliance with the wetland protection ordinance. Because each Land Use Authority Permittee conducts project design and review independently, a single process that must be followed by all Land Use Authority Permittees will not be provided here. The completed ARI Permit Application Package will be submitted to the SSHCP Implementing Entity, USACE, and the RWQCB so that the project can be tracked for compliance monitoring purposes.

7.3 Master Plan Consistency with Aquatic Resources Impact Permits

Due to the large area that a master plan[13] encompasses, third-party project proponents initiating master plans are required to consult with their respective Land Use Authority Permittee about compliance with aquatic resources protection ordinances early in the master plan process. Ensuring that the master plan complies with the provisions of an aquatic resources protection ordinance will reduce the likelihood of project delays. Master plans must be designed to comply with the requirements of the aquatic resources protection ordinance.

Early consultation with the Land Use Authority Permittee will:

- Ensure that all required AMMs are addressed by the master plan.
- Ensure that on-site avoidance areas and Preserves are planned in appropriate locations to satisfy aquatic resources protection ordinance requirements.

7.4 Aquatic Resources Impact Permit Application Processing

An applicant will submit an ARI Permit Application Package for review and approval by the Land Use Authority Permittee following the process described in this section.

[13] A master plan is a document that broadly defines land use, circulation, and infrastructure for a specific area (Master Plan Area) and includes implementation measures that guide how development within the Master Plan Area will occur. The requirements for master plans can be fulfilled by a variety of planning tools, including specific plans, comprehensive plans, special planning areas, or any combination thereof.

7.4.1 Timing of Aquatic Resources Impact Permit Application Submittal

All applicants needing to obtain an ARI Permit must do so prior to any ground-disturbing activity; however, they can also obtain an ARI Permit earlier by the following means:

a. In conjunction with any Plan Permittee discretionary review;

b. For ministerial projects, prior to the issuance of any building or grading permit; or

c. In the absence of building or grading permits, prior to the Covered Activity being performed.

7.4.2 Components of the Aquatic Resources Impact Permit Application Package

Applicants must include the data, documentation, and/or exhibits as described in this section as part of the ARI Permit Application package. Land Use Authority Permittees designate, and may amend, the form and timing in which the following information must be provided; however, each Land Use Authority Permittee's ARI Permit Application Package must include each of the application components described herein. Land Use Authority Permittees may charge a fee to recover costs associated with review and processing of the ARI Permit Application. Applicants are responsible for the costs associated with preparation of the ARI Permit Application, including surveys. Forms for the ARI Permit Application Package will be made available by the Land Use Authority Permittees. The ARI Permit Application includes the components specified in the following subsections.

7.4.2.1 Applicant Information

This part of the application should include the applicant's name and contact information, property owner's name and contact information, and names and contact information for any consultants preparing materials in support of the ARI Permit Application.

7.4.2.2 Project Description and Map

The project description must include a written description of the location of the project site, including Assessor's Parcel Number(s), as well as a written description of all activities proposed within the project site. The written description must include the following:

- Timing of construction activity;
- Type of equipment used;
- Type of fill material and cubic yards, square feet, acreage, and where appropriate linear feet of each type of fill;

- Type and location of permanent and/or temporary impacts to aquatic resources.

The application must also include a site plan illustrating the exact location of the project site overlaid on an aerial photograph at a scale no smaller than 1 inch equals 100 feet (a scaling ratio of 1:1200) showing the location, width, depth, and length of all existing and proposed activities, including structures, roads, stormwater facilities, sewage treatment, installations, stockpiling areas, borrow sites and location of avoidance areas or on-site Preserves, if applicable, within the project site.

7.4.2.3 Aquatic Resources Delineation

"Aquatic resources delineation" means identifying the amount and boundaries of aquatic resources as defined in Section 3 of this document, including wetlands. A Land Use Authority Jurisdiction shall determine the probable existence of aquatic resources on the property involved in a development permit application. If aquatic resources are believed to exist on a property, the project applicant must prepare an aquatic resources delineation. All aquatic resources delineations shall be performed in accordance with the minimum standards set forth by the Sacramento District USACE and State Water Quality Control Board at the time of the delineation. All aquatic resources delineations shall be verified by the USACE. Aquatic resource delineations must be prepared by an individual or firm qualified to prepare them. All maps will be prepared using GIS technology and all shapefiles will be provided to the Land Use Authority Permittee for tracking purposes. When a USACE-verified and valid (i.e., non-expired) delineation for a project site already exists, that delineation can be used. Waters[14] (including wetlands) found to be present on site must be classified using the nomenclature system developed for the SSHCP (see SSHCP Appendix E).

7.4.2.4 Determination of Environmentally Equivalent or Superior Alternative

As described in greater detail in Section 5.2.2.1, if a complete avoidance alternative is not practicable, a DEESA will be prepared to ensure replacement of any lost functions and services to aquatic resources. The DEESA shall include the following information:

- A defined project area boundary and project area acreage.
- A detailed project description, including an overall project purpose statement, that demonstrates: (1) why an avoidance alternative is not practicable;[15] and (2) that the Covered Activity project minimizes direct and indirect effects to aquatic resources to the greatest extent practicable. This description would include information regarding any aquatic

[14] As defined in 33 CFR 328 or 40 CFR 230.2(s).

[15] Practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purpose.

resources on site that are proposed to be avoided. It would also include information regarding any impacted aquatic resources in the context of the regional Conservation Strategy of the SSHCP (e.g., a statement that the project proposal is consistent with the requirements of the SSHCP and any terms and conditions of the SSHCP ITPs).

- Amount (acres and linear feet and cubic yards) of unavoidable impacts (permanent, causing loss of waters, and temporary) to aquatic resources associated with the project, and amount of indirect impacts.
- A detailed description of project design features and mitigation measures that reduce impacts, including, but not limited to, impact minimization; on-site first-order stream realignment (as opposed to removal); and SSHCP BMPs, AMMs, and LID AMMs.
- A description and amount of SSHCP-required compensatory mitigation through re-establishment, establishment, and/or preservation. Compensatory mitigation must conform to the SSHCP Conservation Strategy and the minimum mitigation ratios required by the ARP and must be consistent with the USACE/EPA Mitigation Rule (33 CFR Part 332). The primary way development project activities would accomplish the required mitigation is the purchase of credits from an ILF program that would be used for the SSHCP Plan Area. (See Section 5.3 for specific compensatory mitigation requirements.)
- Demonstration that, although the proposed Covered Activity project would not completely avoid impacts to aquatic resources, with proposed design and compensation measures, the project would be environmentally equivalent or superior to that which would occur under a complete avoidance alternative without these measures, based on one or more of the following factors:
    - Effects on designated Critical Habitat and Core Recovery Areas
    - Effects on the diversity of aquatic resources within the Plan Area
    - Effects on vernal pool and other habitat connectivity and function of the SSHCP Preserve System
    - Effects on the condition of aquatic resources within the Plan Area
    - Effects on the abundance of aquatic resources within the Plan Area
    - Effects on Covered Species.

7.4.2.5 Proposed Compensatory Mitigation Plan

A proposed compensatory mitigation plan shall be included that explains how the project applicant will compensate for permanent and temporary impacts to aquatic resources that will occur, after efforts to avoid and minimize have been exhausted. There are three accepted methods for meeting compensatory mitigation requirements: (1) payment into an ILF program

approved by the USACE and that contains the impact site within its service area, (2) payment into a mitigation bank approved by the USACE and that contains the impact site within its service area, and/or (3) a permittee-responsible compensatory mitigation plan pursuant to local Land Use Jurisdiction Permittee ordinances that is in compliance with the Mitigation Rule. If all or part of the applicant's compensatory mitigation obligation will be satisfied via an ILF fund or through purchase of credits at a mitigation bank, the name and contact information for the ILF fund or the mitigation bank must be provided.

If an applicant is proposing permittee-responsible compensatory mitigation, the Implementing Entity must determine whether the proposed permittee-responsible compensatory mitigation is consistent with SSHCP AMMs described in SSHCP Chapter 5, Section 5.4, Conditions on Covered Activities, and with the biological goals and objectives described in Chapter 7 of the SSHCP (Table 7-1, Biological Goals, Measureable Objectives, and Conservation Actions). It should be noted that the SSHCP has fairly strict criteria that must be adhered to when siting Preserves, and it is possible that a site proposed for permittee-responsible compensatory mitigation will not meet the criteria for an SSHCP Preserve. If it is determined that permittee-responsible compensatory mitigation is not consistent with the requirements of the SSHCP, the applicant may wish to work with the Implementing Entity to find alternative sites that will support the SSHCP Conservation Strategy.

An applicant must provide the following information in support of permittee-responsible compensatory mitigation:

The compensatory mitigation plan consists of two parts: baseline information for the site and a conceptual compensatory mitigation plan. If off-site aquatic resource compensatory mitigation is proposed, baseline information for both the project site and mitigation site is required.

Baseline information shall include:

- Aquatic resources delineation as described pursuant to local aquatic resources protection ordinances;
- Description and maps of land cover types and vegetative conditions at the site;
- Description and maps of hydrological conditions at the site;
- Description of soil conditions at the site based on an on-site analysis and available soils information from online or published sources such as the Natural Resources Conservation Service's soils maps;
- A topographic map of the site; and
- A functional assessment or condition of the existing aquatic resources.

The contents of the compensatory mitigation plan shall be consistent with the USACE's Regional Compensatory Mitigation and Monitoring Guidelines for the South Pacific Division (2015), Appendix D, and include:

- Title page;
- Contributor page;
- Distribution page;
- Table of contents;
- Brief description of proposed compensatory mitigation project and proposed source of compensatory mitigation;
- Determination of goals and objectives of the proposed project. Specific criteria shall be provided for evaluating whether or not the goals and objectives of the compensatory mitigation project are being met. Such criteria may include water quality standards, survival rates of planted vegetation, species abundance and diversity targets, habitat diversity indices, or other ecological, geological, or hydrological criteria;
- A description of all permanent and temporary impacts (acreage and linear feet) that require compensatory mitigation pursuant to local aquatic resources protection ordinances;
- Description of site selection criteria such as watershed overview, landscape setting and position, and site-specific information, including consistency with the site selection guidance provided in the ARP (Appendix D);
- Other baseline information, such as a map showing locations of permanent and/or temporary impact and compensatory mitigation sites; map showing proposed preserves and setbacks; delineation of aquatic resources; functional/condition assessment, if appropriate; species of concern (federal and/or state); cultural resources; existing and planned land uses within and surrounding the proposed compensatory mitigation sites(s); existing site topography/elevations; aerial photos, land uses, site changes (deep ripping, impoundments, channel straightening or realignment); interviews with adjacent landowners, ranchers, land managers regarding locations of seeps, observations of flood events, trespassing/vandalism, opportunities for education and outreach.
- Written specifications for the compensatory mitigation project shall be provided. The specifications shall include the proposed construction sequence; grading and excavation details; water and nutrient requirements for planting; specification of substrate stockpiling techniques; and planting instructions, as appropriate. These written specifications shall be accompanied by detailed site diagrams, scaled cross-sectional drawings, topographic maps showing slope percentage and final grade elevations, and any other drawings appropriate to show construction techniques or anticipated final outcome;

- Discussion and map of plant material to be planted and planting densities;
- Preliminary drainage plan identifying location of proposed drainage facilities, including detention structures and water quality features (e.g., swales);
- Discussion of water sources for all aquatic resources on the site;
- Project schedule;
- A monitoring and management program to measure the success of the compensatory mitigation project pursuant to local aquatic resources protection ordnances. The monitoring and management program must include the following:
    - The compensatory mitigation project shall be monitored for a period necessary to determine if the project is meeting its performance standards, and to determine if measures are necessary to ensure that the compensatory mitigation project is accomplishing its objectives. Compensatory mitigation projects are required to have a minimum monitoring period of 5 years. For aquatic resources with slow development rates (e.g., vernal pools and riparian habitats) a monitoring period of more than 5 years is required. Monitoring periods may be extended if performance standards are not being met. Before determining success, there should be at least two consecutive annual monitoring reports where all the performance standards are met without human intervention (e.g., artificial irrigation).
    - Monitoring shall be designed to measure the performance standards outlined in the compensatory mitigation plan.
    - A monitoring protocol shall be included outlining how the monitoring data will be evaluated by agencies that are tracking the progress of the project.
    - Monitoring reports shall be submitted annually, or on a pre-arranged alternate schedule, for the duration of the monitoring period.
    - Monitoring reports shall analyze the results of monitoring, documenting milestones, successes, problems, and recommendations for corrective and/or contingency actions to ensure success of the compensatory mitigation project.
- A contingency plan that identifies potential courses of action, and any corrective measures to be taken when monitoring or evaluation indicates project performance standards are not being met.
- A monitoring and management program to measure and maintain the long-term sustainability of the compensatory mitigation project in perpetuity. Monitoring and management programs shall be consistent with established practices of the SSHCP and ARP and information collected in a manner that allows for seamless integration into the SSHCP database.

7.4.2.6 Financial Assurances for Permittee-Responsible Compensatory Mitigation

A project applicant proposing permittee-responsible compensatory mitigation shall submit itemized cost estimates showing required financial assurances pursuant to local aquatic resources protection ordinances, including cost estimates associated with performance and maintenance assurances.

7.4.2.7 Description of How the Project Complies with SSHCP Avoidance and Minimization Measures

Project applicants using the SSHCP must document how the proposed project will comply with SSHCP AMMs described in SSHCP Chapter 5, Section 5.4. See the SSHCP AMMs worksheet attached to the SSHCP permit application package.

7.5 Review for Completeness

The Land Use Authority Permittee will compare the ARI Permit Application Package against a Project Review Checklist, to confirm that all requirements have been met, including requirements such as setbacks and other AMMs. The Land Use Authority Permittee's review process may be subject to the processing time and requirements of the Permit Streamlining Act (Government Code Section 65920 et seq.). For most projects, the Land Use Authority Permittee will review the ARI Permit Application Package for completeness within 30 days of receipt of a complete ARI Permit Application package. The Land Use Authority Permittee or Implementing Entity may extend the review period for large or potentially complex projects up to an additional 30 days by providing written notice to the applicant. The Land Use Authority Permittee may continue to extend the review period after written notice until the Land Use Authority Permittee deems that a SSHCP permit application package is complete.

The Land Use Authority Permittee is also authorized to close ARI Permit Applications when they determine that the applicant has failed to provide requested information within a reasonable period. In such an event, the Land Use Authority Permittee shall provide written notice that the ARI Permit Application will be closed within 30 days unless all required materials are submitted.

7.6 Assessment of Impacts

After a complete ARI Permit Application has been submitted, the involved Land Use Authority Permittee shall prepare an assessment of aquatic resource cover type impacts that would result from the project.

7.6.1 Method for Calculating Impacted Acreage

The Land Use Authority Permittee or Implementing Entity will prepare an impact assessment that identifies the location and amount of each aquatic resource cover type that will be directly impacted as a result of implementing an activity. Permanent losses of aquatic resources will be calculated by overlaying the map generated to identify project impacts onto the wetlands delineation. If any portion of a wetland land cover type is impacted, then the entire feature is considered to be directly impacted. The impact assessment will include both a map depicting the area of impact and table(s) quantifying the acres of impact to each land cover type. The results will be used to determine the required mitigation to offset impacts.

7.6.2 Appealing the Impact Assessment

An applicant has the right to appeal the impacts assessment made by a Land Use Authority Permittee. Written objections must be filed with the Land Use Authority Permittee within 30 calendar days of receiving the initial impact assessment, and must be accompanied by data supporting the appeal, such as surveys, aerial photos, maps, or resource agency-verified delineations. The Land Use Authority Permittee has 30 calendar days from the receipt of the appeal to respond. Disagreements that cannot be resolved between the Land Use Authority Permittee staff and applicants will be decided by the Land Use Authority Permittee's governing Board or Council.

7.7 State and Federal Agency Review

While an ARI Permit is required as a condition of local Aquatic Resource Protection Ordnances, the ARI Permit Application is also used to satisfy state and federal aquatic resource permitting requirements.

Programmatic General Permit

As discussed below in Section 8, a project that does not exceed 2 acres of loss of waters, and/or more than 500 linear feet of perennial, intermittent, or third or higher order ephemeral streams, unless this linear foot limit is waived in writing by the USACE, can use a Programmatic General Permit to satisfy state and federal aquatic resource permitting requirements. The ARI Permit Application has been designed to provide all of the information necessary to process a Programmatic General Permit. Because the local Land Use Authority Permittees are authorized to issue Programmatic General

Permits on behalf of the USACE and the RWQCB, no further state or federal resource agency review of the application is required.

Letter of Permission and Standard Permits

Projects that exceed the aquatic resource impact thresholds set for the Programmatic General Permit will be required to seek either a Letter of Permission or a Standard Permit from the USACE as explained in further detail in Section 8 below. Similarly to the Programmatic General Permit the ARI Permit Application has been designed to provide all of the information necessary to process a Letter of Permission or Standard Permit. Unlike the Programmatic General Permit, a Letter of Permission or a Standard Permit cannot be issued by the Land Use Authority Permittees. All ARI Permit Applications completed for projects that exceed the Programmatic General Permit threshold will be submitted to the USACE and RWQCB for review and issuance of either a Letter of Permission or Standard Permit depending on the size of impacts to aquatic resources.

7.8 Fees

Once a project receives a draft compliance determination letter, the Land Use Authority Permittee will calculate fees based on the project impacts. Once impacts are calculated, they must be reported to the SSHCP Implementing Entity, if the project applicant is using the SSHCP to satisfy mitigation obligation, so they can be tracked for compliance with the Plan's stay-ahead provision (see Chapter 9 of the SSHCP). Fees are subject to automatic adjustments to allow for fluctuating land values and other mitigation-related costs. Annual adjustments will be made on or before March 15 of each calendar year, and other adjustments may be made during periodic audits. Table 12-5, Development Fees Used in the SSHCP Economic Model, in SSHCP Chapter 12 sets forth the initial SSHCP development fee structure.

7.8.1 SSHCP Development Fees

SSHCP Development Fee Payment Timing

Mitigation for project impacts, whether through payment of the SSHCP development fee, use of conservation or mitigation bank credits, or by permittee-responsible compensatory mitigation, must occur prior to land disturbance. For master planned projects, an applicant can choose to pay fees for a unit of land to be impacted (a phase or portion of a larger project) rather than paying fees for the full project area at one time. Project proponents that pay fees in advance of issuance of local Land Use Authority permits are subject to provisions of the "catch-up fee ordinance" as described in Chapter 9 of the SSHCP. This ordinance states that if a project proponent pays fees prior to issuance of a permit and fees increase before the permit is issued, the project proponent will pay the difference between what was originally paid and the amount of the fee increase. Fee payments are final and nonrefundable and remove any need for land dedication in lieu of fees.

8 AQUATIC PERMITTING PROGRAM

This section describes how the local permitting program contained in the ARP complements and combines with an anticipated federal and state permitting strategy to provide a comprehensive permit program for the Plan Area. Numerous federal and state regulatory agencies (USACE, RWQCB, and CDFW) have aquatic resources permitting authority over Covered Activities within the Plan Area. The SSHCP and ARP's local permitting program and comprehensive, long-term watershed approach is designed to enable these regulatory agencies to shorten permitting timelines and improve the protection and management of aquatic resources in the Plan Area.

Since many species covered under the SSHCP are closely associated with aquatic resources, state and federal aquatic resources regulatory programs can use the SSHCP framework to develop more efficient permitting processes for SSHCP Covered Activities. In comparison to building upon the ARP's framework and local permitting program, the project-by-project application review currently employed within the Plan Area does not provide as comprehensive an ability for the regulatory agencies to evaluate aquatic resources impacts and compensatory mitigation at a watershed scale.

The SSHCP and ARP are expected to provide the opportunity to increase permitting efficiency, inclusive of the development of the USACE's CWA Section 404 permitting strategy, which could include multiple permit instruments and/or processes, including a GP(s), an LOP, and an abbreviated SP process. The USACE is a cooperating agency on the USFWS' Environmental Impact Statement (EIS) under NEPA being developed for the SSHCP. The USACE anticipates using the EIS as a programmatic document and would incorporate analysis from it to the maximum extent possible to address compliance with NEPA associated with CWA Section 404 permitting for future SSHCP Covered Activities.

Parallel to the USACE's permitting strategy, the RWQCB and CDFW have opportunities to increase the efficiency of their permitting processes, while improving the protection and management of aquatic resources in the Plan Area. The RWQCB could issue a programmatic CWA Section 401 Water Quality Certification (WQC) for the USACE's GP(s), and adopt a more efficient WQC approach for projects associated with USACE's LOP and SP processes. The RWQCB could also adopt a more efficient Waste Discharge Requirement (WDR) approach for waters of the state. The CDFW could issue a Master LSA or Long-Term LSA for activities and adopt a more efficient individual SAA process. The RWQCB and CDFW are cooperating agencies on the Environmental Impact Report (EIR) under CEQA being developed for the SSHCP, and therefore would be able to use the EIR as a programmatic document, and incorporate analysis from it to address compliance with CEQA associated with future SSHCP Covered Activities.

Final decisions on permit strategies and instruments would be made by the USACE Sacramento District, RWQCB, and CDFW. As such, the anticipated vision described in this document is preliminary, but has been reviewed in concert with the various agencies and articulates what is a representative, common outlook.

8.1 General Permit Approach

8.1.1 USACE 404 General Permit and the Local Permit Program

The USACE issues GPs for activities with no more than minimal individual and cumulative impacts on the aquatic environment. GPs are issued on a nationwide, regional, and programmatic basis. PGPs are based on a local or state program that protects aquatic resources. The SSHCP Plan Permittees are seeking a PGP from the USACE for SSHCP Covered Activities within the Plan Area.

8.1.1.1 CWA Section 404 General Permit Overview

If a PGP approach is adopted by the USACE, the PGP would be established for SSHCP Covered Activities with minimal individual and cumulative environmental impacts. The PGP would be premised on the SSHCP, ARP and Aquatic Resources Protection Ordinances that would be adopted by the County of Sacramento, the Cities of Galt and Rancho Cordova and the Implementing Entity. The ordinances would provide the legal structure for the Land Use Authority Permittees and Implementing Entity to implement the local aquatic program. Each proponent proposing to verify a project under the PGP would then submit an application to the Land Use Authority Permittees or Implementing Entity, depending on who has jurisdiction over the project, to discharge dredged or fill material into waters of the United States and waters of the state, and would receive verification from the Land Use Authority Permittees or Implementing Entity for qualified Covered Activities. It would be the Land Use Authority Permittees' or Implementing Entity's responsibility to determine consistency with the SSHCP, the ARP, and the aquatic resources ordinance, depending on who has jurisdiction over the project. The Land Use Authority Permittees and Implementing Entity would submit reports to the USACE at regular intervals for Covered Activity projects approved under the PGP. The PGP would be valid for a period of 5 years, with the potential for reauthorization by the USACE if the program is in compliance with all requirements of the SSHCP, ARP, and PGP. The USACE also has the ability to suspend or revoke GPs (either PGPs or RGPs) in accordance with 33 CFR 325.7 in response to compliance issues and/or a determination that use of the GPs has exceeded minimal individual and cumulative adverse impacts to waters of the United States.

An alternative (or, potentially future addition) to the PGP approach is the establishment of an RGP for SSHCP Covered Activities. Like a PGP, a RGP would only authorize activities substantially similar in nature with minimal individual and cumulative environmental impacts. The main difference between a PGP and RGP is that a PGP is founded upon an existing program

(federal, state or local) and is designed to avoid duplication with that program(s). As envisioned in the context of the ARP, this is anticipated to involve the USACE's issuance of a PGP for use by the Land Use Authority Permittees and Implementing Entity in verifying its use to authorize a project. The USACE also has discretion to issue a PGP that provides that the USACE review and verify authorizations for certain activities or levels of activity, should it be necessary to ensure a PGP meets the standard of minimal individual and cumulative environmental impacts. Under an RGP each project proponent proposing to authorize a project via the RGP would submit a request for verification to the appropriate SSHCP Land Use Authority Permittees or Implementing Entity, who would act as a "clearinghouse" for the permit applications by conducting the initial screening process to verify project consistency with the SSHCP and ARP. The project applications would then be submitted to the USACE, who would review the application requests under the RGP to determine compliance and make permit decisions. The USACE also has the discretion to specify types and/or levels of activities under a RGP that are "non-notifying," such that no pre- or post-project notification or reporting would be necessary between the project proponent and/or SSHCP "clearinghouse" and the USACE. The RGP would be valid for a period of 5 years, with the potential for reauthorization by the USACE if the program is in compliance with all requirements of the SSHCP, ARP, and terms and conditions of the RGP. The USACE also has the ability to suspend or revoke GPs (either PGPs or RGPs) in response to compliance issues and/or a determination that use of the GPs has exceeded minimal individual and cumulative adverse impacts to waters of the United States.

Under either permitting approach, application for use of these GPs is voluntary. Covered Activity projects that would discharge dredged or fill material into waters of the United States and meet the terms and conditions of the USACE GP(s) are eligible, but not obligated, to apply for verification under the GP(s).

8.1.1.2 General Permit Proposal and Basis for General Permit Acreage Threshold

The SSHCP Plan Permittees are developing a local aquatic resources program that they anticipate would support the USACE's issuance of a PGP for discharge of dredged or fill material into waters of the United States that would cause no more than minimal individual and cumulative environmental impacts. This section is written to express how the SSHCP Plan Permittees would envision a proposed PGP, whose final terms and conditions would be determined by the USACE. To qualify for use of the PGP, the loss of waters of the United States, including wetland waters of the United States, resulting from a single and complete Covered Activity project is envisioned by the SSHCP Plan Permittees to not exceed 2 acres of loss of waters, and/or more than 500 linear feet of perennial, intermittent, or third or higher order ephemeral streams, unless this linear foot limit is waived in writing by the USACE.

In addition to a specific acreage limit of loss of waters for any given single project, the SSHCP PGP overall impact amounts would be "capped" over a 5-year implementation term. This Plan Area-wide impact acreage cap would be set at 155 acres of loss of wetlands within the Plan Area per 5-year term of the PGP. Assuming the PGP is reauthorized at 5-year intervals by the USACE, this cap would be repeated approximately nine times between the time of the SSHCP's approval and the end of its 50-year term.

The SSHCP Covered Activities fall into eight general categories:

- Urban Development in the UDA
- Mining in the UDA
- Rural Transportation Projects
- Recycled Water Projects
- Covered Activities in Preserve Setbacks in the UDA
- Covered Activities in Stream Setbacks in the UDA
- SSHCP Preserve System Covered Activities
- Covered Activities in the Laguna Creek Wildlife Corridor of the Preserve System.

Covered Activities allowed under each of the above-listed categories are described in detail in the SSHCP in Section 5.2.

As described above, to qualify for use of the SSHCP PGP, the proposed loss of waters of the United States resulting from a single and complete Covered Activity project could not exceed a total of 2 acres and/or 500 linear feet of perennial, intermittent, or third or higher order ephemeral streams, unless this linear foot limit is waived in writing by the USACE. The per-project acreage threshold of the SSHCP PGP is a higher acreage amount than the typical 0.5-acre threshold of the USACE's Nationwide Permit Program.

The following projects and activities are envisioned by the SSHCP Plan Permittees to not be eligible for authorization under the anticipated SSHCP PGP because they are not covered by the SSHCP Permits:[16] agricultural projects; agricultural-residential development outside the UDA; trail systems outside the UDA; airport operations and expansion outside the UDA; rural infrastructure that is not identified as a Covered Activity; landfills, mining outside the UDA; oil and gas extraction or production; projects related to the Cosumnes River; projects that have received state and/or federal (as applicable) aquatic resource permits in advance of the official

[16] For a complete description of activities and actions not covered by the SSHCP permits, please see Section 5.3 of the SSHCP.

implementation date of the SSHCP; existing or proposed preserves not under SSHCP Management; establishment, of new and management and operation of existing mitigation and conservation banks; pesticide use; dam construction or removal; water diversion; wind energy; power lines outside the UDA; and emergency, safety, and police services. Covered Activities that do not require a development, grading, building, or other construction permit are eligible, but not obligated, to be authorized under the SSHCP PGP.

8.1.2 Section 401 CWA Water Quality Certification, State Board General Order

The SSHCP Plan Permittees are seeking a programmatic Section 401 CWA Water Quality Certification from the RWQCB. As with the proposed USACE General Permit (described above in Section 7.1.1.2), the programmatic 401 Certification would authorize SSHCP activities that cause no more than minimal individual and cumulative adverse impacts to aquatic resources within the Plan Area. Covered Activities authorized under the programmatic 401 Certification would need to satisfy the RWQCB's water quality anti-degradation policy by demonstrating that maintenance of water quality standards are being satisfied in the Plan Area. This would be accomplished when a project enters the SSHCP permitting framework. The local implementing agency would vet local Covered Activities with a review process that would assure all measures required under the SSHCP permitting framework for wildlife and water quality are met before submittal to the RWQCB for final review and approval. The programmatic 401 Certification would satisfy the Report of Waste Discharge requirements for Porter-Cologne.

The more efficient 401 Certification process would be attractive to project proponents because it would save time and costs associated when compared to the standard permitting process. From a regulatory standpoint, it would allow greater environmental benefits to accrue from project impacts considered from a watershed perspective.

8.1.3 California Fish and Game Code/Section 1600 MSAA

For projects that are initiated by a local Land Use Authority Permittee (Sacramento County, the City of Rancho Cordova, or the City of Galt) that need to notify CDFW pursuant to Section 1600 of the California Fish and Game Code, CDFW would enter into an MSAA)or a Long-Term Streambed Alteration Agreement (LTLSA). The aforementioned type permit vehicle (be it a CDFW MSAA or an LTLSA) would be valid for 12 years and would be eligible for a one-time extension for a maximum period of 17 years. For the amount of time remaining under the 50-year SSHCP following the expiration of the first MSAA or LTLSA and its extension, Sacramento County, the City of Rancho Cordova, or the City of Galt would enter into a new agreement that would build upon the first agreement for municipal projects.

For all other Covered Activity projects, CDFW would streamline the process to authorize activities under Section 1602 of the California Fish and Game Code that affect the bed and bank of streams, ponds, and lakes in the Plan Area with implementation of the ARP. The ARP and SSHCP address all impacts and the conservation of streams and riparian habitat and other water bodies regulated by CDFW.

In the streamlined process, the local Land Use Authority Permittees or Implementing Entity, whoever has jurisdiction, may act as a "clearinghouse" for the notification forms and would conduct an initial screening process to verify the project's consistency with the SSHCP, ARP, and the aquatic resources protection ordinances. The local Land Use Authority Permittees or Implementing Entity may then submit the notification forms to CDFW on behalf of the project proponent. Prior to processing an LSA Notification, CDFW must collect the fee for each LSA Notification submitted by the individual project proponent. CDFW is solely responsible for determining whether an LSA Agreement is required.

Ultimately, for land development Covered Activities that conform with the SSHCP permitting framework, the CDFW would enable a MSAA or LTLSA to increase the efficiency of their permitting process and benefit the County and Cities, and the JPA collectively.

8.2 CWA Section 404 Permitting for Projects Ineligible for General Permits

8.2.1 CWA Section 404 Individual Permits

Similar to the discussion above regarding an anticipated PGP, based on working with the USACE in the development of the SSHCP and ARP, the SSHCP Plan Permittees anticipate that the USACE would develop programmatic approaches to processing individual CWA 404 permits for the relatively small amount of SSHCP Covered Activity projects proposed to impact waters of the U.S. that would not fit under the terms and conditions of the PGP. The final determinations and related terms and conditions of these anticipated permit processes is at the discretion of the USACE. Project proponents with development Covered Activity projects located in the development envelope of the Plan Area that do not meet eligibility requirements under the PGP would be able to apply for CWA Section 404 authorization under an "abbreviated" individual permit (IP) process, encompassing two kinds of IPs: SPs and LOPs. For projects proposing to permanently impact more than 2 acres but not more than 10 acres of Waters of the United States, and/or more than 700 linear feet of perennial, intermittent, or third or higher-order ephemeral streams (unless this linear-foot limit is waived in writing by the USACE), a LOP procedure for Covered Activities in the Plan Area is envisioned (see Section 7.2.1.1). For projects proposing to permanently impact more than 10 acres of waters of the United States and/or 700 linear feet of perennial, intermittent, or third or higher-order ephemeral streams, an "abbreviated" SP

procedure for Covered Activities in the Plan Area is envisioned (see Section 7.2.1.2). To use either of these IP procedures, the project proponent would need to document compliance with the requirements of the SSHCP and ARP regulatory permitting framework in the project proposal. The SSHCP and ARP requirements would incorporate compliance with on-site avoidance, minimization, and compensatory mitigation as prescribed under the Plan Area regional assessment of existing aquatic resources diversity, abundance, and condition; impacts proposed upon those resources; and benefits accrued from the SSHCP and ARP AMMs and Conservation Strategy. The envisioned IP processes would be attractive to project proponents because it seeks to largely fulfill in advance the requirements of a separate off-site alternatives analysis, project-by-project assessment of compliance with the USACE's assessment of the Least Environmentally Damaging Practicable Alternative (LEDPA) requirements, and/or, in the case of SPs, alleviate the necessity of preparing a rigorous off-site alternatives analysis. In addition, the IP processes would save time and costs associated when compared to the USACE's typical permitting process through greater permit process certainty.

8.2.1.1 CWA Section 404 LOP

For moderate-scale development Covered Activity projects proposed under the SSHCP regulatory permitting framework that do not meet the eligibility requirements of the proposed SSHCP PGP, and have more than minimal impacts to aquatic resources but less than significant impacts on the human environment under NEPA, the Plan Permittees' understanding is that the USACE anticipates developing an abbreviated procedure for issuing LOPs under CWA 404. LOPs are a type of individual permit issued through abbreviated processing procedures, which includes coordination with federal and state wildlife agencies and a public interest evaluation, but without the publishing of an individual public notice (33 CFR 325.2(e)).

The envisioned LOP procedure would authorize the discharge of dredged or fill material into waters of the United States pursuant to Section 404 of the CWA for SSHCP Covered Activity projects. To qualify for use of the LOP, the loss of waters of the United States, including wetland waters of the United States, resulting from a single and complete Covered Activity project is envisioned to not exceed a total of 5 acres and/or would not permanently impact more than 700 linear feet of perennial, intermittent, or third or higher order ephemeral streams, unless this linear-foot limit is waived in writing by the USACE.

Once the anticipated LOP procedure is in place, project proponents would submit project proposals to the Land Use Authority Permittees or Implementing Entity, whoever has jurisdiction, who would act as a "clearinghouse" for the CWA 404 permit applications by conducting the initial screening process to verify project consistency with the SSHCP and ARP. The applications would then be submitted to the USACE by the Land Use Authority Permittee or Implementing Entity, whichever has jurisdiction over the project, for review under the LOP

procedure. The Corps would likely prepare a simplified decision document (for their program's administrative record) that would refer to the SSHCP's EIS for compliance with NEPA and aspects of compliance with U.S. EPA's 404(b)(1) Guidelines.. The proposed LOP is envisioned to rely on the SSHCP to address avoidance, minimization and requirements for compensatory mitigation for impacts to aquatic resources. For instance, compensatory mitigation requirements would be the same as those in the SSHCP.

8.2.1.2 CWA Section 404 "Abbreviated" Standard Permit

Project proponents with Covered Activity projects located in the Plan Area that do not meet eligibility requirements under the PGP or the LOP procedure could seek authorization under an abbreviated SP process. This abbreviated SP process could be used as long as the project proponent conformed to the requirements of the SSHCP and ARP. The SSHCP permitting framework would require project compliance with on-site avoidance, minimization, and compensatory mitigation, as prescribed under the Plan.. Projects utilizing the abbreviated SP process are anticipated to only occur within the development envelope of the Plan Area (the UDA).

Advanced identification of plan-wide tradeoffs in aquatic resources loss and conservation would have already addressed aquatic resource impact avoidance at a regional level, thus, an off-site alternatives analyses would not be necessary for SP proponents to prepare for purposes of demonstrating compliance with the 404(b)(1) Guidelines. Therefore, SP proponents' alternatives analysis would be limited to addressing avoidance and minimization at the project site level. NEPA requirements for abbreviated SPs may be satisfied with an Environmental Assessment-level of review, or may require preparation of an EIS if proposing potentially significant effects on the human environment. Even for projects requiring the use of an EIS, the SP process is anticipated to be greatly compressed by relying on the SSHCP, ARP and ordinances. The USACE anticipates the use of tiering from the SSHCP EIS, use of programmatic compliance with other laws such as ESA, and alignment with the compensatory mitigation requirements contained in the SSHCP, ARP and ordinances.

The Plan Permittees would still act as the "initial clearinghouse" for permit applications that may enter into the abbreviated SP process, in the same manner they would for the PGP and LOP reviews. The Land Use Authority Permittees or Implementing Entity, depending on who has jurisdiction over the project, would screen all applications to ensure that the Covered Activity projects are in compliance with the SSHCP and ARP, and propose to incorporate all applicable terms and measures. The applications would then be submitted to the USACE by the Land Use Authority Permittee or Implementing Entity, whichever has jurisdiction over the project. The USACE would make the final determination whether or not a permit application could be processed under the abbreviated SP process.

The anticipated abbreviated SP process would be attractive to project proponents because it would save time and cost, and increase certainty in comparison to typical information requirements and processes involved in the USACE's review of standard permit applications. For instance, under the SSHCP permitting framework, urban development Covered Activity projects with more than minimal impacts to the aquatic environment are anticipated to only occur within the development envelope of the Plan Area (the UDA). The UDA has already been determined to be the most suitable location for large-scale development as determined by County and City General Plans. It is assumed that development projects processed under the SSHCP abbreviated SP procedure would, similar to the proposed PGP and LOP, not need to expend time and costs involved with developing an off-site alternatives analysis for the USACE's review and consideration, as described above. Also, the on-site avoidance and minimization requirements that are necessary for SP proponents to address would overlap with requirements of the SSHCP (e.g., stream setbacks) and would therefore satisfy the on-site alternatives analysis for purposes of demonstrating compliance with the 404(b)(1) Guidelines. The DEESA determination made by the Land Use Authority Permittees or the Implementing Entity would be submitted with the abbreviated SP application. As described above, the CSA 404 "abbreviated" SP regulatory approach would likely be utilized for some of the anticipated large-scale urban development Covered Activity projects, and would increase the efficiency of the permitting process (compared to the existing, typical standard permit process), while also promoting greater protection of aquatic resources to accrue from a regulatory framework that considers the balancing of landscape- and project-scale impacts to aquatic resources with a coordinated approach to avoidance, minimization and compensation for unavoidable impacts to aquatic resources.

8.3 Programmatic Section 401 CWA Certification/Porter-Cologne Act Waste Discharge

As discussed in Section 7.1.2, a programmatic Section 401 Water Quality Certification (also satisfying the requirements of the state's Porter-Cologne Act) is sought by the SSHCP Plan Permittees. This programmatic 401 Certification may be able to cover projects applied for under the PGP, and potentially cover (all or in part, promoting efficiency) some larger-scale projects applied for under a LOP or SP. Larger-scale Covered Activity projects proposed within the Plan Area that do not qualify for the programmatic Section 401 Water Quality Certification would be required to obtain individual 401 Water Quality Certifications, which may be required for some LOPs and SPs processed by the USACE. However, the Plan Permittees would establish a programmatic review process to assist in efficient processing of these individual 401 certifications for proposed Covered Activities that are in compliance with all requirements of the SSHCP and ARP. Under this more efficient review process, the Land Use Authority Permittees or Implementing Entity, depending on who has jurisdiction over the project, would still act as the initial "clearinghouse" for permit applications, in the same manner they would for the Section 404

application reviews. The Land Use Authority Permittees or Implementing Entity (as applicable) would screen all applications to ensure that the projects are in compliance with the SSHCP, ARP and applicable Aquatic Resources Protection Ordinance. This initial screening would be anticipated to facilitate a more efficient review process of individual 401 Water Quality Certification applications by the RWQCB by providing a "vetted" and more predictable review. To satisfy CEQA requirements, the Plan Permittees would be able to tier from the SSHCP EIS/EIR, which would greatly quicken their review timeline.

8.4 California Fish and Game Code/Section 1600 Streambed Alteration Agreements

The local Land Use Authority Permittees and the Implementing Entity would develop with CDFW an MOU for land development Covered Activity projects authorized under the SSHCP regulatory framework that notifies CDFW pursuant to Section 1600 et seq. of the California Fish and Game Code. Under this unique MOU, the CDFW would collect a fee for each notification submitted by the local Land Use Authority Permittees or Implementing Entity. However, this expedited MOU process would standardize AMMs and compensatory mitigation. The agreement would describe the SSHCP permitting framework arrangement between CDFW and the local Land Use Authority Permittees and the Implementing Entity, which would include procedures for avoidance, minimization, and compensatory mitigation requirements for all Covered Activities occurring within the Stream Zone, pursuant to Section 1602 of the California Fish and Game Code. Under this MOU, the CDFW would collect fees for each notification, pursuant to Section 1602 of the California Fish and Game Code, and determine whether to issue LSAs to individual Covered Activity projects. However, permitting would be standardized for proposals that comply with requirements set forth in the SSHCP, which would enable CDFW to quicken their permitting process under an MOU permitting procedure. To satisfy CEQA requirements, the CEQA lead agencies would be able to incorporate analysis from the SSHCP EIS/EIR, which would greatly quicken their review timeline. Ultimately, for land development Covered Activity projects that conform with the SSHCP permitting framework, the CDFW would enable the MOU to quicken their permitting process and benefit the County, Cities, and the Implementing Entity collectively.

For municipal projects authorized under the SSHCP regulatory framework, the Implementing Entity would describe such projects in advance and notify the CDFW pursuant to Section 1600 et seq. of the California Fish and Game Code and seek to append those projects to a MSAA or LTLSA.

8.5 Other Federal Laws

8.5.1 Section 7 of the Federal ESA

Section 7 of the ESA requires federal agencies to consult with the USFWS (and/or the National Marine Fisheries Service) to ensure that every action authorized, permitted, funded, or carried out by the federal agency would not jeopardize the continued existence of any federally listed species or destroy or adversely modify designated critical habitat.

As discussed in Section 2.3.1, projects or activities with the potential to discharge dredged or fill material into waters of the United States must consult with the USACE and must comply with Section 404 of the CWA. The USACE's issuance of a CWA 404 permit (or other USACE authorizations for impacts to jurisdictional waters) constitute a federal action, and must comply with the ESA. Therefore, the USACE would consult with the USFWS under ESA Section 7 before issuing a CWA permit (or other CWA authorizations) to any Plan Area project or activity that may impact a federally listed species.

The USACE often acts as the lead federal agency. When acting as lead federal agency, the USACE provides the federal nexus for Section 7 ESA consultation with the USFWS for projects with the potential to affect federally listed species. All of the federally listed species that occur in the Plan Area are SSHCP Covered Species (see SSHCP Chapter 1, Table 1-2).

Under the conventional project-by-project regulatory review process, the USACE first prepares a Biological Assessment to determine if the proposed project or activity may affect listed species or critical habitat. If the Biological Assessment indicates that the project or activity may affect a listed species, the USACE will request a formal consultation with the USFWS under ESA Section 7. (If the Biological Assessment determines that the project or activity is not likely to adversely affect the species or critical habitat, the USACE may request an informal consultation with the USFWS. If the USFWS does not concur with the no adverse determination of the informal consultation, the USFWS may require the USACE to initiate a formal consultation).

Under the conventional project-by-project regulatory review process, the finding by the USACE that the proposed project or activity would adversely impact a federally listed species (or its critical habitat) will initiate the preparation of a Biological Opinion by the USFWS. The Biological Opinion will include a full description of the proposed action, including any conservation measures proposed as part of the action, and will include a detailed discussion of the direct, indirect, and cumulative effects of the action on listed species or critical habitat, and will summarize the information upon which the opinion is based (including the information and analysis provided by the USACE's Biological Assessment). The Biological Opinion presents a determination on whether the proposed action is likely to jeopardize a listed species, or likely to adversely modify its critical habitat. Each Biological Opinion includes an "Incidental Take

Statement," which exempts the USACE and their permittees from the ESA's take prohibitions and penalties, and allows "take" of a specified number of individuals of a listed species, and/or allows modification or degradation of a specified acreage of species habitat. The beneficial effects of the project's conservation measures are taken into consideration for both the jeopardy and the incidental take analysis presented in the Biological Opinion. The incidental take statement also includes nondiscretionary "reasonable and prudent measures" that are necessary to minimize or reduce the impact of the incidental take. In order to be exempt from the prohibitions and penalties of the ESA, the USACE and their permittees must comply with the "terms and conditions" of the Biological Opinion, which implement the reasonable and prudent measures, and outline required future reporting and monitoring. The Biological Opinion's terms and conditions are non-discretionary.

Under the SSHCP and ARP's more efficient project permitting process, the USACE would seek to further streamline their CWA 404 regulatory review of individual future Covered Activities (see Section 7.2) by initiating a single ESA Section 7 consultation with the USFWS for all SSHCP Covered Activities that would require a CWA 404 permit (or other CWA authorization) from the USACE over the 50-year SSHCP. The USACE will request the USFWS prepare a single Programmatic Biological Opinion that programmatically address the direct, indirect, and cumulative effects on federally listed species and designated critical habitats resulting from all USACE's permitting and authorizations, over the 50-year term of the SSHCP. If the USACE can obtain a programmatic Section 7 consultation and Programmatic Biological Opinion, it would eliminate the need for the USACE to initiate individual ESA Section 7 consultations for every SSHCP Covered Activity that may discharge dredged or fill material into waters of the United States, and eliminate the need for the USACE to prepare and submit an individual Biological Assessment for each of those SSHCP Covered Activities, thus eliminating the need for the USFWS to prepare an individual Biological Opinion on each of those SSHCP Covered Activities.

At the time that the final SSHCP and final SSHCP EIS/EIR have completed required public reviews under NEPA and CEQA, the USACE would initiate a request for a programmatic Section 7 consultation with the USFWS, to seek Section 7 ESA coverage for all future SSHCP Covered Activities that the USACE would permit under their proposed multi-layered CWA 404 permitting strategy (i.e., the GPs, LOP, and SPs described in Section 7.2).

With a single programmatic Section 7 consultation anticipated to be in place, the conventional project-by-project "individual" Section 7 consultation would be unnecessary.

8.5.2 Section 106 of the National Historic Preservation Act

The USACE must assure that each Covered Activity project or activity that is permitted or otherwise authorized by the USACE under Section 404 of the CWA also complies with Section 106 of the National Historic Preservation Act (NHPA). The NHPA protects cultural resources that

are listed, or are eligible to be listed, on the National Register of Historic Places. To assure that each USACE decision to issue a CWA Section 404 permit or other CWA authorization to a SSHCP Covered Activity would not directly or indirectly result in a violation of the NHPA, the USACE and the Land-use Authority Permittees may develop a Programmatic Agreement (PA) with the State Historic Preservation Officer (SHPO) to expedite NHPA Section 106 consultations for future SSHCP Covered Activity projects and activities.

In addition, the USACE would also programmatically consult with Native American tribal contacts within the Plan Area, and may consider developing an MOU with the Plan Area Native American tribes concerning coordination and the protection of any Indian Trust Assets and other cultural resources at sites of Covered Activity projects or activities that are permitted or otherwise authorized by the USACE under CWA Section 404.

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