Tide's End Multibenefit Restoration Project

Draft Supplemental Environmental Impact Report

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Acronyms and Other Abbreviations

Acronym or Abbreviation	Definition
°C	degrees Celsius
°F	degrees Fahrenheit
µg/g	micrograms per gram
µg/l	micrograms per liter
A-N	Agricultural Intensive zoning designation in the Yolo County Code of Ordinances
AB	Assembly Bill
AG	Agriculture designation in the *County of Yolo 2030 Countywide General Plan*
Basin Plan	*The Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region: the Sacramento River Basin and the San Joaquin River Basin*
Bay-Delta	San Francisco Bay/Sacramento–San Joaquin Delta
Bay-Delta Basin Plan	*Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary*
Big Notch Project	Yolo Bypass Salmonid Habitat and Fish Passage Project
BMP	best management practice
BOD	biological oxygen demand
BP	before present
CAA	Clean Air Act
CAAQS	California ambient air quality standards
CalEEMod	California Emissions Estimator Model
CALFED	CALFED Bay-Delta Program
CalGEM	California Department of Conservation, Geologic Energy Management Division
California State Parks	California Department of Parks and Recreation
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEDEN	California Environmental Data Exchange Network
Central Valley	Great Valley of California
CEQA	California Environmental Quality Act
CEQA Guidelines	*Guidelines for Implementation of the California Environmental Quality Act*

Acronym or Abbreviation	Definition
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CHAB	cyanobacterial harmful algal bloom
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
Construction General Permit	Statewide Permit for Stormwater Discharges Associated with Construction Activity
County	Yolo County
CR	County Road
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CVFPB	Central Valley Flood Protection Board
CVFPP	Central Valley Flood Protection Plan
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
CY	cubic yards
D-1641	Water Right Decision 1641
DBP	disinfection byproduct
DDT	dichlorodiphenyltrichloroethane
Delta	Sacramento–San Joaquin Delta
DMCP	Sacramento–San Joaquin Delta Mercury Control Program
DO	dissolved oxygen
DOC	California Department of Conservation
DOC	dissolved organic carbon
DPM	diesel particulate matter
DPS	distinct population segment
Draft SEIR	draft supplemental environmental impact report
DTSC	California Department of Toxic Substances Control

Acronym or Abbreviation	Definition
DWR	California Department of Water Resources
DWSC	Deep Water Ship Channel
EC	electrical conductivity
EFH	Essential Fish Habitat
EIR	environmental impact report
EMFAC	Emissions Factor
EPA	U.S. Environmental Protection Agency
ESA	Environmental Science Associates
ESU	evolutionarily significant unit
FESA	federal Endangered Species Act
FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
FR	*Federal Register*
FVM	finite volume method
GGERP	Greenhouse Gas Emissions Reductions Plan
GGS	giant garter snake
GHG	greenhouse gas
GPM	general protection measure
GSA	groundwater sustainability agency
GSP	groundwater sustainability plan
GWP	global warming potential
HAB	harmful algal bloom
HAP	hazardous air pollutant
HCP	habitat conservation plan
HRL	Healthy Rivers and Landscapes
IBC	International Building Code
km	kilometers
LIER	Liberty Island Ecological Reserve
Lookout Slough	Lookout Slough Tidal Habitat Restoration and Flood Improvement Project
LSZ	low-salinity zone
LTS	Less-than-Significant Impact
LTSG	Less than Significant with Implementation of General Protection Measures
LTSM	Less than Significant with Implementation of Mitigation Measures

Acronym or Abbreviation	Definition
LURMP	Land Use and Resource Management Plan
MBTA	Migratory Bird Treaty Act
mg/l	milligrams per liter
Mm	Millimeters
MHHW	Mean Higher High Water
MLLW	Mean Lower Low Water
mpg	miles per gallon
MT	metric tons
$MTCO_2e$	metric tons of carbon dioxide equivalent
NAAQS	national ambient air quality standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NAVD88	North American Vertical Datum of 1988
NAWMP	North American Waterfowl Management Plan
NBA	North Bay Aqueduct
NCCP	Natural Community Conservation Plan
NDWA Contract	*1981 Contract Between State of California Department of Water Resources and North Delta Water Agency for the Assurance of a Dependable Water Supply of Suitable Quality*
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO_2	nitrogen dioxide
NOA	Notice of Applicability
NOP	Notice of Preparation
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTU	nephelometric turbidity units
NWI	National Wetlands Inventory
NWIC	Northwest Information Center

Acronym or Abbreviation	Definition
Order	Order for Clean Water Act Section 401 Water Quality Certification and Waste Discharge Requirements for Restoration Projects Statewide
PBO	programmatic biological opinion
PDE	partial differential equation
PG&E	Pacific Gas and Electric Company
PL	project-level
$PM_{2.5}$	fine particulate matter that is 2.5 microns or less in diameter
PM_{10}	respirable particulate matter that is 10 microns or less in diameter
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
ppm	parts per million
ppt	parts per thousand
PRC	Public Resources Code
proposed Project	Tide's End Multibenefit Restoration Project
Prospect Island	Prospect Island Tidal Habitat Restoration Project
PS	Potentially Significant Impact
regional water board	regional water quality control board
RMP	Restoration Management Permit
ROG	reactive organic gases
SB	Senate Bill
Scoping Plan	climate change scoping plan
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SEIR	supplemental environmental impact report
SGMA	Sustainable Groundwater Management Act
SHA	Safe Harbor Agreement
SHARE	Shared Alliance for Recreational Enhancement
SLF	Sacred Lands File
SO_2	sulfur dioxide
SPOA	Survey on Public Opinions and Attitudes on Outdoor Recreation in California 2012
SRGO	Order for Clean Water Act Section 401 Water Quality Certification and Waste Discharge Requirements for Restoration Projects Statewide
State Water Board	State Water Resources Control Board
SVAB	Sacramento Valley Air Basin
SWAN	Simulating WAves Nearshore
SWP	State Water Project

Acronym or Abbreviation	Definition
SWPPP	stormwater pollution prevention plan
SYMVCD	Sacramento-Yolo Mosquito and Vector Control District
TAC	toxic air contaminant
TMDL	total maximum daily load
TOC	total organic carbon
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VMT	vehicle miles traveled
WPT	western pond turtle
YBFMP	Yolo Bypass Fish Monitoring Program
YBWA	Yolo Bypass Wildlife Area
YSAQMD	Yolo-Solano Air Quality Management District

EXECUTIVE SUMMARY

ES.1 Introduction

The California Department of Water Resources (DWR), as lead agency under the California Environmental Quality Act (CEQA), proposes to implement the Tide's End Multibenefit Restoration Project (proposed Project). This Draft Supplemental Environmental Impact Report (Draft SEIR) was prepared pursuant to CEQA as a supplement to the State Water Resources Control Board Restoration Projects Statewide Order Program EIR (State Clearinghouse No. 2019100230), which was prepared for the State Water Resources Control Board (State Water Board) "Order for Clean Water Act Section 401 Water Quality Certification and Waste Discharge Requirements for Restoration Projects Statewide."

The Tide's End Multibenefit Restoration Project (proposed Project) is being developed to restore and enhance tidal wetland and floodplain habitat, support multibenefit land uses (including managed wetlands and floodplain agriculture), and maintain or improve flood conveyance in the Yolo Bypass. The proposed Project would also support the framework outlined in the Healthy Rivers and Landscapes (HRL) Program and further the goals and objectives of the Central Valley Flood Protection Plan (CVFPP; DWR 2022). The 2,212-acre proposed Project area is located in Yolo County at the downstream end of the Yolo Bypass, about 12 miles southwest of Sacramento and 10 miles southeast of Davis. See Sections 2.1.1 and 2.1.2 in Chapter 2 of this Draft SEIR, "Project Description," for a detailed description of the location and the purpose, goals, and objectives of the proposed Project.

ES.2 Eligibility for Coverage under the Statewide Restoration General Order and Program EIR

In 2022, the State Water Board issued Order WQ 2022-0048-DWQ, "Order for Clean Water Act Section 401 Water Quality Certification and Waste Discharge Requirements for Restoration Projects Statewide," also known as the Statewide Restoration General Order (SRGO, or Order). The purpose of the SRGO is as follows:

> *…to expedite consultation, authorization, and permitting of restoration projects intended to help the State of California achieve its habitat restoration, species recovery, and water quality improvement goals.*

(State Water Board 2022a: Attachment A, p. A-1.) The SRGO provides programmatic authorization for large-scale habitat restoration projects that are consistent with certain eligibility criteria (outlined in Final Attachment A to the SRGO and Appendix E to the Final SRGO Program EIR, "Description and Eligibility").

The State Water Board prepared a Program EIR to evaluate impacts of project types covered by the SRGO and associated measures to protect species and the environment. Under CEQA Guidelines Section 15168, a program EIR is an EIR prepared for a series of actions that can be characterized as one large project and are related either: geographically as logical parts in the chain of contemplated actions; in

connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or as individual activities carried out under the same statutory or regulatory authority that have generally similar environmental effects that can be mitigated in similar ways (California Code of Regulations [CCR] Title 14, Section 15168[a]). The Final SRGO Program EIR was certified in September 2022, including programmatic sideboards, design guidelines, general protection measures, species protection measures, and mitigation measures to protect species and the environment, with the intent that the State Water Board and other administrative agencies would use the SRGO and the Program EIR's analysis to streamline environmental review of qualifying restoration projects, such as the proposed Project, the subject of this Draft SEIR.

To be eligible for the programmatic coverage described above, a project must be a "restoration project" as defined in Section V of the SRGO. The SRGO defines a qualifying restoration project as follows:

> *[A project] that would result in a net increase in aquatic or riparian resource area functions and/or services through implementation of the eligible project types, relevant general protection measures (GPMs), and consideration of design guidelines, summarized below and described in detail in Attachment A, Order Description and Eligibility. (State Water Board 2022a: Section V, p. 2)*

In addition, as stated in the Final SRGO Program EIR, a restoration project covered under the SRGO may include multiple benefits, such as groundwater recharge, recreation, flood management, water quality improvement, and/or adaptation to climate change (Final SRGO Program EIR: Section 1.1, p. 1-2; see also p. 3.6-8).

The proposed Project meets the definition of a qualifying restoration project; it is a multibenefit project that includes the restoration and enhancement of a variety of aquatic habitat types, resulting in a net increase in tidal wetland and associated floodplain habitat functions, with flood management benefits. Chapter 1, "Introduction" of this Draft SEIR presents the specifics on how the proposed Project meets the eligibility criteria, design guidelines, and other protection and mitigation measures outlined in the SRGO (Attachment A, "Description and Eligibility") and the Final SRGO Program EIR (Appendix F, "Species Protection Measures," and Appendix J, "Mitigation Monitoring and Reporting Program"), and meets CEQA's requirement to incorporate applicable mitigation measures and alternatives developed in the Final SRGO Program EIR into the proposed Project, per CEQA Guidelines Section 15168(c)(3). Given the proposed Project's eligibility for the SRGO, this Draft SEIR would meet the above-outlined objective of the SRGO in expediting the consultation, authorization, and permitting of restoration projects intended to help the State of California achieve its habitat restoration and species recovery goals.

ES.3 Goals and Objectives of the Proposed Project

The proposed Project's goals and objectives have been developed to support the HRL Program, help meet the objectives of the CVFPP (DWR 2022), provide benefits for native fish and wildlife species, and maintain existing recreational and agricultural land uses that are of regional importance in the Yolo Bypass. The goals and objectives of the proposed Project are:

Goal 1: Restore tidal and floodplain habitats in the Yolo Bypass to support native fish and wildlife.

Objectives:

1. Create a tidal channel network with connectivity to adjacent floodplain habitat.
2. Reduce impediments to fish passage on and off the floodplain.
3. Enhance aquatic food web production and export.
4. Accommodate inland migration of habitats.

Goal 2: Support multibenefit land uses that are compatible with Yolo Bypass tidal and floodplain habitat objectives.

Objectives:

1. Maintain or improve infrastructure that supports existing recreation and agriculture uses.
2. Implement recreational and agricultural management practices compatible with tidal and floodplain habitats.

Goal 3: Reduce flood risk in a manner compatible with tidal and floodplain habitats.

Objectives:

1. Reduce localized flood stages.
2. Reduce flood encroachments.
3. Maintain or reduce hydraulic roughness.
4. Reduce localized wind-wave erosion.

ES.4 Project Area

The proposed Project is located in the Sacramento Valley, at the fluvial-tidal interface in the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex in the Sacramento-San Joaquin River Delta (Delta) (**Figure ES-1**). The proposed Project area contains 2,212 acres currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat. The proposed Project area consists of all or portions of the following six properties (see **Table ES-1** for assessor's parcel numbers), listed from north to south: Capitol Oil, Laurel G, Yolo Basin, Lucky Five South, Kleary, and Williams (**Figure ES-2**).

TABLE ES-1
ASSESSOR'S PARCEL NUMBERS FOR PROPERTIES IN THE PROPOSED PROJECT AREA

Property	APN(s)
Capitol Oil	033-440-006; 033-450-001; 033-190-010; 033-450-002; 033-450-005
Laurel G	033-220-052; 033-220-054
Yolo Basin	033-220-046
Lucky Five South	033-220-009
Kleary	033-220-068
Williams	033-220-067

Notes: APN = Assessor's Parcel Number; proposed Project = proposed Tide's End Multibenefit Restoration Project
Source: Data compiled by Environmental Science Associates in 2025



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TIDE'S END

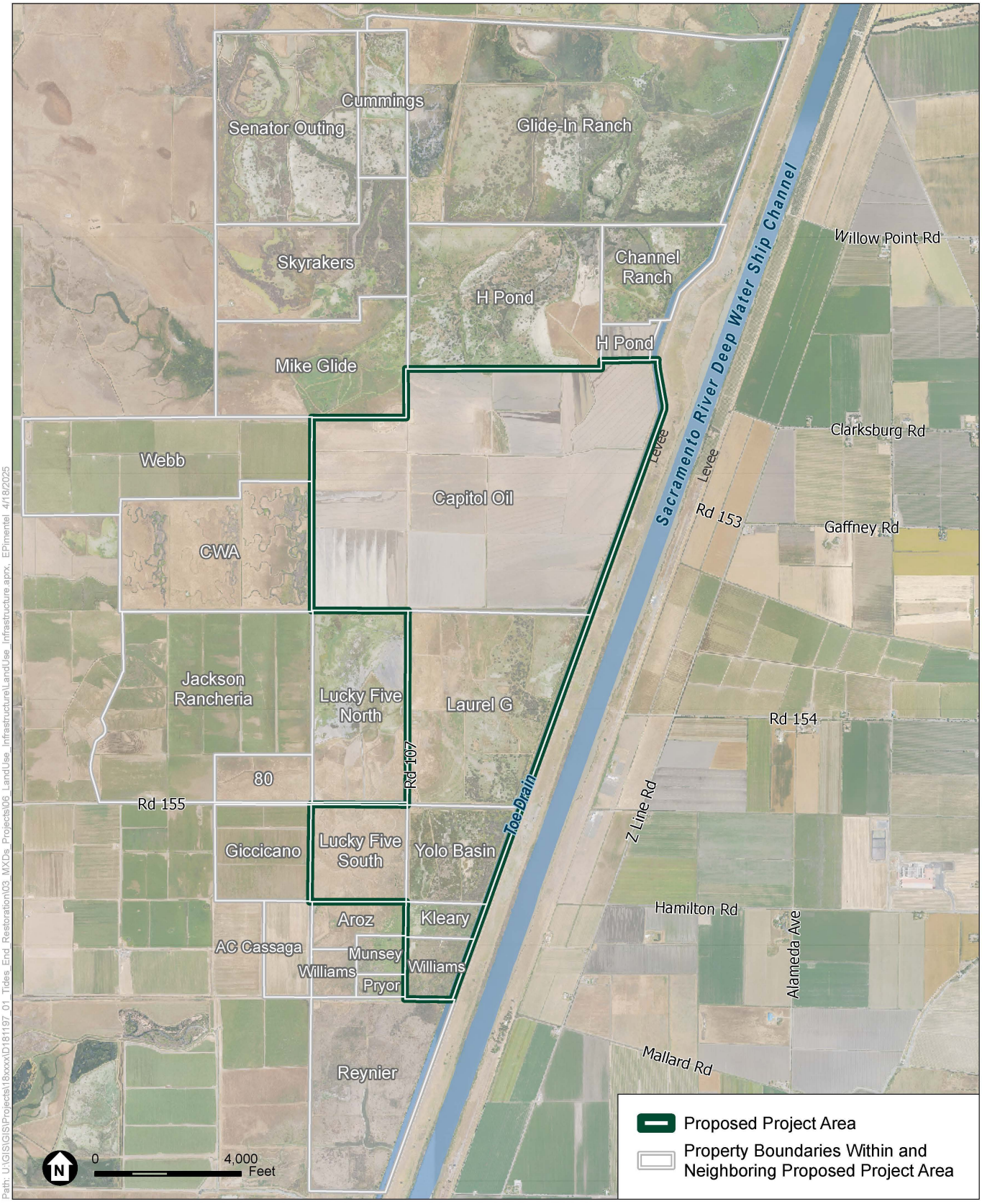
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Tide's End Multibenefit Restoration Project

Figure ES-1
Proposed Project Area
Regional Vicinity

Prepared by: ESA

SOURCE: NAIP 2022, Esri, 2025, EIP 2025, ESA 2025



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Tide's End Multibenefit Restoration Project

Figure ES-2
Proposed Project Area
Property Boundaries

Prepared by: ESA

SOURCE: NAIP, 2022; ESA, 2025

ES.5 Summary of the Project

The proposed Project would restore tidal wetland and adjacent floodplain, providing suitable habitat for delta smelt (*Hypomesus transpacificus*), salmonids, and other native fish and wildlife species, while maintaining and enhancing compatible recreational and agricultural uses within the proposed Project area and reducing flood risk in the vicinity. Tidal inundation would be restored by hydrologically connecting the site to the Toe Drain via a series of berm openings, berm lowering, and channel excavation. The restored habitats would enhance aquatic production and export for food web support and would facilitate volitional fish passage of juvenile salmonids and other native fishes accessing the proposed Project area's floodplain during high-flow events. Habitat types associated with implementation of the proposed Project are summarized in **Table ES-2** and are shown in **Figure ES-3**. Sections 2.2.1 through 2.2.6 in Chapter 2, "Project Description" of this Draft SEIR describes the proposed Project's major restoration design elements, including tidal wetland, transition zone habitat, floodplain habitat, managed wetlands, managed floodplain agriculture, site revegetation (including riparian communities), access improvements, irrigation and drainage improvements, and utility modifications.

TABLE ES-2
APPROXIMATE EXISTING AND PROPOSED HABITAT TYPES

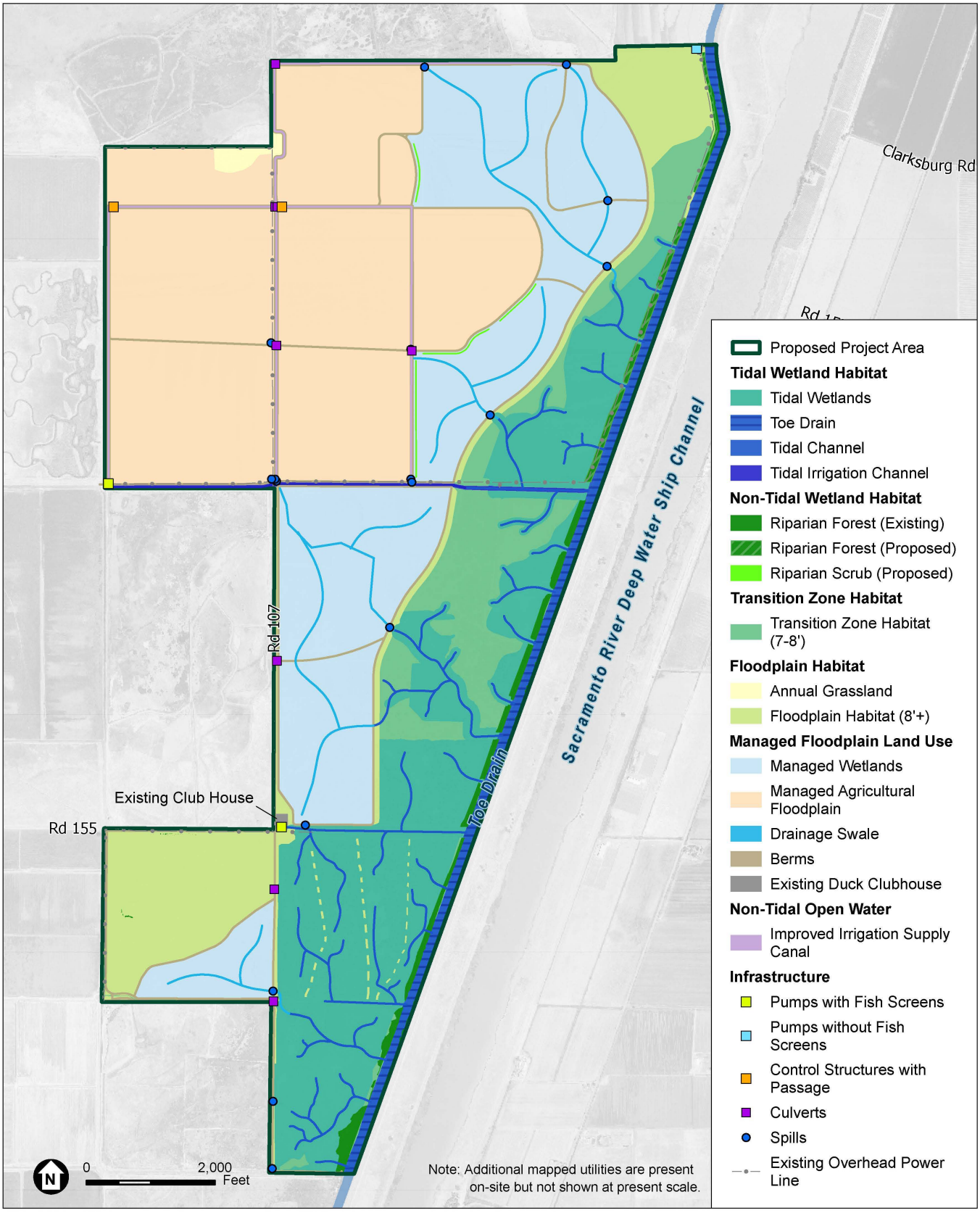
Habitat Type		Existing Conditions—Approximate Area (ac)	Proposed Conditions—Approximate Area[1] (ac)
Riparian Habitat (unmanaged)	Riparian forest, riparian scrub	27.2	36.5
Tidal Wetland Habitat (unmanaged)	Toe Drain	60.6	61.6
	Tidal wetlands, tidal channels, tidal irrigation canals	–	460.7
Transition Zone Habitat[2]	Transition zone habitat (elevation 7–8 feet NAVD88)	–	151.7
Grassland	Annual grassland, salt grass flat	9.3	7.6
Floodplain Habitat	Floodplain habitat (elevation > 8 feet NAVD88)	300.5	220.4
Managed Wetlands (Managed Floodplain)	Managed wetlands, managed tule wetlands, existing waterfowl hunting clubhouse	573.0	552.7
Managed Floodplain Agriculture (Managed Floodplain)	Managed floodplain agriculture, berms/access roads (around agricultural fields)	1,205.3	709.9
Non-tidal Open Water	Ditches, irrigation supply canal	36.5	11.3
	Total	**2,212.4**	**2,212.4**

Notes: ac = acres; NAVD88 = North American Vertical Datum of 1988.

Of the 709.9 acres of proposed condition managed floodplain agriculture: approximately 671.6 acres is designated as Unique Farmland and would be retained as farmland and associated infrastructure would be improved. The remaining 38.3 acres is designated as grazing land but would be managed as agricultural farmland with the Project area.

1. The distribution of habitats or land use types displayed is approximate; some areas may switch from one habitat type to another during the environmental review process as the design is finalized but the total acreage would remain the same.
2. Section 2.2.4 describes this habitat type in more detail.

Source: Data compiled by Environmental Science Associates in 2025



Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure ES-3
Proposed Project Area
Draft Site Plan

Prepared by: ESA

SOURCE: NAIP, 2022; Davids Engineering, 2024; ESA, 2025

ES.6 Alternatives

Chapter 5 of this Draft SEIR "Alternatives" describes alternatives to the proposed Project and compares the environmental impacts of those alternatives. This chapter also describes alternatives that were considered but eliminated from detailed consideration. One alternative was considered but rejected from further analysis, and it is related to alternative locations for the proposed Project. This alternative was rejected because the Yolo Bypass and the proposed Project area are uniquely located to allow for coordination of habitat restoration, agricultural viability, recreation, and reduction of flood risk as required by the goals and objectives of the proposed Project, per CEQA Guidelines Section 15126.6(f)(2)(B), alternative locations were determined not to be feasible and this alternative was rejected from further consideration. Alternative locations were rejected because acquiring 2,212 acres of contiguous land would unreasonably increase Project costs and significantly extend the implementation timeline of the proposed Project due to the time required to identify comparable land, negotiate with multiple landowners, clear encumbrances, and conduct environmental review, etc.

The No Project Alternative and three feasible alternatives to the proposed Project were identified for further evaluation in the Draft SEIR as follows:

- No Project Alternative.
- Alternative 1: Maximize Tidal Habitat Restoration.
- Alternative 2: Maximize Multibenefit Land Uses.
- Alternative 3: Maximize Flood Benefits.

Due to the reduced magnitude and duration of impacts, Alternative 2 was identified as the environmentally superior alternative as defined by CEQA Guidelines Section 15126.6. This alternative would provide similar ecological benefits to native fish and wildlife that result from restoration of tidal wetland and floodplain habitats and the increased export of aquatic food web production as would be provided under the proposed Project. Likewise, Alternative 2 would maintain multibenefit land uses and would achieve objectives related to flood benefits and reduction in wind-wave erosion similar to the proposed Project. Alternative 2 would achieve these objectives with a smaller overall construction effort (including an approximately 40 percent reduction in earthwork, and associated reduction in construction duration and total vehicle operations), resulting in substantially less environmental impacts associated with construction activities compared to the proposed Project.

This alternative seeks to attain all of the proposed Project's goals and objectives while minimizing the extent and duration of construction activities, and thereby reducing the environmental impacts associated with those construction activities compared to the proposed Project.

Regarding Goal 1 and related objectives, Alternative 2 would create a smaller area of new tidal wetland and tidal channel habitat (Objective 1) but would create a larger area of transition zone habitat that would accommodate more inland migration of habitats (Objective 4), as compared to the proposed Project. While Alternative 2 would provide similar types of benefits for native fish and wildlife compared to the proposed Project, Alternative 2 would result in more benefits associated with creation of transition zone and floodplain habitats, and lesser benefits associated with creation of tidal wetland and tidal channels.

Similar to the proposed Project, this alternative would satisfy the second objective through reducing impediments to fish passage on and off the floodplain. Floodplain and tidal wetland vegetation, as well as agricultural fields, would also contribute to aquatic food web production and export (Objective 3).

Alternative 2 would maintain compatibility with the proposed Project's multibenefit goal and objectives (Goal 2) by managing and maintaining floodplain agricultural land and managed wetlands recreational waterfowl hunting use similar to the proposed Project.

Regarding Goal 3 objectives related to reduction of flood risk in the Yolo Bypass, Alternative 2 would achieve similar reductions in flood stages and would include new floodplain vegetation that could buffer localized wind-wave erosion, as compared to the proposed Project.

ES.7 Potential Areas of Controversy and Concern

DWR prepared and published a Notice of Preparation (NOP) of an SEIR on July 23, 2024. The NOP was circulated to the public and to federal, State, and local agencies and other interested parties to solicit comments on the proposed Project. The public comment period for the NOP closed on September 7, 2024. In addition to the public and agency comment period, three public scoping meetings were held: in person with a virtual option on August 6, 2024, at California Natural Resources Headquarters; virtually on August 7, 2024; and in person on August 8, 2024, at the Yolo Bypass Wildlife Area Headquarters.

Concerns raised in response to the NOP and oral comments received at the scoping meetings were considered during preparation of the Draft SEIR. The NOP and the scoping comments are included in Appendix B to this Draft SEIR, "Tide's End Multibenefit Restoration Project Notice of Preparation and Comment Letters.

ES.8 Draft Environmental Impact Report

This Draft SEIR is available to federal, State, and local agencies and interested organizations and individuals who may want to review and comment on the analysis in this document. Publication of the Draft SEIR marks the beginning of a 45-day public review period. The 45-day public review period for the proposed Project extends from February 10, 2026, through March 27, 2026, ending at 5 p.m. During the public comment period, written comments should be delivered to:

Department of Water Resources
Division of Multibenefit Initiatives
Attn: Judah Grossman
P.O. Box 942836
Sacramento, CA 94236-0001
tidesendmbp@water.ca.gov

Please use "Tide's End Multibenefit Restoration Project Draft SEIR Comments" in the subject line. Also, if submitting comments on behalf of an agency, tribal group, or organization, please include the name of a contact person and the name of the group that the comments are coming from. All comments received, including names and addresses, will become part of the official administrative record and be available to the public.

The Draft SEIR is available for public review at the Department of Water Resources, 3500 Industrial Boulevard, West Sacramento, CA 95691 (in the lobby), and at the Mary L. Stephens – Davis Branch Library, 315 E. 14th Street, Davis, CA 95616. The Draft SEIR is also available for review online on CEQAnet (https://ceqanet.lci.ca.gov/) and can be found through DWR's website via the following link: https://water.ca.gov/New/Public-Notices. DWR will also conduct two in-person and one virtual public meeting to receive comments on the adequacy of the analysis included in the Draft SEIR.

In-person meetings will be held on:

Date: Monday February 23, 2026

Time: 10:30 am – 12:00 pm

Location: California Natural Resources Building, Media Room, second floor 2-201, 715 P Street, Sacramento CA 95814

Date: Tuesday February 24, 2026

Time: 5:00 pm – 6:30 pm

Location: Veterans Memorial Center, Club House, 203 E 14th Street, Davis CA 95616

Virtual Meeting (via Zoom) will be held on:

Date: Tuesday February 24, 2026

Time: 10:30 am – 12:00 pm

Zoom Link: https://bit.ly/TidesEndPublicMtg

Webinar ID: 827 9547 1721

Call-in number: (888) 788-0099

ES.9 Summary of Impacts

As described in Chapter 3 of this Draft SEIR, "Environmental Setting, Impacts and Mitigation Measures," The resource areas within the scope of the Final SRGO Program EIR, and for which no further analysis is required in this Draft SEIR, include:

- Aesthetics
- Energy Resources
- Forestry and Forestry Resources
- Geology and Soils
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services

- Transportation
- Wildfire

The resource area topics requiring additional analysis with respect to CEQA beyond the analysis in the Final SRGO Program EIR are presented in the following sections in this Draft SEIR:

- 3.4 Agriculture
- 3.5 Air Quality and Greenhouse Gas Emissions
- 3.6 Biological Resources – Terrestrial
- 3.7 Biological Resources – Aquatic
- 3.8 Cultural Resources
- 3.9 Hazards and Hazardous Materials
- 3.10 Hydrology and Water Quality
- 3.11 Recreation
- 3.12 Tribal Cultural Resources
- 3.13 Utilities and Service Systems

Table ES-3 presents a summary of the impacts and mitigation measures identified for the proposed Project evaluated in this Draft SEIR in Chapter 3, Sections 3.4 through 3.13. The thresholds of significance, impact statements and mitigation measures are presented in each resource section in Chapter 3. Significant impacts are those adverse environmental impacts that meet or exceed the standards of significance; less-than-significant impacts would not exceed the standards of significance. For each impact identified, Table ES-3 presents the following information:

- The environmental impact statement.
- The level of significance before mitigation for construction activities, constructed restoration elements, operations, monitoring, and maintenance activities (LTS - less than significant; NI - no impact; PS - potentially significant).
- For potentially significant impacts, recommended mitigation measures.
- Mitigation Measures and/or reference to applicable general protection and species protection measures to reduce the magnitude of the potentially significant impact
- For potentially significant impacts, the level of significance after mitigation and/or applicable general protection measures and species protection measures (LTSM - less than significant after mitigation; LTSG – less than significant with implementation of general protection measures and/or species protection measures; B - beneficial)

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TABLE ES-3
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact	LOS Prior to Construction Activities	LOS Prior to Constructed Restoration Elements	LOS Prior to Operations, Monitoring, and Maintenance Activities	Mitigation Measure	LOS After to Construction Activities	LOS After to Constructed Restoration Elements	LOS After to Operations, Monitoring, and Maintenance Activities
3.4 Agriculture							
3.4-1: Implementation of the proposed Project could convert Special Designation Farmland to nonagricultural use	LTS	PS	LTS	**Mitigation Measure AG-1: Minimize and Avoid Loss of Special Designation Farmland.** The following measures shall be implemented before and during construction of restoration projects permitted under the Order to minimize and avoid loss of Special Designation Farmland, as applicable. • Restoration projects shall be designed to minimize, to the greatest extent feasible, the loss of agricultural land with the highest values. • Restoration projects that will result in permanent conversion of Special Designated Farmland shall preserve other Special Designation Farmland in perpetuity by acquiring an agricultural conservation easement, or by contributing funds to a land trust or other entity qualified to preserve Special Designation Farmland in perpetuity (at a target ratio of 1:1, depending on the nature of the conversion and the characteristics of the Special Designated Farmland to be converted, to compensate for the permanent loss). Based upon the cost and availability of farmland, whether the landowner is sponsoring the project, recent (within 5 years) and ongoing farmland viability, and other factors, the CEQA lead agency for the individual restoration project should consider whether a 1:1 ratio is appropriate and feasible on a case-by-case basis. For example, contributions to a program such as the California Farmland Conservancy Program, which establishes conservation easements to preserve existing farmland in California, may be prohibitively expensive at a 1:1 ratio where there is a significant amount of affected Special Designated Farmland because it is based on a farm real estate average value per acre. For example, the farm real estate average value per acre in 2019 was $10,000 [USDA 2019]. • Restoration project features shall be designed to minimize fragmentation or isolation of Special Designation Farmland. Where a project involves acquiring land or easements, the remaining non-project area shall be of a size sufficient to allow viable farming operations. The project proponents shall be responsible for acquiring easements, making lot line adjustments, and merging affected land parcels into units suitable for continued commercial agricultural management. • Any utility or infrastructure serving agricultural uses shall be reconnected if it is disturbed by project construction. If a project temporarily or permanently cuts off roadway access or removes utility lines, irrigation features, or other infrastructure, the project proponents shall be responsible for restoring access as necessary to ensure that economically viable farming operations are not interrupted. • Where applicable to a project site, buffer areas shall be established between restoration projects and adjacent agricultural land. The buffers shall be sufficient to protect and maintain land capability and flexibility in agricultural operations. Buffers shall be designed to protect the feasibility of ongoing agricultural operations and reduce the effects of construction-related or operational activities (including the potential to introduce special-status species in the agricultural areas) on adjacent or nearby properties. Buffers shall also serve to protect restoration areas from noise, dust, and the application of agricultural chemicals. The width of each buffer shall be determined on a project-by-project basis to account for variations in prevailing winds, crop types, agricultural practices, ecological restoration, or infrastructure. Buffers can function as drainage swales, trails, roads, linear parkways, or other uses compatible with ongoing agricultural operations.	LTS	LTSM	LTS
3.4-2: Implementation of the proposed Project could conflict with existing zoning for agricultural use or a Williamson Act contract	LTS	PS	LTS	**Mitigation Measure AG-2: Minimize Impacts on Lands Protected by Agricultural Zoning or Williamson Act Contract.** Restoration projects shall be designed to minimize, to the greatest extent feasible, conflicts and inconsistencies with land protected by agricultural zoning or a Williamson Act contract and the terms of the applicable zoning/contract.	LTS	LTSM	LTS
3.4-3: Implementation of the proposed Project could involve other changes in the existing environment which, due to their location or nature, could result in conversion of Special Designation Farmland to non-agricultural use.	PS	LTS	LTS	See Section 3.4.4, *Impacts and Mitigation Measures*, in Section 3.4, *Agriculture,* and *Appendix A* for applicable general protection measures.	LTSG	LTS	LTS
3.5 Air Quality and Greenhouse Gas Emissions							
3.5-1: Implementation of the proposed Project could conflict with or obstruct implementation of an applicable air quality plan.	PS	PS	PS	See Section 3.5.4, *Impacts and Mitigation Measures*, in Section 3.5, *Air Quality and Greenhouse Gas Emissions*, and *Appendix A* for applicable general protection measures.	LTSG	LTSG	LTSG
3.5-2: Implementation of the proposed Project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard.	PS	PS	PS	See Section 3.5.4, *Impacts and Mitigation Measures*, in Section 3.5, *Air Quality and Greenhouse Gas Emissions*, and *Appendix A* for applicable general protection measures.	LTSG	LTSG	LTSG
3.5-3: Implementation of the proposed Project could expose sensitive receptors to substantial pollutant concentrations.	PS	PS	PS	See Section 3.5.4, *Impacts and Mitigation Measures*, in Section 3.5, *Air Quality and Greenhouse Gas Emissions*, and *Appendix A* for applicable general protection measures.	LTSG	LTSG	LTSG
3.5-4: Implementation of the proposed Project could result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	PS	PS	PS	See Section 3.5.4, *Impacts and Mitigation Measures*, in Section 3.5, *Air Quality and Greenhouse Gas Emissions*, and *Appendix A* for applicable general protection measures.	LTSG	LTSG	LTSG

LTS = less than significant; LTSG = less than significant with implementation of general protection measures; LTSM = less than significant with implementation of mitigation measures; NI = no impact; PS = potentially significant; SU = significant and unavoidable.

Impact	LOS Prior to Construction Activities	LOS Prior to Constructed Restoration Elements	LOS Prior to Operations, Monitoring, and Maintenance Activities	Mitigation Measure	LOS After to Construction Activities	LOS After to Constructed Restoration Elements	LOS After to Operations, Monitoring, and Maintenance Activities
3.5-5: Implementation of the proposed Project could result in an increase in GHG emissions that may have a significant impact on the environment.	LTS	LTS	LTS	None required.	LTS	LTS	LTS
3.5-6: Implementation of the proposed Project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.	LTS	LTS	LTS	None required.	LTS	LTS	LTS
3.6 Biological Resources—Terrestrial							
3.6-1: Implementation of the proposed Project could adversely affect habitat for special-status plant species.	LTS	PS	PS	See Section 3.6.4, *Impacts and Mitigation Measures*, in Section 3.6, *Biological Resources—Terrestrial*, and *Appendix A* for applicable general protection measures and species protection measures.	LTS	LTSG	LTSG
3.6-2: Implementation of the proposed Project could adversely affect habitat for special-status wildlife species.	PS	PS	PS	See Section 3.6.4, *Impacts and Mitigation Measures*, in Section 3.6, *Biological Resources—Terrestrial*, and *Appendix A* for applicable general protection measures and species protection measures.	LTSG	LTSG	LTSG
3.6-3: Implementation of the proposed Project could result in adverse effects on riparian habitat or sensitive natural communities.	PS	PS	PS	See Section 3.6.4, *Impacts and Mitigation Measures*, in Section 3.6, *Biological Resources—Terrestrial*, and *Appendix A* for applicable general protection measures.	LTSG	LTSG	LTSG
3.6-4: Implementation of the proposed Project could result in adverse effects on State and federally protected wetlands through direct removal, hydrological interruption, or other means.	PS	PS	PS	See Section 3.6.4, *Impacts and Mitigation Measures*, in Section 3.6, *Biological Resources—Terrestrial*, and *Appendix A* for applicable general protection measures and species protection measures.	LTSG	LTSG	LTSG
3.6-5: Implementation of the proposed Project could interfere with the movement of native resident and migratory wildlife species.	PS	PS	PS	See Section 3.6.4, *Impacts and Mitigation Measures*, in Section 3.6, *Biological Resources—Terrestrial*, and *Appendix A* for applicable general protection measures and species protection measures.	LTSG	LTSG	LTSG
3.6-6: Implementation of the proposed Project could conflict with local policies or ordinances protecting biological resources.	LTS	LTS	LTS	None required.	LTS	LTS	LTS
3.6-7: Implementation of the proposed Project could conflict with the provisions of an adopted habitat conservation plan or natural community conservation plan.	LTS	PS	PS	**Mitigation Measure TERR-1: Coordinate with CDFW, USFWS, and Permittees Regarding HCPs, NCCPs, and Other Conservation Plans.** If the site for a restoration project permitted under the Order is within the planning area for any adopted HCP, NCCP, or similar conservation plan, the CEQA lead agency for the project shall consult with the plan permittee(s), CDFW, and/or USFWS, as applicable, to identify any potential conflicts with the plan's goals, objectives, or conservation measures. As part of this consultation, the CEQA lead agency shall seek input regarding potential design features, conservation measures, or other mitigation strategies to avoid potential conflicts and achieve substantial conformance with the objectives of the HCP, NCCP, or similar conservation plan. The CEQA lead agency shall implement these elements as applicable to ensure that the restoration project conforms to applicable goals and policies set forth in the adopted conservation plan.	LTS	LTSM	LTSM
3.7 Biological Resources—Aquatic							
3.7-1: Implementation of the proposed Project could result in substantial adverse effects on special-status fish species directly, or indirectly through habitat modifications.	PS	NI	PS	See Section 3.7.5, *Impacts and Mitigation Measures*, in Section 3.7, *Biological Resources—Aquatic*, and *Appendix A* for applicable general protection measures and species protection measures.	LTSG	B	LTSG
3.7-2: Implementation of the proposed Project could result in substantial adverse direct effects on the movement of native resident or migratory fish.	LTS	NI	NI	None required.	LTS	B	B
3.8 Cultural Resources							
3.8-1: Implementation of the proposed Project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.	NI	NI	NI	None required.	NI	NI	NI

LTS = less than significant; LTSG = less than significant with implementation of general protection measures; LTSM = less than significant with implementation of mitigation measures; NI = no impact; PS = potentially significant; SU = significant and unavoidable.

Impact	LOS Prior to Construction Activities	LOS Prior to Constructed Restoration Elements	LOS Prior to Operations, Monitoring, and Maintenance Activities	Mitigation Measure	LOS After to Construction Activities	LOS After to Constructed Restoration Elements	LOS After to Operations, Monitoring, and Maintenance Activities
3.8-2: Implementation of the proposed Project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	PS	PS	PS	**Mitigation Measure CUL-3: Implement Measures to Protect Archaeological Resources during Project Construction or Operations.** If archaeological resources are encountered during project construction or operations of any project permitted under the Order, all activity within 100 feet of the find shall cease and the find shall be flagged for avoidance. The lead agency and a qualified archaeologist, defined as one meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology, shall be immediately informed of the discovery. The qualified archaeologist shall inspect the discovery and notify the lead agency of their initial assessment. If the qualified archaeologist determines that the resource is or is potentially indigenous in origin, the lead agency shall consult with culturally affiliated California Native American Tribes to assess the find and determine whether it is potentially a tribal cultural resource. If the lead agency determines, based on recommendations from the qualified archaeologist and culturally affiliated California Native American Tribes, that the resource is indigenous, that the resource may qualify as a historical resource (per State CEQA Guidelines Section 15064.5), unique archaeological resource (per PRC Section 21083.2), or tribal cultural resource (per PRC Section 21074), then the resource shall be avoided if feasible. If avoidance of an identified indigenous resource is not feasible, the lead agency shall consult with a qualified archaeologist, culturally affiliated California Native American Tribes, and other appropriate interested parties to determine treatment measures to minimize or mitigate any potential impacts on the resource pursuant to PRC Section 21083.2 and State CEQA Guidelines Section 15126.4. If any such resources are on or in the tide and submerged lands of California, this process shall also include coordination with the California State Lands Commission. Once treatment measures have been determined, the lead agency shall prepare and implement an archaeological (and/or tribal cultural) resources management plan that outlines the treatment measures for the resource. Treatment measures typically consist of the following steps: • Determine whether the resource qualifies as a historical resource (per State CEQA Guidelines Section 15064.5), unique archaeological resource (per PRC Section 21083.2), or tribal cultural resource (per PRC Section 21074) through analysis that could include additional historical or ethnographic research, evaluative testing (excavation), or laboratory analysis. • If it qualifies as a historical resource (per State CEQA Guidelines Section 15064.5) and/or unique archaeological resource (per PRC Section 21083.2), implement measures for avoiding or reducing impacts such as the following: o Modify the project to avoid impacts on resources. o Plan parks, green space, or other open space to incorporate resources. o Recover the scientifically consequential information from the archaeological resource before any excavation at the resource's location. This typically consists of (but is not necessarily limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the resource to be affected by the project. o Develop and implement interpretive programs or displays. • If it qualifies as a tribal cultural resource (per PRC Section 21074) implement measures for avoiding or reducing impacts such as the following: o Avoid and preserve the resource in place through measures that include but are not limited to the following: – Plan and construct the project to avoid the resource and protect the cultural and natural context. – Plan greenspace, parks, or other open space to incorporate the resources with culturally appropriate protection and management criteria. o Treat the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, through measures that include but are not limited to the following: – Protect the cultural character and integrity of the resource. – Protect the traditional use of the resource. – Protect the confidentiality of the resource. o Implement permanent conservation easements or other interests in real property, with cultural appropriate management criteria for the purposes of preserving or using the resource or place.	LTSM	LTSM	LTSM
3.8-3: Implementation of the proposed Project could disturb human remains, including those interred outside of dedicated cemeteries.	PS	PS	PS	**Mitigation Measure CUL-4: Implement Measures to Protect Human Remains during Project Construction or Operations** If human remains are encountered during construction or operations and maintenance of any project permitted under the Order, all work shall immediately halt within 100 feet of the find and the lead agency shall contact the appropriate county coroner to evaluate the remains and follow the procedures and protocols set forth in State CEQA Guidelines Section 15064.5(e)(1). If human remains encountered are on or in the tide and submerged lands of California, the lead agency shall also contact the California State Lands Commission. If the coroner determines that the remains are Native American in origin, the appropriate county shall contact the California Native American Heritage Commission, in accordance with California Health and Safety Code Section 7050.5(c) and PRC Section 5097.98. Per PRC Section 5097.98, the project's lead agency shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the lead agency has discussed and conferred, as prescribed PRC Section 5097.98, with the most likely descendants and the property owner regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.	LTSM	LTSM	LTSM

LTS = less than significant; LTSG = less than significant with implementation of general protection measures; LTSM = less than significant with implementation of mitigation measures; NI = no impact; PS = potentially significant; SU = significant and unavoidable.

Impact	LOS Prior to Construction Activities	LOS Prior to Constructed Restoration Elements	LOS Prior to Operations, Monitoring, and Maintenance Activities	Mitigation Measure	LOS After to Construction Activities	LOS After to Constructed Restoration Elements	LOS After to Operations, Monitoring, and Maintenance Activities
3.9 Hazards and Hazardous Materials							
3.9-1: Implementation of the proposed Project could involve the routine transport, use, or disposal of hazardous materials that, if accidentally released, could create a hazard to the public or the environment.	PS	PS	PS	See Section 3.9.4, *Impacts and Mitigation Measures*, in Section 3.9, *Hazards and Hazardous Materials*, and *Appendix A* for applicable general protection measures and species protection measures.	LTSG	LTSG	LTSG
3.9-2: Ground-disturbing activities for construction of the proposed Project could encounter previously unidentified contaminated soil and/or groundwater, potentially exposing construction workers, the public, and the environment to risks associated with hazardous materials.	PS	LTS	LTS	**Mitigation Measure HAZ-1: Prepare and Implement a Health and Safety Plan and Provide Qualified Oversight of Fill Removal Related to Earthmoving Activities.** The following measures shall be implemented before and during construction of the proposed Project: • A health and safety plan for the project shall be developed and implemented. This plan shall clearly notify all workers of the potential to encounter hazardous materials during ground-disturbing work and other construction activities. The plan shall identify proper handling and disposal procedures for contaminants expected to be on-site and shall provide maps and phone numbers for local hospitals and other emergency contacts. Construction workers shall comply with all protocols outlined in the health and safety plan throughout project implementation. • Any hazardous materials being stored in the project area and not needed for construction activities shall be removed and disposed of at appropriately permitted locations before construction. A qualified professional (e.g., geologist or engineer) shall oversee fill excavation activities and work in potential project areas that contain abandoned underground storage tanks requiring removal, to properly identify any contaminated soils that may be present. Excavation of underground storage tanks must comply with county ordinances and policies. If contaminated soils are found, Mitigation Measure HAZ-2 shall be implemented. • Removal of underground storage tanks associated with the restoration project shall include measures to ensure their safe transport and disposal. Remediation actions, if necessary, shall be defined in consultation with the local regional water board and implemented during construction. **Mitigation Measure HAZ-2: Notify Appropriate Federal, State, and Local Agencies If Contaminated Soils Are Identified, and Complete Recommended Remediation Activities.** The following measures shall be implemented before construction of the proposed Project if contaminated soils are found in the proposed Project area: • The appropriate federal, State, and local agencies shall be notified if evidence of previously undiscovered soil or groundwater contamination (e.g., stained soil, odorous groundwater) is encountered during construction activities. Any contaminated areas shall be cleaned up in accordance with the recommendations of the regional water board, DTSC, or other appropriate federal, State, or local regulatory agencies. • A site plan shall be prepared for the remediation activities appropriate for the proposed land uses, including excavation and removal of on-site contaminated soils, and needed redistributions of clean fill material in the study area. The plan shall include measures to ensure the safe transport, use, and disposal of contaminated soil and building debris removed from the site. If ground-disturbing activities encounter contaminated groundwater, the construction contractor shall report the contamination to the appropriate agencies, dewater the area, and treat the groundwater to remove the contaminants before discharge into the sanitary sewer system. The construction contractor shall comply with the plan and applicable federal, State, and local laws. The plan shall outline specific procedures for handling and reporting of hazardous materials, and for disposing of hazardous materials removed from the site at an appropriate off-site facility. **Mitigation Measure HAZ-3: Notify Appropriate Federal, State, and Local Agencies If Accidental Discharges of Hazardous Materials.** Following an accidental discharge of a reportable quantity of a hazardous material or an unknown material, the appropriate federal, State, and local agencies shall be notified. Any contaminated areas shall be cleaned up in accordance with the recommendations of a regional water board, DTSC, or other appropriate federal, State, or local regulatory agencies.	LTSM	LTS	LTS
3.9-3: Implementation of the proposed Project could interfere with emergency response access or with an adopted emergency response or evacuation plan (including those located in or near State responsibility areas or land classified as very high Fire Hazard Severity Zone) or result in inadequate emergency access.	LTS	LTS	LTS	None required.	LTS	LTS	LTS
3.9-4: Implementation of the proposed Project could create vector habitat that would pose a significant public health hazard.	LTS	LTS	LTS	None required.	LTS	LTS	LTS

LTS = less than significant; LTSG = less than significant with implementation of general protection measures; LTSM = less than significant with implementation of mitigation measures; NI = no impact; PS = potentially significant; SU = significant and unavoidable.

Impact	LOS Prior to Construction Activities	LOS Prior to Constructed Restoration Elements	LOS Prior to Operations, Monitoring, and Maintenance Activities	Mitigation Measure	LOS After to Construction Activities	LOS After to Constructed Restoration Elements	LOS After to Operations, Monitoring, and Maintenance Activities
3.10 Hydrology and Water Quality							
3.10-1: Implementation of the proposed Project could substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that could result in substantial on- or off-site erosion or siltation; substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding; create or contribute runoff water which would exceed the capacity of the existing or planned irrigation drainage system or provide substantial additional sources of polluted runoff; or impede or redirect flood flows.	PS	LTS	LTS	See Section 3.10.4, *Impacts and Mitigation Measures*, in Section 3.10, *Hydrology and Water Quality*, and *Appendix A* for applicable general protection measures.	LTSG	LTS	LTS
3.10-2: Implementation of the proposed Project could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the proposed Project may impede sustainable groundwater management of the basin or obstruct implementation of a sustainable groundwater management plan.	PS	LTS	LTS	See Section 3.10.4, *Impacts and Mitigation Measures*, in Section 3.10, *Hydrology and Water Quality*, and *Appendix A* for applicable general protection measures.	LTSG	LTS	LTS
3.10-3: Implementation of the proposed Project could result in the release of pollutants into surface water and/or groundwater that could violate water quality standards or waste discharge requirements, substantially degrade water quality, or obstruct implementation of a water quality control plan.	PS	LTS	PS	See Section 3.10.4, *Impacts and Mitigation Measures*, in Section 3.10, *Hydrology and Water Quality*, and *Appendix A* for applicable general protection measures.	LTSG	LTS	LTSG
3.11 Recreation							
3.11-1: Implementation of the proposed Project could directly impair, degrade, or eliminate recreational resources, facilities, and opportunities.	LTS	LTS	LTS	None required.	LTS	LTS	LTS
3.11-2: Implementation of the proposed Project could alter recreational resources or facilities or require the construction or expansion of recreational facilities that could result in environmental impacts.	LTS	LTS	LTS	None required.	LTS	LTS	LTS
3.11-3: Implementation of the proposed Project could increase the use of existing recreational resources and facilities such that substantial physical deterioration would occur or be accelerated.	LTS	LTS	LTS	None required.	LTS	LTS	LTS
3.12 Tribal Cultural Resources							
3.12-1: Implementation of the proposed Project could cause a substantial adverse change in the significance of a Tribal cultural resource, as defined in PRC Section 21074.	PS	PS	PS	**Mitigation Measure TCR-2: Implement Measures to Protect Tribal Cultural Resources during Project Construction or Operation.** These measures include but are not limited to those outlined in PRC Section 21084.3. If tribal cultural resources or indigenous archaeological resources that may qualify as tribal cultural resources are encountered during project construction or operation of any project permitted under the Order, all activity within 100 feet of the find shall cease and the find shall be flagged for avoidance. The lead agency, a qualified archaeologist, defined as one meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology, and California Native American Tribes that are traditionally and culturally affiliated to a project area shall be immediately informed of the discovery. The qualified archaeologist and representatives from the notified Native American Tribes shall inspect the discovery and notify the lead agency of their initial assessment. a. If the lead agency determines, based on recommendations from the qualified archaeologist and California Native American Tribes that are traditionally and culturally affiliated to a project area, that the resource may qualify as a tribal cultural resource (per PRC Section 21074), then the resource shall be avoided if feasible. If avoidance of the resource is not feasible, the lead agency shall consult California Native American Tribes that are traditionally and culturally affiliated to a project area to determine treatment measures to minimize or mitigate any potential impacts on the resource pursuant to PRC Section 21083.2 and CEQA Guidelines Section 15126.4. If any such resources are on or in the tide and submerged lands of California, this process shall also include coordination with the California State Lands Commission. Once treatment measures have been determined, the lead agency shall prepare and implement a tribal cultural resources management plan that outlines the treatment measures for the resource. Treatment measures typically consist of the following steps:	LTSM	LTSM	LTSM

LTS = less than significant; LTSG = less than significant with implementation of general protection measures; LTSM = less than significant with implementation of mitigation measures; NI = no impact; PS = potentially significant; SU = significant and unavoidable.

Impact	LOS Prior to Construction Activities	LOS Prior to Constructed Restoration Elements	LOS Prior to Operations, Monitoring, and Maintenance Activities	Mitigation Measure	LOS After to Construction Activities	LOS After to Constructed Restoration Elements	LOS After to Operations, Monitoring, and Maintenance Activities
				○ Determine whether the resource qualifies as a tribal cultural resource (per PRC Section 21074) through analysis that could include additional ethnographic research, archaeological investigations, or laboratory analysis. ○ If it qualifies as a tribal cultural resource (per PRC Section 21074) implement measures for avoiding or reducing impacts such as the following: – Avoid and preserve the resource in place through measures that include but are not limited to the following: ▪ Plan and construct the project to avoid the resource and protect the cultural and natural context. ▪ Plan greenspace, parks, or other open space to incorporate the resources with culturally appropriate protection and management criteria. ○ Treat the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, through measures that include but are not limited to the following: ▪ Protect the cultural character and integrity of the resource. ▪ Protect the traditional use of the resource. ▪ Protect the confidentiality of the resource. ○ Implement permanent conservation easements or other interests in real property, with cultural appropriate management criteria for the purposes of preserving or using the resource or place. **Mitigation Measure CUL-4: Implement Measures to Protect Human Remains during Project Construction or Operation.** See Section 3.8.4, *Impacts and Mitigation Measures*, in Section 3.8, *Cultural Resources*.			
3.13 Utilities and Service Systems and Public Services							
3.13-1: Implementation of the proposed Project could require or result in the construction or relocation of new or expanded water or electric power facilities, the construction or relocation of which could cause significant environmental effects.	LTS	LTS	LTS	None required	LTS	LTS	LTS
3.13-2: Implementation of the proposed Project could result in insufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years.	LTS	LTS	LTS	None required	LTS	LTS	LTS
3.13-3: The proposed Project could be served by a landfill with insufficient permitted capacity to accommodate the Project's solid waste disposal needs and could fail to comply with federal, State, and local statutes and regulations related to solid waste.	LTS	LTS	LTS	None required	LTS	LTS	LTS

LTS = less than significant; LTSG = less than significant with implementation of general protection measures; LTSM = less than significant with implementation of mitigation measures; NI = no impact; PS = potentially significant; SU = significant and unavoidable.

CHAPTER 1
Introduction

The California Department of Water Resources (DWR), as lead agency under the California Environmental Quality Act (CEQA), proposes to implement the Tide's End Multibenefit Restoration Project (proposed Project). This draft supplemental environmental impact report (Draft SEIR) was prepared pursuant to CEQA as a supplement to the State Water Resources Control Board Restoration Projects Statewide Order Program Environmental Impact Report (EIR; State Clearinghouse No. 2019100230), which was prepared for the State Water Resources Control Board (State Water Board) "Order for Clean Water Act Section 401 Water Quality Certification and Waste Discharge Requirements for Restoration Projects Statewide."

The proposed Project is being developed to restore and enhance tidal wetland and floodplain habitat, support multibenefit land uses (including managed wetlands and floodplain agriculture), and maintain or improve flood conveyance in the Yolo Bypass. The proposed Project would also support the framework outlined in the Healthy Rivers and Landscapes (HRL) Program and further the goals and objectives of the Central Valley Flood Protection Plan and the Central Valley Flood Protection Plan Conservation Strategy (CVFPP; DWR 2022). The 2,212-acre proposed Project area is located in Yolo County at the downstream end of the Yolo Bypass, about 12 miles southwest of Sacramento and 10 miles southeast of Davis. See Sections 2.1.1 and 2.1.2 in Chapter 2, "Project Description," for a detailed description of the location and the purpose, goals, and objectives of the proposed Project.

1.1 Eligibility for Coverage under the Statewide Restoration General Order and Program EIR

In 2022, the State Water Board issued Order WQ 2022-0048-DWQ, "Order for Clean Water Act Section 401 Water Quality Certification and Waste Discharge Requirements for Restoration Projects Statewide," also known as the Statewide Restoration General Order (SRGO, or Order). The purpose of the SRGO is as follows:

> *…to expedite consultation, authorization, and permitting of restoration projects intended to help the State of California achieve its habitat restoration, species recovery, and water quality improvement goals.*

(State Water Board 2022a: Attachment A, p. A-1.) The SRGO provides programmatic authorization for large-scale habitat restoration projects that are consistent with certain eligibility criteria (outlined in Final Attachment A to the SRGO and Appendix E to the Final SRGO Program EIR, "Description and Eligibility").

The State Water Board prepared a program EIR to evaluate impacts of project types covered by the SRGO and associated measures to protect species and the environment. Under CEQA Guidelines Section 15168, a program EIR is an EIR prepared for a series of actions that can be characterized as one large project and are related either: geographically as logical parts in the chain of contemplated actions; in connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or as individual activities carried out under the same statutory or regulatory authority that have generally similar environmental effects that can be mitigated in similar ways (California Code of Regulations [CCR] Title 14, Section 15168[a]). The Final SRGO Program EIR was certified in September 2022, including programmatic sideboards, design guidelines, general protection measures, species protection measures, and mitigation measures to protect species and the environment, with the intent that the State Water Board and other administrative agencies would use the SRGO and the Program EIR's analysis to streamline environmental review of qualifying restoration projects, such as the proposed Project, the subject of this Draft SEIR.

To be eligible for the programmatic coverage described above, a project must be a "restoration project" as defined in Section V of the SRGO. The SRGO defines a qualifying restoration project as follows:

> *[A project] that would result in a net increase in aquatic or riparian resource area functions and/or services through implementation of the eligible project types, relevant general protection measures (GPMs), and consideration of design guidelines, summarized below and described in detail in Attachment A, Order Description and Eligibility. (State Water Board 2022a: Section V, p. 2)*

In addition, as stated in the Final SRGO Program EIR, a restoration project covered under the SRGO may include multiple benefits, such as groundwater recharge, recreation, flood management, water quality improvement, and/or adaptation to climate change (Final SRGO Program EIR: Section 1.1, p. 1-2; see also p. 3.6-8).

The proposed Project meets the definition of a qualifying restoration project; it is a multibenefit project that includes the restoration and enhancement of a variety of aquatic habitat types, resulting in a net increase in tidal wetland and associated floodplain habitat functions, with flood management benefits.

As discussed further below, the proposed Project meets the eligibility criteria, design guidelines, and other protection and mitigation measures outlined in the SRGO (Attachment A, "Description and Eligibility") and the Final SRGO Program EIR (Appendix F, "Species Protection Measures," and Appendix J, "Mitigation Monitoring and Reporting Program"), and meets CEQA's requirement to incorporate applicable mitigation measures and alternatives developed in the Final SRGO Program EIR into the proposed Project, per CEQA Guidelines Section 15168(c)(3). Given the proposed Project's eligibility for the SRGO, this Draft SEIR would meet the above-outlined objective of the SRGO in expediting the consultation, authorization, and permitting of restoration projects intended to help the State of California achieve its habitat restoration and species recovery goals.

1.1.1 The Proposed Project is an "Eligible Project Type"

Attachment A to the SRGO describes categories of eligible restoration project types in Section A.4 (State Water Board 2022a: Attachment A, p. A-9). The proposed Project includes elements associated with several different restoration project types to achieve a range of goals and objectives for habitat enhancement and restoration (based on existing site elevations), flood management, and recreation. The proposed Project area spans the transition between the tidally influenced Cache Slough Complex and the Yolo Bypass floodplain; consequently, elements of the proposed Project provide benefits associated with SRGO project type A.4.6: "Floodplain Restoration" and project type A.4.9: "Establishment, Restoration, and Enhancement of Tidal, Subtidal, and Freshwater Wetlands," outlined below.

To be eligible for CEQA coverage under the final SRGO Program, a proposed project does not need to meet all criteria of the listed project type (Final SRGO Program EIR: Section 2.6, "Categories of Restoration Projects in the Order," pp. 2-8 through 2-22) and may modify design approaches that do not conform with the specific guidelines based on site-specific conditions or technological constraints or advances, or regionally accepted guidance documents (Final SRGO Program EIR: Section 2.9, "Design Guidelines," p. 2-32).

SRGO Project Type A.4.6: "Floodplain Restoration"

The proposed Project objectives are consistent with SRGO project type A.4.6: "Floodplain Restoration" (State Water Board 2022a: Attachment A, pp. A-15 through A-17). The essential outcomes for a floodplain restoration project are to:

- Provide opportunities for sediment to deposit on the floodplain seasonally, which enhances meadow vegetation, use by birds and mammals, and fish rearing and spawning, and also provides refuge from predators and physical stressors.
- Create intermittent hydrologic connections between streams and floodplains.
- Increase floodway capacity and the frequency and duration of floodway inundation.
- Improve ecosystem functions for aquatic and terrestrial species and also improve water quality.
- Reconnect stream channels to floodplains, thus improving the fluvial dynamics of the watershed system, and allowing normal patterns of sediment deposition and transport, as well as channel migration.
- Reduce or eliminate areas that strand native fish or provide habitat for non-native predatory fish, or both.
- Provide high-flow and thermal refuges for native fish and other aquatic species.

Table 1-1 describes how the proposed Project achieves these essential outcomes for floodplain restoration. For supporting documentation of these proposed Project benefits, see Chapter 2, "Project Description," Section 3.7, "Biological Resources – Aquatic," and Section 3.10, "Hydrology and Water Quality," of this Draft SEIR.

TABLE 1-1
PROPOSED PROJECT BENEFITS RELATIVE TO ESSENTIAL OUTCOMES FOR FLOODPLAIN RESTORATION PROJECTS UNDER THE SRGO

Essential SRGO-Defined Outcome	Benefits of the Proposed Project
Provide opportunities for sediment to deposit on the floodplain seasonally, which enhances meadow vegetation, use by birds and mammals, and fish rearing and spawning, and also provides refuge from predators and physical stressors.	The proposed Project would construct tidal channels that would be connected to seasonally inundated floodplain habitats by modifying existing berms and installing fish-passable water control structures to improve hydrologic connectivity and fish migration between the Yolo Bypass floodplain and the Toe Drain channel, benefiting fish rearing. The proposed Project would also create tidal channels that would improve tidal exchange and flow conveyance that would enhance and expand tidal wetlands that, over time, would capture vital sediments needed to sustain wetland habitats and support native species. The proposed Project would enhance floodway capacity along the Yolo Bypass by lowering existing berms within the floodplain and facilitating management of tall, dense vegetation to maintain floodplain conveyance. The proposed Project would increase the duration of inundation for floodplain habitats to support fish rearing and other wildlife by: • Establishing an improved irrigation and drainage system serving the agricultural fields and managed wetlands that would reduce redundant pumps, convey fish food, and install fish screens for the protection of fish. • Creating new tidal wetland and tidal channel habitats that would provide year-round habitat for fish and other aquatic wildlife. • Preserving existing and creating new riparian and transition zone habitats adjacent to the new tidal wetland areas that would be directly accessible by fish during floodplain flows and that would provide indirect benefits to the adjacent wetlands (i.e., by providing shade, an increased diversity and resilience of plant and wildlife species, and space for wetland habitat to migrate with sea-level rise).
Create intermittent hydrologic connections between streams and floodplains.	
Increase floodway capacity and the frequency and duration of floodway inundation.	
Improve ecosystem functions for aquatic and terrestrial species and also improve water quality.	The proposed Project would improve ecosystem functions by: • Improving connectivity between the Toe Drain, tidal channels and adjacent tidal wetland, and floodplain areas. • Modifying agricultural and managed pond water use to promote primary productivity, promoting floodplain fish rearing. • Promoting drainage patterns from agricultural areas and managed wetlands that would increase dry-season water flow to tidal wetlands. • Improving ecosystem functions, including water quality, through the establishment of freshwater tidal wetland vegetation that would convert dissolved nutrients into plant matter, filtering pollutants, and recharging groundwater supplies.
Reconnect stream channels to floodplains, thus improving the fluvial dynamics of the watershed system, for example, by allowing normal patterns of sediment deposition and transport, as well as channel migration.	*[Not relevant for the proposed Project area. The proposed Project area is at the lower limit of the watershed, in the tidally influenced zone, and no major creek channels pass through the proposed Project area.]*
Reduce or eliminate areas that strand native fish or provide habitat for non-native predatory fish, or both.	The proposed Project would remove fish passage barriers by removing or lowering existing berms, removing redundant pumps, creating new tidal channels, and installing fish screens on water control structures. Water control structures would be limited to the minimum necessary to support managed floodplain agriculture and managed wetland land uses. Design features would create and enhance natural, dynamic processes associated with seasonally inundated floodplain and tidal wetland habitats that discourage establishment of non-native predatory fish species and predation hot spots.

Essential SRGO-Defined Outcome	Benefits of the Proposed Project
Provide high-flow and thermal refuges for native fish and other aquatic species.	The proposed Project's location on the Yolo Bypass and associated design features, including managed floodplains and tidal wetlands, would provide high-flow refugia for native fish and other aquatic species.

Notes: proposed Project = Tide's End Multibenefit Restoration Project; SRGO = Statewide Restoration General Order
Sources: State Water Board 2022a; data compiled by Environmental Science Associates in 2025

SRGO Project Type A.4.9: "Establishment, Restoration, and Enhancement of Tidal, Subtidal, and Freshwater Wetlands"

The primary benefits of the proposed Project are consistent with SRGO project type A.4.9: "Establishment, Restoration, and Enhancement of Tidal, Subtidal, and Freshwater Wetlands" (State Water Board 2022a: Attachment A, pp. A-18 through A-21). The essential outcomes from this project type are the following: (1) increased wetland area, (2) increased primary and secondary ecological productivity, and (3) increased diversity of habitat.

Table 1-2 describes how the proposed Project achieves these essential outcomes for establishment, restoration, and enhancement of tidal, subtidal, and freshwater wetlands. For supporting documentation of these proposed Project benefits, see Chapter 2, "Project Description," and Section 3.7, "Biological Resources – Aquatic," of this Draft SEIR.

TABLE 1-2
ESSENTIAL OUTCOMES FOR ESTABLISHMENT, RESTORATION, AND ENHANCEMENT OF TIDAL, SUBTIDAL, AND FRESHWATER WETLANDS UNDER THE SRGO

Essential SRGO-Defined Outcome	Proposed Project Benefits
Increased Wetland Area	The proposed Project would restore 511 acres of tidal wetland habitat. The proposed Project would restore 152 acres of transition zone habitat adjacent to restored tidal wetlands.
Increased Primary and Secondary Ecological Productivity	The proposed Project's conversion of existing floodplain agricultural areas and nontidal managed wetlands to tidal wetlands would increase the duration of inundation, with corresponding increases in primary productivity. The proposed Project's construction of the new tidal channel network would improve nutrient export to other tidal habitats in the region via the Toe Drain.
Increased Diversity of Habitat	The proposed Project would create a substantial area of new tidal wetland habitat and transition zone habitat, greatly increasing the diversity of tidal habitats in the vicinity. Existing tidal habitat types in the vicinity are limited to open-water tidal canals and very narrow fringing marshes, generally less than 10 feet wide, along the Toe Drain channel banks.

Notes: proposed Project = Tide's End Multibenefit Restoration Project; SRGO = Statewide Restoration General Order
Sources: State Water Board 2022a; data compiled by Environmental Science Associates in 2025

1.1.2 The Proposed Project Design Incorporates Guidance from Applicable Programmatic Sideboards

Attachment A to the SRGO provides a list of programmatic sideboards in Section A.5.1. Individual restoration projects authorized through the SRGO should be designed, planned, and implemented in a

manner that is consistent with the techniques and minimization measures presented in the list of guidance documents and administrative agency manuals listed as programmatic sideboards of the Final SRGO Program EIR. The following guidance documents contain applicable general protection measures to ensure the avoidance and minimization of impacts on aquatic/riparian resources for proposed Project construction activities (State Water Board 2022a: Attachment A, p. A-24). These guidance documents are relevant to the proposed Project based on project type and have been reviewed as noted to guide planning and design of the proposed Project:

- The following chapters of the California Department of Fish and Wildlife's (CDFW) *California Salmonid Stream Habitat Restoration Manual*, Fourth Edition, Volume II (Flosi et al. 2010), were used to provide general guidance on upland (unmanaged floodplain), riparian, and aquatic features:
  - Part X, *Upslope Assessment and Restoration Practices.*
  - Part XI, *Riparian Habitat Restoration.*
  - Part XII, *Fish Passage Design and Implementation.*
- CDFW's *Fisheries Restoration Grant Program* guidance documents, specifically the *California Riparian Habitat Restoration Handbook* (Griggs 2009), were used to provide guidance for managed and unmanaged floodplain, riparian, and aquatic features, including associated permitting requirements.
- The National Marine Fisheries Service's (NMFS) *Fish Screening Criteria for Anadromous Salmonids* (NMFS 1997) and CDFW's *Fish Screening Criteria* (from the *California Salmonid Stream Habitat Restoration Manual*) were used to provide guidance and requirements for pump intake fish screens.
- NMFS' science-based tools for evaluating stream engineering, management, and restoration proposals (Skidmore et al. 2011) were used to provide general guidance on upland (unmanaged floodplain), riparian, and aquatic features.
- CDFW's and DWR's *Managed Agricultural Floodplain Design Criteria* (CDFW and DWR 2020) document was used to provide specific design criteria for managed floodplain elements.

1.1.3 The Proposed Project Design Incorporates Design Guidelines

Attachment A to the SRGO provides design guidelines by project type in Section A.6 (State Water Board 2022a: Attachment A, pp. A-42 through A-58). **Table 1-3** and **Table 1-4** describe how the proposed Project incorporates design guidelines for the "Establishment, Restoration, and Enhancement of Tidal, Subtidal, and Freshwater Wetlands" and "Floodplain Restoration" project types.

TABLE 1-3
SRGO DESIGN GUIDELINES FOR ESTABLISHMENT, RESTORATION, AND ENHANCEMENT OF TIDAL, SUBTIDAL, AND FRESHWATER WETLANDS

Design Guideline	Applicable to Proposed Project?	Discussion
Implement projects to repair or restore estuary functions, while not putting adjacent landowners at increased flood risk once dikes/levees are notched and the project area is flooded.	Yes	The proposed Project design is consistent with this guideline. See Section 3.10, "Hydrology and Water Quality," of this Draft SEIR for a description of the hydrologic and hydraulic analyses performed to verify proposed Project outcomes related to flood conveyance and landowner protection.
Where possible, recreate historic channel morphology that supports wetland function. Channel designs may be based on aerial photograph interpretation, literature, topographic surveys, and nearby undisturbed channels. Channel dimensions (width and depth) are based on measurements of similar types of channels and the drainage area. For example, channels may have varied topography throughout their length to encourage sinuosity of the developing channel.	Yes	The proposed Project design is consistent with this guideline. See Section 2.1 of Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impact Assessment," for information on the historic ecology of the proposed Project area. See Sections 2.2.2 and 2.2.4 of Section 2.2, "Proposed Project Restoration Elements," in Chapter 2, "Project Description," for information on tidal channel design.
To the extent possible, prior to restoration, remove or decommission infrastructure or ditches that were installed historically to drain wetlands or unwanted historical structures, such as duck blinds, docks, or boat hides. Restore contours created through the drain tile removal by backfilling the ditch with clean fill.	Yes	The proposed Project design is consistent with this guideline. The proposed Project would remove redundant pumps and other water control infrastructure and regrade ditches that are incompatible with the proposed restored habitats. Some portions of existing ditches would be integrated into the proposed new tidal channel network where consistent with desired habitat types. Some existing channels and infrastructure would remain and be reused and reconfigured where needed to provide irrigation and drainage to support continued agriculture and managed wetland land uses in neighboring areas. Fish screens would be added to all remaining infrastructure.
Remove temporary access roads and decompact soils as necessary to support desired revegetation.	Yes	The proposed Project design is consistent with this guideline. The proposed Project would restore to pre-project conditions any temporary access roads created during construction. Haul routes would be decompacted using conventional soil loosening techniques.
Restore wetlands to elevations necessary to support the desired vegetation communities, accounting for anticipated natural sediment accumulation. Appropriate dredge material or other clean fill material may be imported to raise subsided landscapes, depending on the desired habitat to be restored. Overfill may be necessary to accommodate settling. When projects involve dredge material, conduct a pre-application consultation.	Yes	The proposed Project design is consistent with this guideline. The proposed Project would restore a mosaic of tidal and transition zone habitats generally following the variability of the existing ground elevations, with targeted local grading to achieve desirable hydrologic and ecologic connectivity within and between habitat types. The proposed Project would not involve importing dredge material.
If grading of intertidal plain (landform) is required, implement the following measures, to the extent feasible, to avoid and/or minimize adverse effects to water quality, aquatic resources, and/or special-status species: • after grading of tidal plane is complete, implement water management activities to revegetate and stabilize exposed soils on the	Yes	The proposed Project design is consistent with this guideline. The proposed Project would install agency-approved fish screens on all new pump intakes. To the extent feasible, the proposed Project area would be isolated from aquatic habitats (including the Toe Drain) during the construction phase to minimize impacts on water quality, aquatic resources, and/or special-status species. Where complete pre-breach isolation is not feasible, the proposed Project would apply best management practices to maintain water

Design Guideline	Applicable to Proposed Project?	Discussion
plane prior to removing cofferdam and/or breaching dikes or levees; • install fish screens that meet NMFS, USFWS, and CDFW criteria, as applicable, on any new pump intakes that could be used for pre-breach water management activities; and • implement … pre-breach water management measures…		quality equivalent to existing conditions (see Section 3.10, "Hydrology and Water Quality," of this Draft SEIR). The Toe Drain berm openings would be timed to minimize potential adverse effects on aquatic wildlife (see Section 3.7, "Biological Resources – Aquatic," of this Draft SEIR).
For projects that include the use of donor vegetation beds for use in restored marsh and/or emergent or submerged vegetation sites, no more than 5% of the belowground biomass of an existing donor bed should be harvested for transplanting purposes. Plants harvested should be taken in a manner that thins an existing bed without leaving any noticeable bare areas. Harvesting of flowering shoots for seed buoy techniques should occur only from widely separated plants and only a certain percent of the donor stock may be used per year. This percent is site dependent and prior to restoration requires intimate knowledge of the genetics and population dynamics of the donor site.	No	The proposed Project does not include the use of donor vegetation beds. Donor vegetation would be salvaged from the footprint of the new tidal channels and from areas of existing managed wetland ponds where grading is necessary to provide desired drainage and/or to create elevations suitable for target habitat types.

Notes: CDFW = California Department of Fish and Wildlife; Draft SEIR = draft supplemental environmental impact report; NMFS = National Marine Fisheries Service; proposed Project = Tide's End Multibenefit Restoration Project; SRGO = Statewide Restoration General Order; USFWS = U.S. Fish and Wildlife Service

Sources: State Water Board 2022a; data compiled by Environmental Science Associates in 2025

TABLE 1-4
SRGO DESIGN GUIDELINES FOR FLOODPLAIN RESTORATION

Design Guideline	Applicable to Proposed Project?	Discussion
As applicable, fish passage and/or screening needs should be addressed with the installation of new structures.	Yes	The proposed Project design is consistent with this guideline. All new pump intakes would have suitable fish screens. All new water control structures would be designed and operated to provide fish passability.
Channel reconstruction, reset, or relocation.	No	This design guideline is not applicable at the proposed Project location. *The proposed Project area is located on the upland boundary of the tidally influenced portion of the Yolo Bypass. This area did not contain extensive fluvial channels under historic conditions; instead, the area supported shallowly inundated seasonal wetlands without major channels. See Section 2.1 of Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impact Assessment," for information on the historic ecology of the proposed Project area. See Table 1-3 for discussion of tidal channels.*

Design Guideline	Applicable to Proposed Project?	Discussion
Setback or removal of existing berms, dikes, and levees:	Yes	The proposed Project design is consistent with this guideline. The proposed Project includes the removal and/or breaching of numerous existing berms and dikes to improve hydrological connectivity between the Toe Drain channel and the restored floodplain.
Design actions to restore floodplain characteristics—elevation, width, gradient, length, and roughness—in a manner that closely mimics, to the extent possible, those that would naturally occur in that area.	Yes	The proposed Project design is consistent with this guideline. The proposed Project design locates tidal channel, tidal wetlands, transition zone, and floodplain areas in a gradient that follows existing elevations and that mimics natural landforms at less-disturbed reference sites to the extent feasible given constraints associated with existing infrastructure, managed floodplain land uses, and need to balance earthwork locally within the proposed Project area.
Remove drain pipes, fences, concrete, and other structural improvements to the extent possible.	Yes	The proposed Project design is consistent with this guideline. The proposed Project would remove redundant pumps and other water control infrastructure, as well as unnecessary fencing and utilities. See Section 2.2.6, “Facilities Improvements,” in Chapter 2, “Project Description.”
Remove non-native fill material from the floodplain and, if pathogen free, reuse or dispose of it at an upland site, to the extent possible. Trash and debris should be disposed at an appropriate off-site disposal location, potentially including a landfill (for human debris).	Yes	The proposed Project design is consistent with this guideline. The proposed Project area does not contain extensive **non-native** fill material. Trash and debris would be disposed in an appropriate **off-site** disposal location in a manner consistent with this guideline.
Where it is not possible to remove or setback all portions of dikes and berms, or in areas where existing berms, dikes, and levees support abundant riparian vegetation, and their removal or setback is not part of the project design, openings may be created with carefully planned and approved breaches. Timing and spacing of breaches should be planned for maximum positive environmental outcomes.	Yes	The proposed Project design is consistent with this guideline. Berms that support existing riparian habitats would be opened in select locations but otherwise preserved. This includes the berm along the west side of the Toe Drain channel. See Sections 2.1 and 2.2 of Section 2.2, “Proposed Project Restoration Elements,” in Chapter 2, “Project Description,” for information on the partial removal of the Toe Drain berm.
When necessary for plant establishment, loosen compacted soils once overburden material is removed. Overburden or fill comprised of native materials, which originated from the project area, may be used within the floodplain, only if pathogen free (where feasible), to create setback dikes and fill anthropogenic holes provided that floodplain function is not impeded.	Yes	The proposed Project design is consistent with this guideline. Compacted soils would be loosened as part of site mobilization/demobilization/habitat restoration elements. Native soils originating from the proposed Project area would be used to create topographic features, as described in Chapter 2, “Project Description.”

Notes: proposed Project = Tide’s End Multibenefit Restoration Project; SRGO = Statewide Restoration General Order

Sources: State Water Board 2022a; data compiled by Environmental Science Associates in 2025

1.1.4 The Proposed Project Incorporates Applicable General and Species Protection Measures and Mitigation Measures

Attachment A to the SRGO, Section A.5.2, provides general protection measures related to water quality and hazardous materials (staging and stockpiling of materials, erosion and sedimentation control measures, other water quality measures, and in-water work measures), vegetation/habitat disturbance, revegetation, and herbicide use (State Water Board 2022a: Attachment A, pp. A-24 through A-40). All general protection measures applicable to the proposed Project would be implemented, as cited and

discussed in relevant resource sections of this Draft SEIR (see Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures"). **Table 1-5** lists the general protection measures applicable to the proposed Project. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection measure.

The Final SRGO Program EIR contains a list of species-specific protection measures to be implemented in addition to all the applicable general protection measures when suitable habitat exists within a given project area or if a project is proposed within the currently occupied range of the species and/or a species is determined to be present (Final SRGO Program EIR: Section 2.10, pp. 2-32 through 2-34). Alternative measures, conditions, or technological advances to accommodate individual restoration projects may be proposed by enrollees for regulatory agency approval (NMFS, the U.S. Fish and Wildlife Service [USFWS], and/or CDFW [Final SRGO Program EIR: Section 2.8, pp. 2-27 and 2-28]). The proposed Project shall incorporate all applicable special-status species protection measures, as cited and discussed in relevant resource sections of this Draft SEIR (see Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures"). **Table 1-6** lists the species protection measures applicable to the proposed Project. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each species protection measure.

Restoration projects authorized under the SRGO and covered by the Final SRGO Program EIR must also comply with all applicable mitigation measures listed in the impact section for each environmental resource discussion (Final SRGO Program EIR: Section 3.1, p. 3.1-7). See the Final SRGO Program EIR, Appendix J, "Mitigation Monitoring and Reporting Program," for a full description of each mitigation measure. The proposed Project shall incorporate all applicable mitigation measures for each affected resource area, or alternatively provide comparable and equally effective alternative mitigation measures, as discussed and provided in each relevant resource section of this Draft SEIR (see Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures").

TABLE 1-5
GENERAL PROTECTION MEASURES

Category	Measures
General Protection Measures	GPM-1: Receipt and Copies of All Permits and Authorizations GPM-2: Construction Work Windows GPM-3: Construction Hours GPM-4: Environmental Awareness Training GPM-5: Environmental Monitoring GPM-6: Work Area and Speed Limits GPM-7: Environmentally Sensitive Areas GPM-8: Prevent Spread of Invasive Species GPM-9: Practices to Prevent Pathogen Contamination GPM-10: Equipment Maintenance and Materials Storage GPM-11: Material Disposal GPM-12: Fugitive Dust Reduction GPM-13: Trash Containment and Removal GPM-14: Project Cleanup after Completion GPM-15: Revegetate Disturbed Areas

Category	Measures
Water Quality and Hazardous Materials	WQHM-1: Staging Areas and Stockpiling of Materials and Equipment WQHM-2: Storm Water Pollution Prevention Plan WQHM-3: Erosion and Sediment Control Measures WQHM-4: Hazardous Materials Management and Spill Response Plan WQHM-5: In-Water Concrete Use WQHM-6: Accidental Discharge of Hazardous Materials
General In-Water Measures	IWW-1: Appropriate In-Water Materials IWW-2: In-Water Vehicle Selection and Work Access IWW-3: In-Water Placement of Materials, Structures, and Operation of Equipment IWW-4: In-Water Staging Areas and Use of Barges IWW-5: Cofferdam Construction IWW-6: Dewatering/Diversion IWW-7: Fish and Aquatic Species Exclusion while Installing Diversion Structures IWW-8: Removal of Diversion and Barriers to Flow IWW-9: In-Water Pile Driving Plan for Sound Exposure IWW-10: In-Water Pile Driving Methods IWW-11: Sediment Containment during In-Water Pile Driving IWW-12: Pile Driving Monitoring IWW-13: Dredging Operations and Dredging Materials Reuse Plan
Vegetation/Habitat Disturbance and Revegetation, and Herbicide Use	VHDR-1: Avoidance of Vegetation Disturbance VHDR-2: Native and Invasive Vegetation Removal Materials and Methods VHDR-3: Revegetation Materials and Methods VHDR-4: Revegetation Erosion Control Materials and Methods VHDR-5: Revegetation Monitoring and Reporting VHDR-6: General Herbicide Use VHDR-7: Herbicide Application Planning VHDR-8: Herbicide Application Reporting

SOURCES: State Water Board 2022b, Appendix E, "Restoration Projects Statewide Order: Description and Eligibility (August 16, 2022)"

TABLE 1-6
SPECIAL-STATUS SPECIES PROTECTION MEASURES

Category	Measures
General Species Protection Measures[1]	SPM-1: Preconstruction Surveys SPM-2: Environmentally Sensitive Areas and/or Wildlife Exclusion SPM-3: Species Protection Construction Work Windows SPM-4: Species Capture, Handling, and Translocation SPM-5: Special-Status Species Entrapment Prevention SPM-6: Airborne Noise Reduction
Amphibians – Guild Protection Measures[2]	AMP-1: Wildlife Passage Design AMP-2: Rain Event Limitations AMP-3: Preconstruction Survey AMP-4: Disease Prevention and Decontamination AMP-5: Lighting AMP-6: Clearing and Grubbing Vegetation AMP-7: Pump Screens AMP-8: Removal of Non-native Invasive Species AMP-9: Placement of Suitable Erosion Control Material AMP-10: Encounters with Species AMP-11: Species Observations and Handling Protocol

Category	Measures
Reptiles – Guild Protection Measures[2]	REP-1: Pre-Construction Survey REP-2: Environmentally Sensitive and Wildlife Exclusion Area REP-3: Clearing and Grubbing Vegetation REP-4: Prohibited Use of Rodenticides REP-5: Species Observations and Encounters REP-6: Species Handling and Relocation
Birds – Guild Protection Measures[2]	BIRD-1: Habitat Assessment BIRD-2: Nest Protection Work Window BIRD-3: Work Area Limits BIRD-4: Site Access Restrictions BIRD-5: Monitoring
Mammals – Guild Protection Measures[2]	MAM-1: Conduct Habitat Assessment MAM-2: Avoidance Areas MAM-3: Use of Handheld Tools MAM-4: Species Trapping and Relocating MAM-5: Reporting Requirements
Invertebrates – Guild Protection Measures[2]	INVERT-1: Implement California Freshwater Shrimp Measures INVERT-2: Implement Vernal Pool Branchiopods Measures INVERT-3: Implement Valley Elderberry Longhorn Beetle Protocol INVERT-4: Implement Butterfly Protection Measures
Fish – Guild Protection Measures[2]	FISH-1: Habitat Disturbance Avoidance and Minimization FISH-2: Habitat Assessment and Surveys FISH-3: Fish Capture and Relocation FISH-4: Reporting
Plant Species Protection Measures[3]	PLANT-1: Habitat Assessment and Surveys PLANT-2: Seasonal Avoidance of Vernal Pool Plant Species and Other Annual and Perennial Species PLANT-3: Exclusion Buffer Establishment PLANT-4: Work Restrictions in the Exclusion Buffer PLANT-5: Biological Monitoring PLANT-6: Herbicide Application, Clearing, and Ground Disturbance

Notes:

1. Species protection measures (i.e., measures that generally can apply to all or multiple guilds).
2. All species guild protection measures (i.e., subsets of measures that generally can be applied to all species within a given guild) are programmatic; project-specific measures for single or smaller groups of species shall be further developed and evaluated by project proponents based on project-specific conditions with permitting agencies based on individual project-specific conditions. The protection measures described for species guilds are generally listed in chronological order of project implementation activities for ease of implementation (e.g., design, surveys, avoidance, work windows, work restrictions, implementation monitoring, and revegetation monitoring).
3. Protection measures for plants primarily consist of avoidance measures. When complete avoidance of special-status plant species is not possible, additional protection measures have been included.

Sources: State Water Board 2022b Appendix F, “Species Protection Measures (August 16, 2022)”

1.1.5 The Proposed Project Does Not Include Activities Prohibited under the SRGO

Attachment A to the SRGO, Section A.5.5, outlines certain activities that are not within the scope of the SRGO and would require separate permitting approvals with the State Water Board and/or regional water quality control boards (regional water boards [State Water Board 2022a: Attachment A, pp. A-41 and

A-42]). A brief discussion of whether the proposed Project includes such prohibited activities is provided below each listed action.

- Use of gabion baskets, boxes, or cages.
  - The proposed Project does not include the use of gabion baskets, boxes, or cages.
- Use of cylindrical riprap (e.g., Aqualogs).
  - The proposed Project does not include the use of cylindrical riprap. The proposed Project would install correctly sized riprap to prevent scour only in the immediate vicinity of pumps and other water control structures.
- Use of undersized riprap (e.g., would not remain in place during a 100-year flow event or other standard accepted by the approving regional water board).
  - The proposed Project does not include the use of undersized riprap. The proposed Project would install correctly sized riprap to prevent scour only in the immediate vicinity of pumps and other water control structures.
- Construction of permanent dams (does not apply to beaver dam analogs) or concrete-lined channels of any sort.
  - The proposed Project does not include the construction of any dams or concrete-lined channels.
- Use of chemically treated timbers for grade or channel stabilization structures, bulkheads, or other structures within or immediately adjacent to waters of the State, or where runoff from the treated material could enter waters of the State.
  - The proposed Project does not include the use of chemically treated timbers.
- Activities that result in long-term, substantial disruption of the movement of those species of aquatic life indigenous to the water body, including those species that normally migrate through the project areas.
  - The proposed Project activities would result in a beneficial increase in volitional fish passage onto and off the floodplain by reconfiguring the existing irrigation and drainage system, eliminating redundant pumps, and adding fish-passable devices to existing water control structures.
- Elimination of a riffle, pool, or riffle/pool complex that is not replaced/enhanced elsewhere by the project. (Note: In some instances, a restoration project may affect or modify riffle/pool complex, depending on project-specific conditions and design objectives. For example, a culvert removal may affect an existing pool. These types of projects would be allowed under the Order.)
  - The proposed Project area does not include impacts on or elimination of a riffle or riffle/pool complex.
- Water diversions, except diversions associated with water conservation projects as described in Section A.4.5, “Water Conservation”; diversions associated with delivery or conveyance to and within managed wetland habitats as described in Category A.4.9, “Establishment, Restoration, and Enhancement of Tidal, Subtidal, and Freshwater Wetlands”; and those necessary to temporarily dewater the construction site of a restoration project.

  - The proposed Project includes the relocation and improvement of water control structures associated with delivery or conveyance to and within managed wetlands and managed floodplain agriculture areas, as allowed under project type A.4.9: "Establishment, Restoration, and Enhancement of Tidal, Subtidal, and Freshwater Wetlands." The proposed Project does not include new water diversions other than those that would potentially be implemented to temporarily dewater the construction site, as authorized under the Order.

- Installation of flashboard dams, head gates, or other mechanical structures is generally prohibited; however, there are exceptions for certain projects that require them to meet ecological goals (e.g., storage projects to reduce low-flow stream diversions (Section A.4.5), off-channel/side-channel managed floodplain, and managed wetland habitat), and for the required replacement of legacy structures under the Small Dam, Tide Gate, Flood Gate, and Legacy Structure Removal project category.
  - The proposed Project falls under project type A.4.9: "Establishment, Restoration, and Enhancement of Tidal, Subtidal, and Freshwater Wetlands." The SRGO expressly states that eligible projects under project type A.4.9 may include the installation of water control structures, siphons, sills, etc. The proposed Project includes the relocation and improvement of water control structures associated with delivery or conveyance to and within managed wetlands and managed floodplain agriculture areas, as allowed under project type A.4.9.
- Creation or potential creation of a barrier to anadromous fish passage as determined by the NMFS fish passage guidelines or equivalent CDFW guidelines, as applicable (including any associated maintenance activities, or lack thereof).
  - The proposed Project activities would result in a beneficial increase in volitional fish passage onto and off the floodplain by reconfiguring the existing irrigation and drainage system, eliminating redundant pumps, and adding fish-passable devices to existing water control structures.
- Use of excess riprap bank protection, other than the minimum amount needed to achieve project goals, as determined by the State Water Board or appropriate regional water board, as applicable.
  - The proposed Project does not include the use of riprap.
- Installation of infiltration galleries (subsurface structure, typically including perforated conduits in gravel, to expedite the transfer of water to or from a soil).
  - The proposed Project does not include the installation of infiltration galleries.
- Managed surrogate floodplain and managed returned flows that do not allow for volitional movement (ingress and egress) of fish to the main channel (up and/or downstream).
  - While the proposed Project includes managed floodplain and would implement managed return flows, the proposed Project design would result in a beneficial increase in volitional fish passage onto and off the floodplain by reconfiguring the existing irrigation and drainage system, eliminating redundant pumps, and adding fish-passable devices to existing water control structures.

1.2 Type of Environmental Impact Report

The lead agency for a project under CEQA may prepare a supplement to a previously certified EIR if certain conditions are met. Specifically, if the requirements to prepare a subsequent EIR are met, then a supplemental EIR may be prepared if "only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation" (*Guidelines for Implementation of the California Environmental Quality Act* [CEQA Guidelines] Section 15163).

In accordance with these requirements, this Draft SEIR supplements the previously certified Final SRGO Program EIR and addresses proposed modifications, changed circumstances, and new information not described in that prior environmental document. This Draft SEIR provides additional information needed to make the Final SRGO Program EIR, as supplemented, adequate for the proposed Project. Consistent with CEQA Guidelines Section 15163(b), this Draft SEIR contains only the information needed to analyze the proposed Project, including changed circumstances and new information requiring additional environmental review. Where information and analysis provided in the Final SRGO Program EIR is applicable to the proposed Project, it is summarized and/or incorporated by reference.

The proposed Project is within the scope of and would not substantively change the SRGO Program EIR, with the exception of additional project–specific details, such as those discussed below:

- Addresses the potential new or potentially more severe environmental impacts related to developments in project design (e.g., details related to the location of staging and borrow sites, mitigation sites, and haul routes) and project-level, resource-area-specific surveys, if applicable (14 CCR Section 15168[d][3]).
- Recommends mitigation measures to avoid or minimize any new or substantially more severe environmental impacts, if applicable, to reduce them to less-than-significant levels.
- Updates the impact analyses and mitigation measures where environmental or regulatory conditions have changed since certification of the Final SRGO Program EIR (14 CCR Section 15168[d][2]).

1.2.1 Intended Uses of this Supplemental Environmental Impact Report

DWR is the lead agency for complying with CEQA and the CEQA Guidelines. DWR has prepared this Draft SEIR to provide the public and responsible and trustee agencies with information about the potential environmental effects of the proposed Project. Table 2-2, "Anticipated Regulatory Requirements," in Section 2.1.4, "Anticipated Approvals, Certifications, and Permits," presents a list of all anticipated permits and approvals required for the proposed Project. State and regional agencies listed in Table 2-2 that may potentially use this Draft SEIR include the following:

- CDFW
- State Water Board
- Central Valley Regional Water Quality Control Board
- Central Valley Flood Protection Board

- Delta Stewardship Council

As described in CEQA Guidelines Section 15121(a), an EIR is a public information document that assesses potential environmental effects of a proposed project and identifies mitigation measures and alternatives to the proposed project that would reduce or avoid adverse environmental impacts. CEQA requires State and local government agencies to consider the environmental consequences of projects over which they have discretionary authority. As lead agency, DWR will consider the Final SRGO Program EIR as revised by this Draft SEIR, when deciding whether to approve the proposed Project in accordance with CEQA Guidelines Section 15163.

1.2.2 Incorporation by Reference

This Draft SEIR tiers from and incorporates by reference information contained in the following Program documents, as noted in this Draft SEIR, pursuant to Cal. Pub. Res. Code Section 21068.5 and CEQA Guidelines Sections 15150 and 15152:

- Order for Clean Water Act Section 401 Water Quality Certification and Waste Discharge Requirements for Restoration Projects Statewide (SRGO) (State Water Board 2022a). Available online at:

  https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2022/wqo2022-0048-dwq.pdf.

- Consolidated Final State Water Resources Control Board Restoration Projects Statewide Order Program Environmental Impact Report (Final SRGO Program EIR) (State Clearinghouse No. 2019100230) (State Water Board 2022b). Available online at:

  https://www.waterboards.ca.gov/water_issues/programs/cwa401/generalorders/2022/srgo-final-peir-combined.pdf (main body).

  https://www.waterboards.ca.gov/water_issues/programs/cwa401/generalorders/2022/srgo-final-peir-appendices.pdf (appendices only).

1.3 Environmental Review and Approval Process

Preparation of an SEIR involves multiple steps, during which the public is provided the opportunity to review and comment on the content of the SEIR, the scope of the analyses, results and conclusions presented, and the overall adequacy of the document to meet the substantive requirements of CEQA and provide full disclosure of the potential environmental consequences of implementing the proposed Project. The following discussion describes the major steps in the environmental review process that are applicable to this Draft SEIR.

1.3.1 Notice of Preparation/Public Review Process

DWR prepared and published a Notice of Preparation (NOP) of an SEIR on July 23, 2024. The NOP was circulated to the public and to federal, State, and local agencies and other interested parties to solicit comments on the proposed Project. The public comment period for the NOP closed on September 7, 2024. In addition to the public and agency comment period, three public scoping meetings were held: in person with a virtual option on August 6, 2024, at California Natural Resources Agency Headquarters;

virtually on August 7, 2024; and in person on August 8, 2024, at the Yolo Bypass Wildlife Area Headquarters.

Issues raised in response to the NOP and oral comments received at the scoping meetings were considered during preparation of the Draft SEIR. The scoping comments are included in Appendix B of this document, "Tide's End Multibenefit Restoration Project Notice of Preparation and Comment Letters."

1.3.2 Draft Supplemental EIR

This Draft SEIR is available to federal, State, and local agencies and interested organizations and individuals who may want to review and comment on the analysis in this document. Publication of the Draft SEIR marks the beginning of a 45-day public review period. The 45-day public review period for the proposed Project extends from February 10, 2026, through March 27, 2026, ending at 5 p.m. During the public comment period, written comments should be delivered to:

Department of Water Resources
Division of Multibenefit Initiatives
Attn: Judah Grossman
P.O. Box 942836
Sacramento, CA 94236-0001
tidesendmbp@water.ca.gov

Please use "Tide's End Multibenefit Restoration Project Draft SEIR Comments" in the subject line. Also, if submitting comments on behalf of an agency, Tribal group, or organization, please include the name of a contact person and the name of the group that the comments are coming from. All comments received, including names and addresses, will become part of the official administrative record and be available to the public.

The Draft SEIR is available for public review at the Department of Water Resources, 3500 Industrial Boulevard, West Sacramento, CA 95691 (in the lobby), and at the Mary L. Stephens – Davis Branch Library, 315 E. 14th Street, Davis, CA 95616. The Draft SEIR is also available for review online on CEQAnet (https://ceqanet.lci.ca.gov/) and can be found through DWR's website via the following link: https://water.ca.gov/New/Public-Notices. DWR will also conduct two in-person and one virtual public meeting to receive comments on the adequacy of the analysis included in the Draft SEIR.

In-person meetings will be held on:

Date: Monday February 23, 2026

Time: 10:30 am – 12:00 pm

Location: California Natural Resources Building, Media Room, second floor 2-201, 715 P Street, Sacramento CA 95814

Date: Tuesday February 24, 2026

Time: 5:00 pm – 6:30 pm

Location: Veterans Memorial Center, Club House, 203 E 14th Street, Davis CA 95616

Virtual Meeting (via Zoom) will be held on:

Date: Tuesday February 24, 2026
Time: 10:30 am – 12:00 pm
Zoom Link: https://bit.ly/TidesEndPublicMtg
Webinar ID: 827 9547 1721
Call-in number: (888) 788-0099

1.3.3 Final Supplemental EIR

After this Draft SEIR has been circulated and the public comments and responses to comments have been incorporated, DWR will publish a Final SEIR. DWR will review the proposed Project and its anticipated or potential environmental impacts, as identified in the SEIR as a supplement to the Final SRGO Program EIR, and will decide whether or not to certify the Final SEIR and whether or not to approve the proposed Project or project alternative.

CEQA requires that the lead agency neither approve nor implement a project unless the project's significant environmental effects have been "eliminated or substantially lessened," unless specific findings are made (CEQA Guidelines Section 15092). If the lead agency approves the project despite residual significant adverse impacts that cannot be mitigated to less-than-significant levels, the agency must state the reasons for its action in writing. This "Statement of Overriding Considerations" must be included in the record of project approval.

1.3.4 Mitigation Monitoring and Reporting Program

CEQA Section 21081.6(a) requires lead agencies to "adopt a reporting and mitigation monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment." All mitigation measures identified in the Final SEIR for the proposed Project, including the applicable mitigation measures and general protection measures from the Final SRGO Program EIR, will be included in the mitigation monitoring and reporting program, which will identify all compliance measures and responsible parties.

1.4 Contents, Organization, and Scope of this Supplemental Environmental Impact Report

1.4.1 Level of Review

As discussed in greater detail in Chapter 2, "Project Description," of this Draft SEIR, the construction and operational aspects of the proposed Project are largely the same as those described for restoration projects analyzed under the Final SRGO Program EIR. As anticipated by the SRGO and CEQA Guidelines Section 15168, additional project-specific details have since been developed related to the location of staging and construction sites and associated haul routes to the proposed Project area. This Draft SEIR supplements the previously certified Final SRGO Program EIR; it therefore contains only the information needed to analyze the proposed Project, including changed circumstances, proposed modifications, and new information requiring additional environmental review.

1.4.2 Summary of Issues Not Addressed Further

According to CEQA Guidelines Section 15163, this Draft SEIR needs to contain only the information needed to analyze the proposed Project, including changed circumstances and new information requiring additional environmental review (14 CCR Section 15163[b]). Where existing information and analysis in the Final SRGO Program EIR are sufficient to evaluate the impacts of the proposed Project, no additional environmental review is warranted. Section 3.2, "Environmental Issues Not Requiring Further Analysis," summarizes environmental issues for which potential impacts of the proposed Project are adequately addressed in the certified Final SRGO Program EIR and no further analysis is required.

The proposed Project would not result in new or more severe potentially significant impacts, and the Final SRGO Program EIR adequately addresses potential impacts for many of the resource areas, including the following: Aesthetics, Energy, Geology and Soils, Greenhouse Gas Emissions, Forestry, Land Use/ Planning, Mineral Resources, Noise, Population/Housing, Transportation, and Wildfire.

1.4.3 List of Issues Considered for Additional Impact Analysis

In light of the environmental issues not addressed further, the following CEQA resource areas are considered in greater detail in a revised impact analysis in this Draft SEIR:

- Agriculture
- Air Quality and Greenhouse Gas Emissions
- Biological Resources—Terrestrial Resources
- Biological Resources— Aquatic Resources
- Cultural Resources
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Recreation
- Tribal Cultural Resources
- Utilities and Service Systems

A discussion of how potential impacts from the proposed Project are addressed in the Final SRGO Program EIR is provided in Chapter 3. In addition, this Draft SEIR includes a cumulative impacts assessment, alternatives analysis, and an analysis of other CEQA issues.

1.5 Supplemental Environmental Impact Report Organization

This Draft SEIR is organized as follows:

- **Executive Summary.** This chapter presents a summary of the Tide's End Multibenefit Restoration Project description, a description of issues to be resolved, the significant environmental impacts that would result from implementation of the proposed Project, and mitigation measures proposed to reduce or eliminate those impacts.
- **Chapter 1, Introduction.** Chapter 1 includes background information on the Tide's End Multibenefit Restoration Project and describes the intended uses of this Draft SEIR, the environmental review and approval process, and document organization.

- **Chapter 2, Project Description.** Chapter 2 presents an overview of the Tide's End Multibenefit Restoration Project, outlines its objectives, and summarizes the components of the proposed Project and how they relate to the potential restoration projects analyzed in the Final SRGO Program EIR.
- **Chapter 3, Environmental Setting, Impacts, and Mitigation Measures.** This chapter presents a summary of the resource areas for which potential impacts of the proposed Project are adequately addressed in the certified Final SRGO Program EIR and no further analysis is required. This chapter also provides information about the resource area topics requiring additional CEQA analysis beyond the analysis in the Final SRGO Program EIR.
- **Chapter 4, Cumulative Impacts.** This chapter presents a project-specific geographic scope relevant to a cumulative analysis of environmental resources potentially affected by the proposed Project, a list of cumulative projects, and a discussion of potential cumulative effects, as well as the proposed Project's potentially considerable contribution to cumulative effects.
- **Chapter 5, Alternatives.** This chapter evaluates a range of alternatives to the proposed Project, including the No Project Alternative, which is required by CEQA.
- **Chapter 6, List of Preparers and Persons Consulted.** Chapter 6 provides the names of the Draft SEIR authors and consultants, and agencies or individuals consulted during preparation of this Draft SEIR.
- **Chapter 7, References.** This chapter lists all references cited in this Draft SEIR.
- **Appendices.** The appendices include materials that support the findings and conclusions presented in the text of this Draft SEIR.

CHAPTER 2
Project Description

2.1 Introduction

The California Department of Water Resources (DWR) proposes to implement the Tide's End Multibenefit Restoration Project (proposed Project), a habitat restoration project covered by the State Water Resources Control Board's (State Water Board) Statewide Restoration General Order (SRGO) and Final SRGO Program EIR (see Section 1.1, "Eligibility for Coverage under the Statewide Restoration General Order and Program EIR").

The proposed Project is being developed to restore and enhance tidal wetlands and floodplain habitat, support multibenefit land uses (including managed wetlands and floodplain agriculture), and maintain or improve flood conveyance in the Yolo Bypass. The proposed Project would also support the framework outlined in the Healthy Rivers and Landscapes (HRL) Program and further the goals and objectives of the Central Valley Flood Protection Plan (CVFPP) (see Section 2.1.3, "Relationship to Other Regional Plans and Programs").

2.1.1 Proposed Project Location

The proposed Project is located in the Sacramento Valley, at the fluvial-tidal interface in the downstream end of the Yolo Bypass, adjacent to the Cache Slough Complex in the Sacramento–San Joaquin Delta (Delta) (**Figure 2-1**). The proposed Project area contains 2,212 acres currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat. The proposed Project area consists of all or portions of the following six properties (see **Table 2-1** for assessor's parcel numbers), listed from north to south: Capitol Oil, Laurel G, Yolo Basin, Lucky Five South, Kleary, and Williams (**Figure 2-2**).

TABLE 2-1
ASSESSOR'S PARCEL NUMBERS FOR PROPERTIES IN THE PROPOSED PROJECT AREA

Property	APN(s)
Capitol Oil	033-440-006; 033-450-001; 033-190-010; 033-450-002; 033-450-005
Laurel G	033-220-052; 033-220-054
Yolo Basin	033-220-046
Lucky Five South	033-220-009
Kleary	033-220-068
Williams	033-220-067

Notes: APN = Assessor's Parcel Number; proposed Project = proposed Tide's End Multibenefit Restoration Project
Source: Data compiled by Environmental Science Associates in 2025



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Ecosystem Investment Partners

TIDE'S END

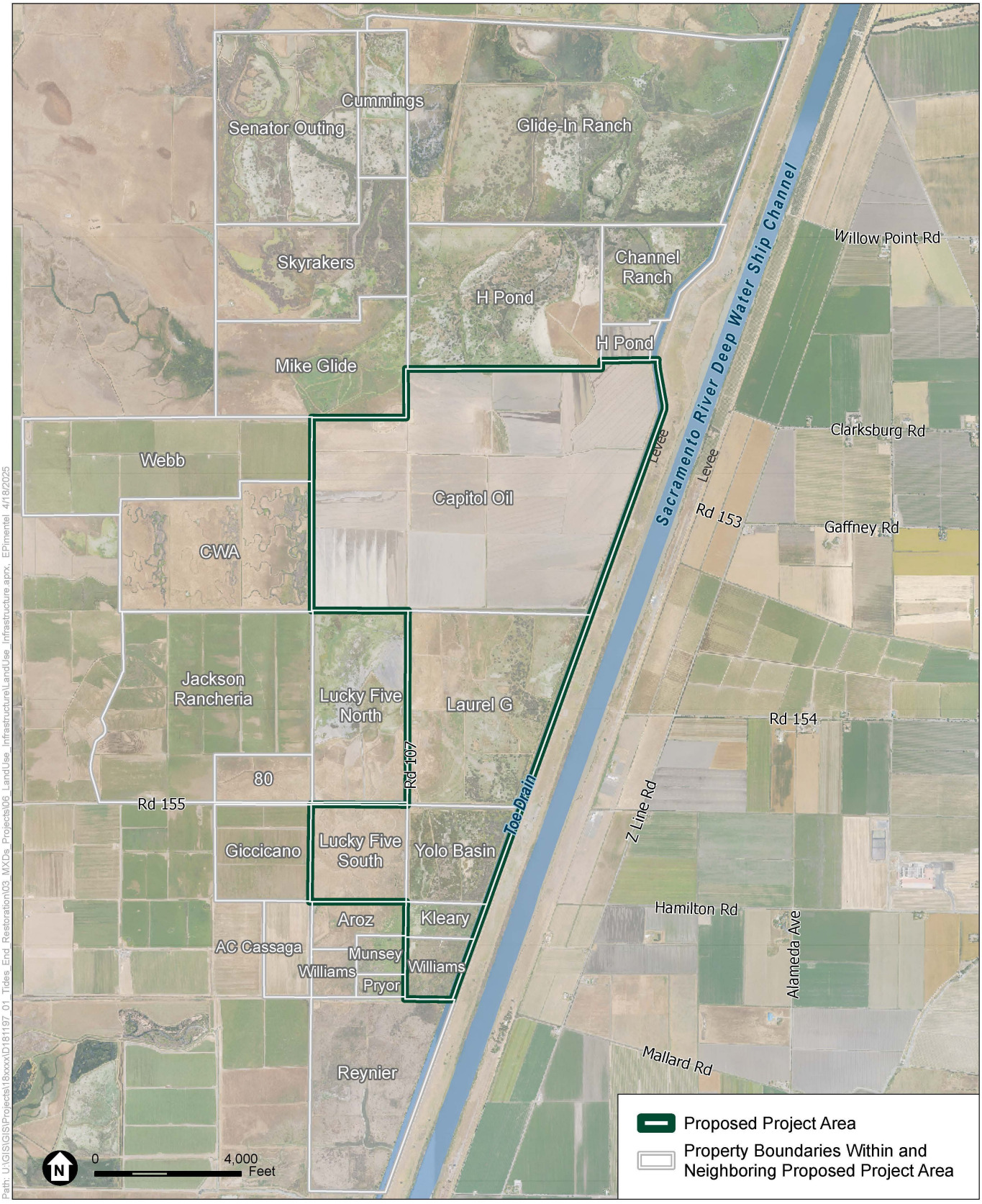
DEPARTMENT OF WATER RESOURCES · STATE OF CALIFORNIA

Tide's End Multibenefit Restoration Project

Figure 2-1
Proposed Project Area
Regional Vicinity

Prepared by: ESA

SOURCE: NAIP 2022, Esri, 2025, EIP 2025, ESA 2025



Ecosystem Investment Partners

TIDE'S END

DEPARTMENT OF WATER RESOURCES · STATE OF CALIFORNIA

Tide's End Multibenefit Restoration Project

Figure 2-2
Proposed Project Area
Property Boundaries

Prepared by: ESA

SOURCE: NAIP, 2022; ESA, 2025

The proposed Project was developed to restore and enhance tidal wetland and floodplain habitats, support multibenefit land uses, and reduce flood risk across the proposed Project area, which is situated in the Yolo Bypass. The Yolo Bypass, which is located on the western floodplain of the Sacramento River, was established as a primary flood control mechanism in the Sacramento River Basin and acts as a relief valve for floodwaters in the Sacramento River. This area was historically referred to as the Yolo Basin (see Figure 2-1), where additional land uses provide multiple benefits including flood protection, agricultural production, and fish and wildlife habitat.

By design, the Yolo Bypass is activated as a floodplain during periods of high flow by flood discharges from the Sacramento River at the Fremont Weir and Sacramento Weir, and by inputs from the Knights Landing Outfall and the Westside Tributaries stream group (Cache Creek, Willow Slough, and Putah Creek) (Figure 2-1). The proposed Project area is adjacent to the southeastern drainage channel for the Yolo Bypass, referred to as the "Toe Drain," which also serves as a migratory corridor for fish. The Toe Drain is the southern continuation of the Tule Canal; together, these channels receive water from the Westside Tributaries and agricultural diversions. During high-flow events, the Toe Drain spills out of bank and onto adjacent floodplains both upstream of the proposed Project area and in the proposed Project area itself. Hydrology and operations of the Yolo Bypass are described in further detail in Section 3.10, "Hydrology and Water Quality."

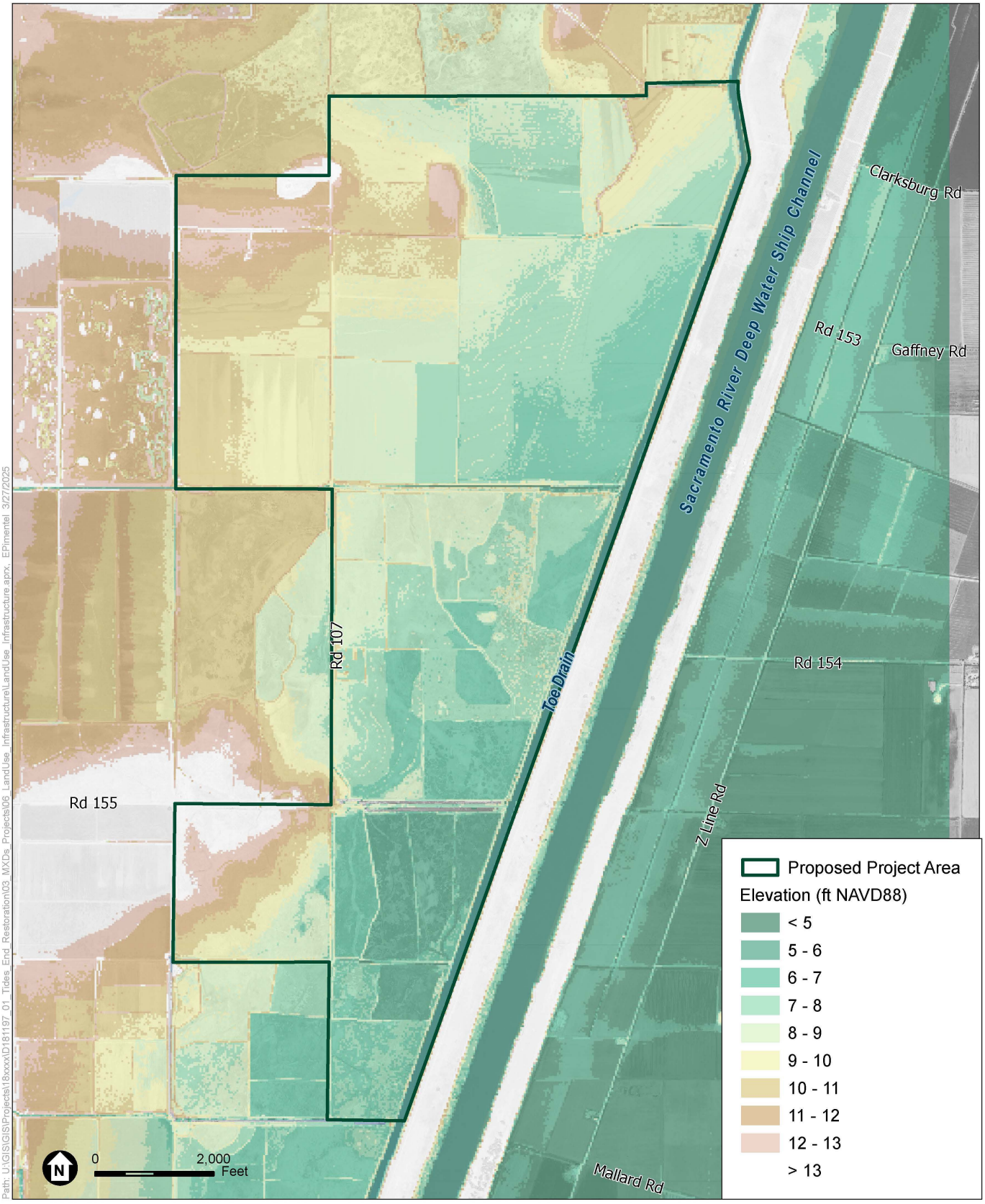
The proposed Project was sited in this area to take advantage of existing land elevations and amplify the habitat benefits of seasonal flows through the Yolo Bypass (see **Figure 2-3** for existing elevations in the proposed Project area). With the restoration and enhancement of tidal wetland and floodplain habitats, conditions would mimic the historic shallow, long-duration flood patterns of the region that support underlying ecological processes necessary for productive aquatic ecosystems, as outlined in Section 2.2 below. In addition, implementation of the proposed Project would complete an approximately 10-mile corridor of wetland and floodplain habitats, stretching from the southern tip of Lookout Slough to the Yolo Bypass Wildlife Area, that are managed for fish and wildlife benefits.

2.1.2 Purpose, Goals, and Objectives

Purpose

The proposed Project is being considered by DWR to support the HRL Program and to restore and build resiliency in the floodplain. As described in the draft HRL Scientific Basis Report (State Water Board et al. 2023), native aquatic species have been declining in tributaries, San Francisco Bay, and the Delta because of anthropogenic stressors such as degradation of habitat and changes in flows (State Water Board et al. 2023: Section 2.3).

The HRL Program includes a combination of flow and non-flow measures to address these stressors. The non-flow measures include habitat restoration actions targeted at improving spawning and rearing capacity for juvenile salmonids, smelt, and other native fishes. The proposed Project area is located at the interface between the North Delta Arc and Yolo Bypass regions defined by the HRL Program. The HRL Program establishes targets for non-flow measures to benefit fish species for both regions, including the creation and enhancement of floodplain, tidal, and riparian habitats (State Water Board et al. 2023: Section 3.2). The proposed Project would contribute to the achievement of these targets.



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Figure 2-3
Proposed Project Area
Existing Elevations

Prepared by: ESA

SOURCE: NAIP, 2022; DWR Bay Delta DEM, 2017; ESA, 2025

Goals and Objectives

The proposed Project's goals and objectives have been developed to support the HRL Program, help meet the objectives of the CVFPP (DWR 2022), provide benefits for native fish and wildlife species, and maintain existing recreational and agricultural land uses that are of regional importance in the Yolo Bypass. The goals and objectives of the proposed Project are:

Goal 1: Restore tidal and floodplain habitats in the Yolo Bypass to support native fish and wildlife.

Objectives:

1. Create a tidal channel network with connectivity to adjacent floodplain habitat.
2. Reduce impediments to fish passage on and off the floodplain.
3. Enhance aquatic food web production and export.
4. Accommodate inland migration of habitats.

Goal 2: Support multibenefit land uses that are compatible with Yolo Bypass tidal and floodplain habitat objectives.

Objectives:

1. Maintain or improve infrastructure that supports existing recreation and agriculture uses.
2. Implement recreational and agricultural management practices compatible with tidal and floodplain habitats.

Goal 3: Reduce flood risk in a manner compatible with tidal and floodplain habitats.

Objectives:

1. Reduce localized flood stages.
2. Reduce flood encroachments.
3. Maintain or reduce hydraulic roughness.
4. Reduce localized wind-wave erosion.

2.1.3 Relationship to Other Regional Plans and Programs

Key regional plans and programs related to the proposed Project include the HRL Program (Signatories 2024[1]), the CVFPP (DWR 2022), the Yolo County Habitat Conservation Plan (Yolo Habitat Conservancy 2018), and the Delta Plan (Delta Stewardship Council 2024). The proposed Project aligns with the goals of these plans and programs, as described below.

As mentioned in Section 2.1.2, "Purpose, Goals, and Objectives," the proposed Project complements the work being done through the HRL Program elsewhere in the Sacramento River system and the Delta to provide flows and create and restore side-channel habitat and tidal wetlands to advance ecological restoration. Proposed Project activities would also further the goals and objectives of the CVFPP by managing floodway roughness and maintaining long-term flood capacity in the Yolo Bypass (see Section

[1] The signatories of the 2022 Memorandum of Understanding on the Healthy Rivers and Landscapes Program (Signatories 2022) include numerous federal, State, and local agencies, including (but not limited to) DWR, the U.S. Bureau of Reclamation, the Metropolitan Water District of Southern California, and several regional water agencies. A full list is available in the program documentation.

3.10, "Hydrology and Water Quality"). As discussed in Section, 3.6, "Biological Resources – Terrestrial," under Impact 3.6-7, the proposed Project would not conflict with the Yolo County Habitat Conservation Plan with appropriate coordination with the California Department of Fish and Wildlife and U.S. Fish and Wildlife Service. In addition, the proposed Project area lies within one of the Delta Plan's designated Priority Habitat Restoration Areas, and the proposed Project's tidal wetland and associated floodplain restoration elements and commitment to maintaining recreational and agricultural values within the proposed Project area are aligned with the coequal goals of the Delta Plan (reliable statewide water supply and a protected, restored Delta ecosystem).

2.1.4 Anticipated Approvals, Certifications, and Permits

Consistent with CEQA Guidelines Section 15124, **Table 2-2** identifies a list of agencies expected to use this supplemental environmental impact report (SEIR) in their decision-making, and the anticipated regulatory approvals, permits, certifications, and consultations that may be needed in connection with the proposed Project. These potential permitting requirements are preliminary and may change during pre-application coordination with the regulatory agencies and/or through design of the proposed Project.

TABLE 2-2
ANTICIPATED REGULATORY REQUIREMENTS

Agency	Governing Regulation	Potential Requirement
Federal		
U.S. Army Corps of Engineers	Clean Water Act Section 404, Rivers and Harbors Act Section 10	Nationwide Permit preconstruction notification or Individual Permit
	Rivers and Harbors Act Section 14 (33 USC 408)	Section 408 Letter of Permission
U.S. Fish and Wildlife Service	Endangered Species Act, Fish and Wildlife Coordination Act, Migratory Bird Treaty Act	FESA Section 7 consultation (programmatic biological opinion)
National Marine Fisheries Service	Endangered Species Act and Magnuson-Stevens Fishery Conservation and Management Act	FESA Section 7 consultation (programmatic biological opinion) and Magnuson-Stevens Fishery Conservation and Management Act consultation
State Historic Preservation Office	Section 106 of the National Historic Preservation Act	Federal undertaking (i.e., permit or funding)
State		
California Department of Fish and Wildlife	Fish and Game Code Section 1602	Lake and streambed alteration agreement
	California Endangered Species Act, Fish and Game Code Section 2081	CESA incidental take permit or restoration management permit
State Water Resources Control Board	National Pollutant Discharge Elimination System	Stormwater pollution prevention plan for construction activities
Central Valley Regional Water Quality Control Board	Clean Water Act Section 401; Porter-Cologne Water Quality Control Act	Water quality certification/waste discharge requirements
Central Valley Flood Protection Board	California Water Code Sections 8700–8709; CCR Title 23, Division 1	Encroachment permit
Delta Stewardship Council	California Water Code Sections 85225–85225.30; CCR Title 23, Division 6	Certification of consistency with the Delta Plan
State Lands Commission	State Lands Act	Request for jurisdictional determination

Notes: CCR = California Code of Regulations; CESA = California Endangered Species Act; FESA = federal Endangered Species Act; USC = United States Code

Source: Data compiled by Environmental Science Associates in 2025

2.2 Proposed Project Restoration Elements

The proposed Project would restore tidal wetland and adjacent floodplain, providing suitable habitat for delta smelt (*Hypomesus transpacificus*), salmonids, and other native fish and wildlife species, while maintaining and enhancing compatible recreational and agricultural uses within the proposed Project area and reducing flood risk in the vicinity. Tidal inundation would be restored by hydrologically connecting the site to the Toe Drain via a series of berm openings, berm lowering, and channel excavation. The restored habitats would enhance aquatic production and export for food web support and would facilitate volitional fish passage of juvenile salmonids and other native fishes accessing the proposed Project area's floodplain during high-flow events. Habitat types associated with implementation of the proposed Project are summarized in **Table 2-3** and are shown in **Figure 2-4**. The subsections below detail the proposed Project's major restoration design elements, including tidal wetland, transition zone habitat, floodplain habitat, managed wetlands, managed floodplain agriculture, site revegetation (including riparian communities), access improvements, irrigation and drainage improvements, and utility modifications.

TABLE 2-3
APPROXIMATE EXISTING AND PROPOSED HABITAT TYPES

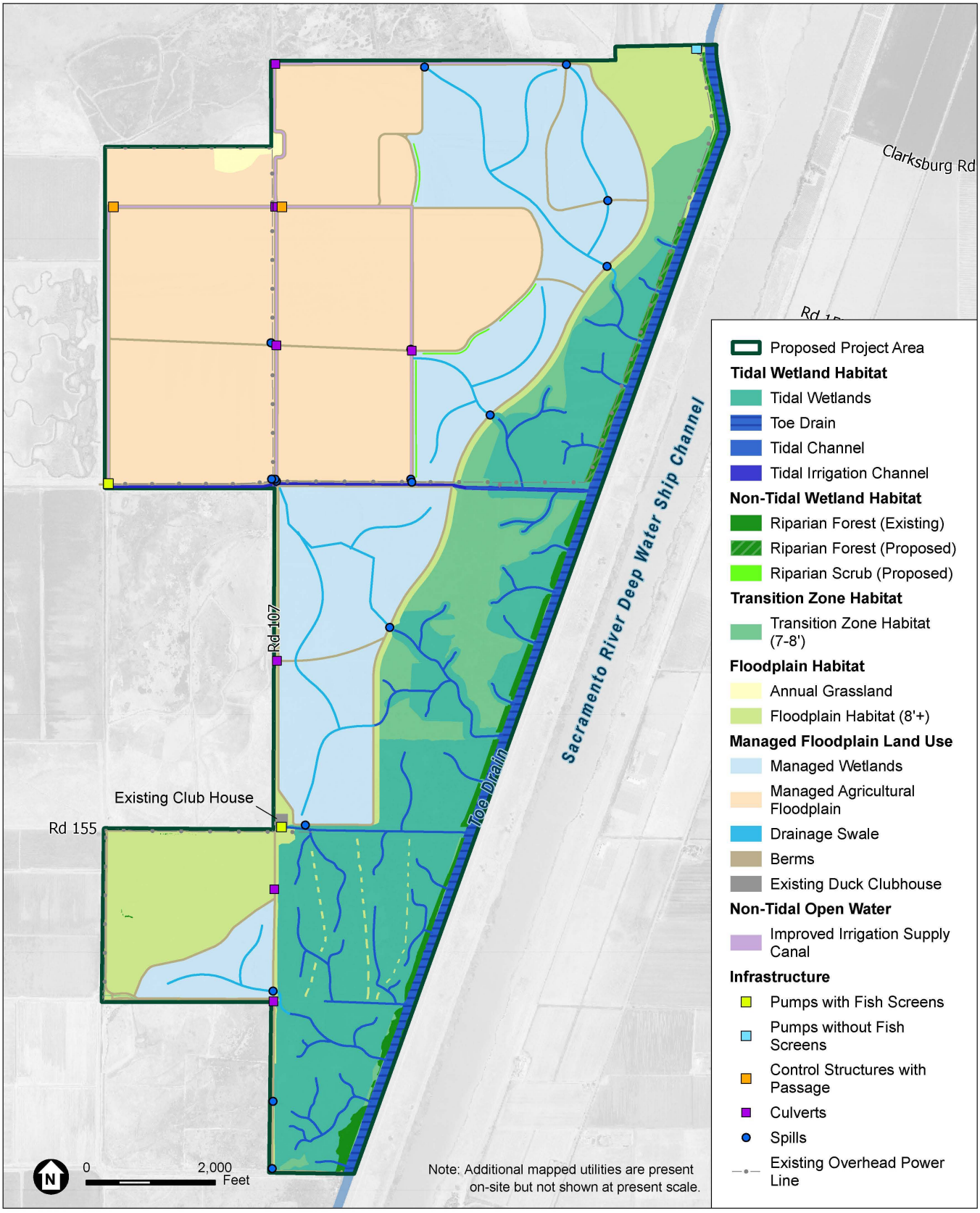
Habitat Type		Existing Conditions—Approximate Area (ac)	Proposed Conditions—Approximate Area[1] (ac)
Riparian Habitat (unmanaged)	Riparian forest, riparian scrub	27.2	36.5
Tidal Wetland Habitat (unmanaged)	Toe Drain	60.6	61.6
	Tidal wetlands, tidal channels, tidal irrigation canals	–	460.7
Transition Zone Habitat[2]	Transition zone habitat (elevation 7–8 feet NAVD88)	–	151.7
Grassland	Annual grassland, salt grass flat	9.3	7.6
Floodplain Habitat	Floodplain habitat (elevation > 8 feet NAVD88)	300.5	220.4
Managed Wetlands (Managed Floodplain)	Managed wetlands, managed tule wetlands, existing waterfowl hunting clubhouse	573.0	552.7
Managed Floodplain Agriculture (Managed Floodplain)	Managed floodplain agriculture, berms/access roads (around agricultural fields)	1,205.3	709.9
Non-tidal Open Water	Ditches, irrigation supply canal	36.5	11.3
	Total	**2,212.4**	**2,212.4**

Notes: ac = acres; NAVD88 = North American Vertical Datum of 1988.

Of the 709.9 acres of proposed-condition managed floodplain agriculture, approximately 671.6acres is designated as Unique Farmland and would be retained as farmland and associated infrastructure would be improved. The remaining 38.3 acres is designated as grazing land but would be managed as agricultural farmland within the proposed Project area.

1. The distribution of habitats or land use types displayed is approximate; some areas may switch from one habitat type to another during the environmental review process as the design is finalized, but the total acreage would remain the same.
2. Section 2.2.4 describes this habitat type in more detail.

Source: Data compiled by Environmental Science Associates in 2025



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Figure 2-4
Proposed Project Area
Draft Site Plan

Prepared by: ESA

SOURCE: NAIP, 2022; Davids Engineering, 2024; ESA, 2025

2.2.1 Riparian Habitat

The proposed Project area currently supports riparian forest and riparian scrub communities. The riparian forest community occurs in a narrow strip along the Toe Drain south of the Capitol Oil property, dominated by box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), willows (*Salix* spp.), and Fremont cottonwood (*Populus fremontii* ssp. *fremontii*). The riparian scrub community is limited to a few small areas occurring along certain drainage ditches in the central portion of the proposed Project area, dominated by dense sandbar willow (*Salix exigua*) (see Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report").

The proposed Project would largely avoid disturbance to riparian forest and scrub communities, except where proposed opening or lowering of the Toe Drain berm would occur to reconnect tidal hydrology for restoration of tidal wetlands (see Section 2.2.2). The proposed Project is designed to provide a substantial net benefit of riparian habitat, including planting riparian forest and scrub vegetation at appropriate elevations along areas of the Toe Drain and select edges of managed wetlands (see Section 2.3.8).

2.2.2 Tidal Wetland Habitat

Freshwater tidal wetland habitats include vegetated marsh plains and channels that are regularly inundated by high tides. Predominant plant species include tule (*Schoenoplectus* spp.) and cattail (*Typha* spp.). Tidal wetland provides numerous ecological functions and benefits, including habitat for fish, birds, and other wildlife species, and generates both primary productivity (e.g., phytoplankton) and secondary productivity (e.g., zooplankton and macroinvertebrates) (see "Fish Growth and Survival in the Yolo Bypass" in Section 3.7.3, "Data Sources," of this Draft SEIR). Tidal wetland also provides food for aquatic species, including delta smelt and juvenile anadromous salmonids, in nearby and downstream tidal channels.

The proposed Project area is not tidally connected, does not currently support tidal wetlands, and contains an extensive system of hydraulic barriers (i.e., berms and culverts with tide gates) that restrict wildlife and vegetation migration and drainage to nearby open water channels, such as the Toe Drain. The proposed Project would restore tidal wetland habitat in low-elevation areas, primarily in the eastern and southern parts of the proposed Project area (see Figure 2-3). The tidal wetland restoration areas were identified based on landscape elevations relative to tidal elevations, with additional consideration of soil conditions, proximity to existing or proposed tidal channels, and compatibility with existing and proposed water control infrastructure. Tidal wetland habitats would be created in portions of the proposed Project area that are at or near appropriate intertidal elevations by creating a new tidal channel network to restore tidal hydrology, performing earthwork in certain areas to expand the available acreage of the proposed Project area within the elevation range suitable to support tidal wetland vegetation, and opening or lowering the Toe Drain berm to reconnect tidal hydrology. Soils excavated from wetland grading on the Williams and Kleary properties would be used to construct a berm on the west side of those properties.

In the southern portions of the proposed Project area, including the Kleary, Williams, and Yolo Basin properties and the southeastern portion of the Laurel G property, existing grades are generally within the elevation range suitable for tidal wetland vegetation. In these areas, new tidal channels would be constructed to establish tidal hydrology and limited additional earthwork would be performed to eliminate potential fish stranding hazards, improve drainage, and improve habitat diversity. Existing ground elevations are higher in the northern portions of the proposed Project area; however, the eastern portions

of Laurel G and Capitol Oil both feature some areas where ground elevations are within 1–2 feet of the elevation range suitable for tidal wetland vegetation. In these areas, the proposed Project would construct new tidal channels and lower the adjacent ground elevations to achieve tidal range, with the aim of creating approximately 50- to 100-foot-wide (or larger) bands of tidal wetland habitat on both sides of each new channel. To add habitat complexity and offer benefits for various waterfowl species and other wildlife while simultaneously providing opportunities to balance cut and fill on-site, habitat mounds (small areas of elevated ground) would be created in the tidal wetland habitat areas using soils excavated to create tidal channels. Because tidal wetland habitat would receive surface runoff and be tidally inundated, it would not require supplemental irrigation as agricultural fields and managed wetlands would; therefore, converting agricultural fields to tidal wetlands would reduce overall drainage into the Toe Drain (see Section 3.4.2, Table 3.4-3).

2.2.3 Floodplain Habitat

"Floodplain habitat" as discussed in this Draft SEIR refers to all locations within the proposed Project area above typical tidal elevations that would be inundated during Yolo Bypass flow events, excluding areas where managed uses are present (managed wetlands or managed floodplain agriculture). Floodplain habitats include a mix of vegetation communities, composed primarily of herbaceous-dominated seasonal wetlands and grasslands, with limited distribution of woody vegetation communities such as riparian woodland and scrub. These floodplains provide seasonal habitat for fish, including juvenile anadromous salmonids and Sacramento splittail, during periods when higher flows inundate the floodplain surface. They also contribute to aquatic food production and export and provide habitat for a variety of birds and other wildlife species (see "Fish Growth and Survival in the Yolo Bypass" in Section 3.7.3, "Data Sources," of this Draft SEIR).

The proposed Project's design prioritizes the restoration of floodplain habitats in areas that are adjacent and well-connected to restored tidal wetland habitats. The design creates a complex, meandering transition between tidal wetland and floodplain habitats; both avian and terrestrial wildlife species benefit from a longer edge length between these two habitats because it can improve wildlife access to these habitat types (SCWRP 2018). The proposed Project does not propose to significantly alter existing grades or landforms in the floodplain habitat areas. However, the proposed Project does include several measures to improve the quality of these floodplain habitats: fish passage improvements, drainage improvements, vegetation management, and targeted application of native seed mixes to promote colonization by native plants. The proposed Project design allows for flexible fill placement on floodplain habitat areas to balance cut and fill quantities, as long as such fill placement is compatible with other proposed Project functions, including preservation of flood conveyance and desired drainage patterns. The proposed Project would include land uses and elevations that would be designed, analyzed, and maintained with a roughness compatible with Yolo Bypass flood flows. Because the floodplain habitat would receive surface runoff, it would not require supplemental irrigation as agricultural fields would; therefore, converting agricultural fields and managed wetlands to floodplain habitat would reduce overall drainage into the Toe Drain (see Section 3.4.2, Table 3.4-3).

2.2.4 Transition Zone Habitat

"Transition zone habitat" as discussed in this SEIR is a unique ecotone between tidal wetland and floodplain habitats, extending approximately 2 feet above the upper elevation limit of the tidal wetland

habitats. These are areas that drain toward adjacent wetland habitat, with no significant barriers to surface water flows or wildlife movement, providing high-tide refugia for wetland species and space for tidal wetlands to migrate to higher elevations as sea levels rise. Plant and animal communities from both wetland and floodplain habitats meet and integrate in transition zone habitats, which support a mix of marsh, native grassland, and riparian vegetation (Delta Stewardship Council 2022). Because the proposed Project area does not currently support tidal wetland habitat and contains hydraulic barriers described in Section 2.2.2, "Tidal Wetland Habitat," the transition zone habitat type does not currently exist in the proposed Project area.

The proposed Project would develop and reconnect transition zone habitat areas that drain toward adjacent restored tidal wetland habitats (see Section 2.2.2). The design proposes to create a series of multi-branching tidal channel corridors with adjacent transition zone areas that respond to existing topographic conditions. Under proposed Project conditions, these transition zone habitats would provide benefits to the tidal wetland habitats associated with primary productivity and high-tide refugia. The sloped ecotones provided by transition zone habitat would also create a landscape that is resilient to the higher tidal elevations of sea level rise by allowing benefited species to shift their habitats to higher elevations (upslope migration). Because tidal wetland habitat would receive surface runoff and be tidally inundated, it would not require supplemental irrigation as agricultural fields would; therefore, converting agricultural fields and managed wetlands to transition zone habitat would reduce overall drainage into the Toe Drain (see Section 3.4.2, Table 3.4-3).

2.2.5 Managed Floodplain

Managed Wetlands

"Managed wetlands" as discussed in this Draft SEIR refer to shallow ponds that can serve the dual purpose of duck habitat and floodplain habitat, providing enhanced food web productivity to benefit native fishes in adjacent aquatic habitats. Water management regimes for ducks have the potential to enhance food web productivity by extending the residence time of water (Philips et al. 2024; Aha et al. 2021); food-rich water can then be exported (drained and conveyed) to downstream aquatic habitats.

The proposed Project would construct several managed wetlands, which would provide for continued duck club operations in the Project area. Each managed wetland would consist of a broad flat basin between approximately 40 and 120 acres, surrounded by a perimeter berm that would also serve as an access road. Fill would be placed to construct berms around the new managed wetlands compatible with Yolo Bypass flood flows. These berms would have weirs that would allow for control of water levels in the managed wetlands to support continued recreational waterfowl hunting and fish passage. Each managed wetland would include a primary drainage swale to provide volitional fish egress to the outlet during floodplain drawdown. The managed wetlands may also include "islands," "potholes," and other topographic variations attractive to waterfowl and other wildlife. Wetland elevations and vegetation would be designed and maintained for conveyance of flow during high-water events.

Despite the lack of a need for supplemental irrigation in areas with tidal wetlands, transition zone, or floodplain habitats, duck clubs would be able to add supplemental water to inundate the managed wetlands in dry years and increase the duration of naturally occurring inundation events. The period when the managed wetlands would be inundated by either natural flood events or supplemental water for waterfowl

hunting is from mid-October through the end of January, which coincides with spring periods when target fish species would be using the adjacent floodplain (salmonids) and tidal wetland (smelt and salmonids) as rearing/foraging habitat. Supplemental water and management of drainage through the outlets in the proposed Project area could be used to extend inundation through April, which covers the full salmonid floodplain rearing season (NMFS 2021) and periods when delta smelt are present in the lower Yolo Bypass (Interagency Ecological Program 2022). Therefore, the managed wetlands potentially would retain water for up to several weeks, reducing peak flows to the Toe Drain while surrounding lands are draining.

The managed wetlands would be filled and drained at appropriate times of year via a reconfigured irrigation and drainage system under the proposed Project. Proposed improvements include reducing irrigation supply redundancies, decreasing the number of pumps, and adding fish-passable devices to allow volitional fish passage on and off the floodplain without restricting flood flows. See Section 2.2.6, "Facilities Improvements," for further details. The proposed Project also includes the enhancement and creation of informal roads that would provide maintenance access to the managed wetlands; these roads are intended to provide functional access for suitable 4x4 vehicles and equipment and would be neither suitable nor intended for general vehicle access.

Managed Floodplain Agriculture

Parts of the proposed Project area have been used for farming for many years. Certain agriculture is compatible with the flood function of the Yolo Bypass by managing vegetation and maintaining flood conveyance (see California Code of Regulations Title 23, Section 131, "Vegetation"; see also Title 23, Section 136, "Supplemental Standards for Yolo Bypass and Sutter Bypass"). In addition, rice and other floodplain agricultural production can enhance nutrient exchange and aquatic food web productivity (see "Fish Growth and Survival in the Yolo Bypass" in Section 3.7.3, "Data Sources," of this Draft SEIR). The proposed Project integrates the benefits of ecologically sensitive agricultural practices in the floodplain (e.g., rice production) into restoration design to provide seasonal food production to native fish species and to be responsive to ongoing agricultural uses as well as local and regional priorities.

The proposed Project includes approximately 720 acres of agricultural fields to support long-term operation of floodplain agriculture in the proposed Project area. Of these acres, approximately 670 acres are designated as Unique Farmland and would be retained as farmland and associated infrastructure would be improved. The remaining 50 acres are designated as grazing land but would be managed as agricultural farmland within the Project area.

These fields are expected to be used primarily for rice cultivation; however, other crops may also be grown during certain years as part of planned crop rotations. Each field would be graded with very gentle slopes, and a berm would be constructed around the field perimeter that would also support vehicle access for agricultural operations. Agricultural fields and associated features would be designed and analyzed to be compatible with flood flows.

The floodplain agriculture areas would support agriculture during the growing season while providing salmonid floodplain rearing habitat during the winter months. Specifically, these areas would provide slow-moving, shallow, warmer floodplain water and enhanced food web productivity from the breakdown of post-harvest vegetative matter. Agricultural areas would also provide potential habitat for other listed species (e.g., Swainson's hawk; see Section 3.6, "Biological Resources – Terrestrial") during the dry

season and would be managed to provide benefits to shorebirds and waterfowl by retaining shallow standing water during times when such ponding would not conflict with agricultural operations (early winter and late spring). Therefore, the managed floodplain agriculture areas potentially would retain water for up to several weeks, reducing peak flows to the Toe Drain while surrounding lands are draining.

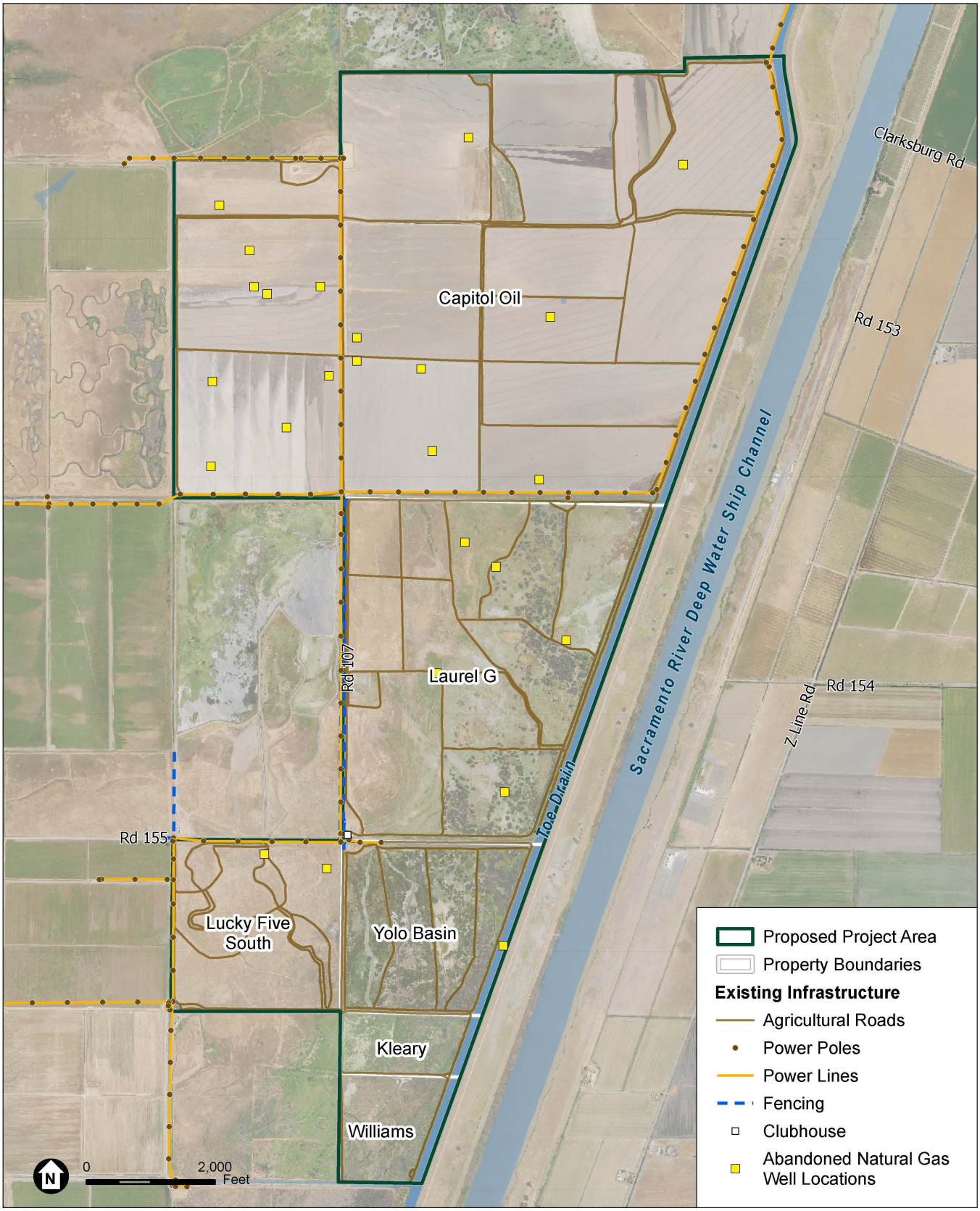
Floodplain agricultural fields would be supported by the proposed Project's reconfiguration of the existing irrigation and drainage system. Proposed improvements include reducing irrigation supply redundancies, decreasing the number of pumps, improving the efficiency of water delivery infrastructure, and adding fish-passable devices to allow volitional fish passage on and off the floodplain. See Section 2.2.6, "Facilities Improvements," for further details. The proposed Project also includes enhancement and creation of informal roads that would provide access to the agricultural fields; these roads are intended to provide functional access for suitable 4x4 vehicles and equipment and would not be suitable or intended for general vehicle access.

2.2.6 Facilities Improvements

A variety of physical infrastructure is present in the proposed Project area, such as a duck clubhouse, agricultural roads, utilities infrastructure, and water control infrastructure, that reflects the area's prior and current land uses (**Figure 2-5** and **Figure 2-6**). Lift pumps draw directly from the Toe Drain or from canals connected to the Toe Drain to supply irrigation across the proposed Project area. Water delivered to the proposed Project area generally drains to the east, flowing back to the Toe Drain through spills, culverts, and drainage ditches. Some neighboring properties to the west also receive water from the Main Drain, on the south side of the Capitol Oil property, which is pumped through the neighboring property owner's pumps and infrastructure located outside the proposed Project area. Drainage from some of the western neighboring properties flows through the proposed Project area's system of drainage ditches (see Appendix D to this Draft SEIR, "Tide's End Multibenefit Restoration Project Land Use Constraints Analysis"). The existing duck clubhouse is served by a groundwater well that provides water for non-potable uses. Existing electric utility poles on the proposed Project area serve existing water control infrastructure as well as the duck clubhouse.

The proposed Project would reconfigure irrigation and drainage infrastructure to manage wetland water levels and floodplain agriculture irrigation effectively (these improvements would occur across the habitat types outlined in Table 2-3; see Figure 3.7-2 in Section 3.7, "Biological Resources – Aquatic"). The proposed Project would improve an irrigation supply canal on the Main Drain of the Capitol Oil property that supplies water to the managed floodplain areas and to the proposed Project area's western neighbors. Existing pumps, pipes, and other water control structures that are not needed under proposed Project conditions would be removed and salvaged and/or discarded. This infrastructure includes one pump at the Laurel G clubhouse and three pumps along the northern boundary of the Laurel G property. A new pump and associated infrastructure would be installed at the southwest corner of Capitol Oil and this would become the primary irrigation supply for the Capitol Oil property. All pumps replaced or maintained as part of the proposed Project would be installed with fish screens to minimize harm to fish.

Fish-passable culverts and weir boxes would be installed at the inlet and outlet of each managed wetland and agricultural field for managing water levels and for drainage under existing and new roads and berms. The proposed Project would improve and modify drainage ditches to provide volitional fish egress from the fields during floodplain drawdown.



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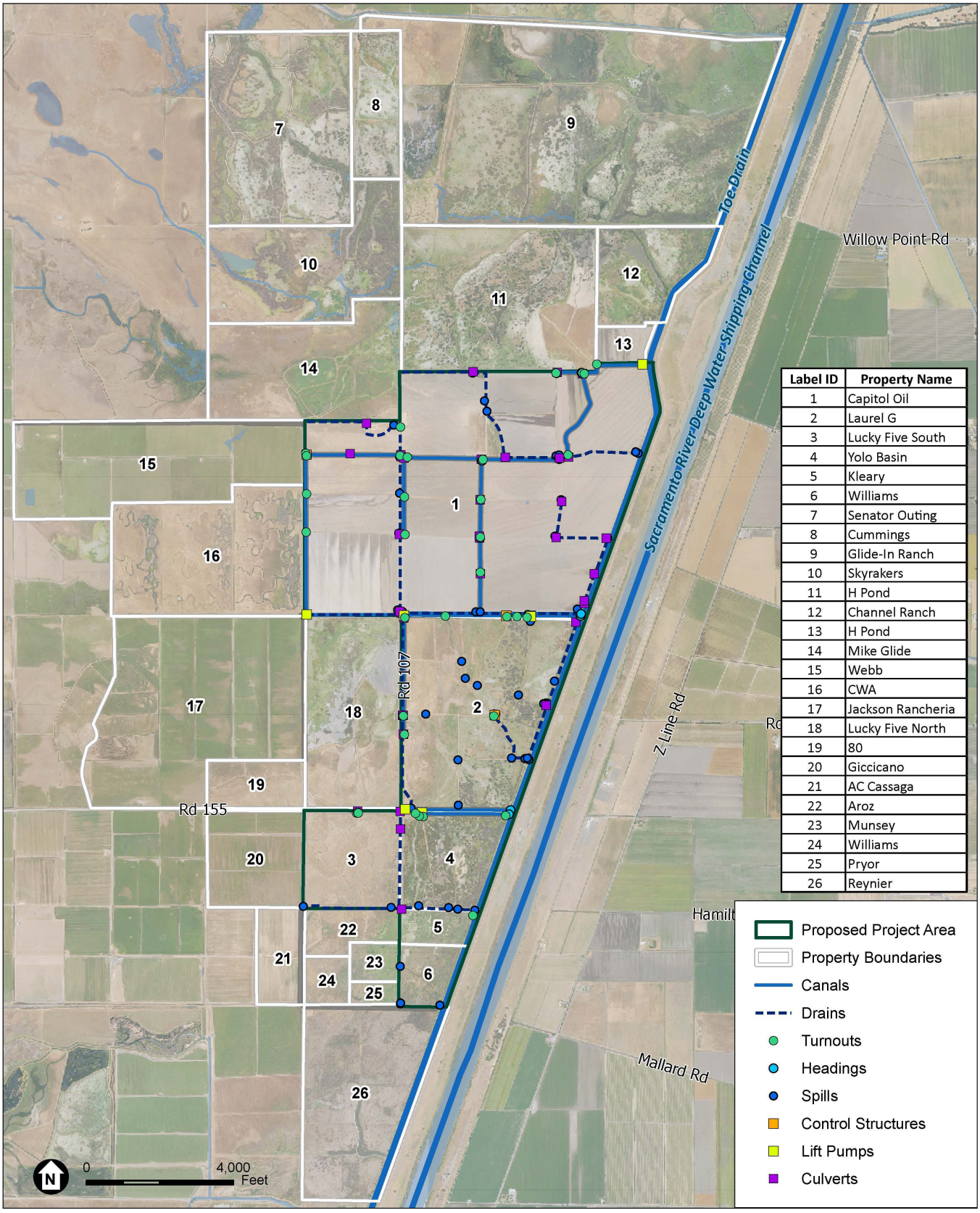
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Tide's End Multibenefit Restoration Project

Figure 2-5
Proposed Project Area
Existing Infrastructure

Prepared by: ESA

SOURCE: NAIP, 2022; Davids Engineering, 2024; ESA, 2025



Label ID	Property Name
1	Capitol Oil
2	Laurel G
3	Lucky Five South
4	Yolo Basin
5	Kleary
6	Williams
7	Senator Outing
8	Cummings
9	Glide-In Ranch
10	Skyrakers
11	H Pond
12	Channel Ranch
13	H Pond
14	Mike Glide
15	Webb
16	CWA
17	Jackson Rancheria
18	Lucky Five North
19	80
20	Giccicano
21	AC Cassaga
22	Aroz
23	Munsey
24	Williams
25	Pryor
26	Reynier

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Figure 2-6
Proposed Project Area
Existing Water Supply and Drainage System

Prepared by: ESA

SOURCE: NAIP, 2022; Davids Engineering, 2024; ESA, 2025

The proposed Project would improve drainage for upstream areas. In addition, the proposed Project would also provide drainage benefits to neighboring properties, including creating a pathway for water to drain from properties immediately to the north.

2.3 Proposed Project Construction

This section describes construction activities and timing. The ways in which various construction activities and equipment would be applied to construct the proposed Project's restoration elements are also described below. See **Tables 2-4** and **2-5** for summaries of the activities and equipment discussed, respectively.

TABLE 2-4
PROPOSED PROJECT CONSTRUCTION METHODS

Construction Methods	Proposed Restoration/Project Element					
	Site Access and Preparation	**Tidal Wetlands and Transition Zone**	**Floodplain Habitat**	**Managed Floodplain**	**Facilities Improvements**	**Habitat Revegetation/ Stabilization**
Construction Activities						
Demolition	X					
Vegetation Clearing	X	X	X	X	X	
Dewatering		X	X	X	X	
Earthmoving—Scrapers			X	X		
Earthmoving—Excavators, Trucks		X	X	X	X	
Fill Placement		X	X	X	X	
Concrete Work					X	
Installation/Removal of Equipment/Facilities					X	
Structural Foundation Installation					X	
Grading/Leveling (incl. to restore roads)				X		
Dust Control	X	X	X	X	X	X
Planting/Seeding/Vegetation Placement						X

Source: Data compiled by Environmental Science Associates in 2025

TABLE 2-5
PROPOSED PROJECT CONSTRUCTION EQUIPMENT

Equipment	Proposed Restoration/Project Element					
	Site Access and Preparation	Tidal Wetlands and Transition Zone	Floodplain Habitat	Managed Floodplain	Facilities Improvements	Habitat Revegetation/ Stabilization
Excavators						
Quantity	1	1	1	0	1	0
# Days	10	55	45	0	165	0
Scrapers						
Quantity	0	5	1	1	1	0
# Days	0	110	8	105	15	0
Graders/Dozers						
Quantity	1	2	1	1	1	1
# Days	150	165	135	75	15	150
Off-Road Trucks						
Quantity	0	5	5	0	0	0
# Days	0	15	45	0	0	0
Highway Trucks						
Quantity	5	10	5	5	5	5
# Days	40	80	40	40	40	40
Water Trucks						
Quantity	1	2	1	1	1	0
# Days	6	60	8	105	15	0
Sheepsfoot Compactor						
Quantity	0	2	1	1	1	1
# Days	0	60	6	75	15	3
Forklift						
Quantity	1	2	1	1	1	1
# Days	45	85	45	45	45	45
Backhoe						
Quantity	1	2	1	1	1	1
# Days	45	85	45	45	45	45
Skid Steer						
Quantity	1	2	1	1	1	1
# Days	45	85	45	45	45	45
Vibratory Hammer						
Quantity	0	0	0	0	1	0
# Days	0	0	0	0	30	0
Crane						
Quantity	0	0	0	0	1	0
# Days	0	0	0	0	30	0

Note: Assumes a 2-year construction schedule.

Source: Data compiled by Environmental Science Associates in 2025

2.3.1 Construction Schedule, Phasing, and Workforce

A crew of approximately 15–20 workers would be necessary to implement the proposed Project. Construction activities are expected to occur from 7 a.m. to 6 p.m., Monday through Friday. Nighttime fueling and repairing of construction equipment could occasionally occur which would require nighttime lighting powered by generators. Proposed Project construction would likely over two construction seasons, spanning April 1 to November 1 each year. The construction of the restoration elements would occur in a phased manner across the six properties of the proposed Project area, based on ground conditions, special-status species work windows, the type of restoration elements being developed on each property, and the desire to balance cut and fill on-site. **Table 2-6** summarizes planned construction phasing; note that not all properties would receive all restoration element types.

TABLE 2-6
ANTICIPATED CONSTRUCTION SCHEDULE/PHASING OVERVIEW

Proposed Restoration/Project Element	Year 1 and Year 2, If Needed						
	APR	MAY	JUN	JUL	AUG	SEP	OCT-NOV
Site Access and Preparation							
Capitol Oil, Laurel G	X	X					
Yolo Basin, Kleary, Williams			X	X			
Lucky Five South			X				
Tidal Wetland							
Capitol Oil, Laurel G		X	X	X	X		
Yolo Basin, Kleary, Williams				X	X	X	X
Lucky Five South							
Floodplain Habitat							
Capitol Oil, Laurel G		X	X	X	X		
Yolo Basin, Kleary, Williams							
Lucky Five South				X	X	X	
Managed Floodplain							
Capitol Oil, Laurel G			X	X	X	X	
Yolo Basin, Kleary, Williams							
Lucky Five South				X	X	X	
Facilities Improvements							
Capitol Oil, Laurel G				X	X		
Yolo Basin, Kleary, Williams							
Lucky Five South				X	X		
Habitat Finalization/Stabilization							
Capitol Oil, Laurel G						X	
Yolo Basin, Kleary, Williams						X	X
Lucky Five South						X	

Notes: Construction of the proposed Project may occur over a single construction season, in which case the intensity of construction activities would increase, and phasing would be compressed.

2.3.2 Construction Access

For construction, the proposed Project area would be accessed via County Road (CR) 155 and CR 107. Both roads are public county roads that terminate at the proposed Project area's boundary. Some work may cross CR 107 for reinstallation or reconfiguration of water control structures, canals, or other irrigation and drainage supply infrastructure; however, both roads would remain accessible to the public throughout construction. Haul routes on-site would be constructed on top of temporary berms alongside CR 107.

2.3.3 Construction Site Preparation

Site preparation activities would include the installation of required protection, avoidance, and minimization measures as required by the SRGO (State Water Board 2022: Section A.5, pp. A-24 through A-39) and this Draft SEIR; installation of best management practices (e.g., stormwater pollution prevention plan); marking of existing utilities; development of staging areas; vegetation clearing; invasive species management; and demolition.

Staging areas would be required for storage, fueling, and distribution of construction materials and equipment. Staging areas would be located at the north end of CR 107, within the existing graveled parking lot for the duck clubhouse at the southwest corner of Laurel G, or in other locations outside of sensitive habitat areas.

Management and control of invasive plant species would occur prior to and during construction, using both mechanical and chemical control measures. Vegetation clearing and grubbing would occur within the earthwork footprint for all restoration elements and as needed for access, staging, and haul routes. Woody material would be stockpiled and placed on-site to create brush piles and woody debris habitat structures or would be processed (chipped and buried) on-site. Leaves and other small vegetation debris for species that do not require special handling would be mixed into nonstructural fill material, including fill for floodplain habitat slopes and habitat mounds, or would be processed on-site as described above.

The proposed Project would avoid construction directly over the 25 plugged and abandoned natural gas wells located in the proposed Project area and there would be no construction activities within approximately 25 feet of the abandoned natural gas wells.

The proposed Project would require the demolition of structures and facilities throughout the proposed Project area. In total, it is anticipated that 51 outflow/spill structures, 33 inflow/turnout structures, three weir boxes, seven heading structures, 34 culverts, and four pumps would be demolished. Existing facilities marked for demolition and removal would be removed using excavators (or similar construction equipment) and manual labor. Demolished equipment and facilities would be sorted for reuse or disposal. Plastic and metal debris would be hauled to appropriate off-site waste disposal facilities, while rock and inert concrete debris would be either buried on-site or hauled to appropriate off-site waste disposal facilities.

2.3.4 Tidal Wetland and Transition Zone Habitat Construction

Earthwork for the tidal wetland habitat area would begin when soils in the work areas are sufficiently dry to support access and operations by construction equipment. The proposed Project area is expected to naturally dry out during the late spring/early summer months through passive (gravity-driven) operation

of the existing water control structures draining to the Toe Drain. However, it may be necessary to use temporary pumps to accelerate drying of the site in low-lying and deeper ponded areas and for the new tidal channels as the areas are being excavated. In that case, all applicable dewatering measures from the Final SRGO Program EIR would be implemented (Final SRGO Program EIR: Section 2.8, p. 2-29).

If necessary, pumped water would be discharged into either the nearby floodplain habitat areas, agricultural areas, managed wetland areas, existing irrigation supply canals, or drainage canals flowing into the Toe Drain. If the proposed Project area cannot be fully dried out with dewatering, all in-water measures from the Final SRGO Program EIR would also be implemented (Final SRGO Program EIR: Section 2.8, p. 2-29).

The contractor would clear existing vegetation in the footprint of the new tidal channels and adjacent tidal wetland and transition zone areas, including riparian vegetation on areas of the Toe Drain berm that are proposed for opening/lowering. Earthwork for tidal wetland areas would include excavating and shaping tidal channels, lowering ground elevations, creating habitat mounds, lowering and/or opening the Toe Drain berm, and creating the new berm on the west side of the Kleary and Williams properties. Development of adjacent transition zone habitats in the proposed Project area would require earthwork to fill in holes, smooth grades, remove existing berms, and otherwise shape the landform for appropriate drainage to adjacent tidal wetland habitats. This would be accomplished using a combination of scrapers, excavators, haul trucks, and dozers. Generated soils from both tidal wetland and transition zone excavation would be placed adjacent to the tidal channels and shaped to create tidal wetland habitat mounds, spread across nearby transition zone and floodplain areas to create gentle slopes and support drainage, or used to construct new berms around the perimeters of the managed wetlands for waterfowl and agricultural fields.

No planting or seeding is planned for the tidal wetland habitat areas, as they are expected to revegetate naturally; however, organic debris generated from the clearing of dense tule stands may be opportunistically mixed into the top layer of soil (using agricultural rippers, diskers, or similar machinery) to enhance the legacy seed bank and introduce potentially viable tule rhizomes to accelerate growth of desired wetland vegetation. Within the Delta, natural recruitment of tidal freshwater emergent marsh vegetation has been known to occur relatively quickly, with colonization of bare intertidal ground typically beginning within the first year and reaching substantial coverage within 3–4 years (Simenstad et al. 1999). For example, Lower Mandeville Tip (located in the northwestern portion of the Delta), breached in 1933, was nearly fully vegetated by 1937 (Simenstad et al. 1999), and dredge spoil sites at Venice Cut and Donlon islands (located in the central-western portion of the Delta) showed 83–85 percent marsh cover and more than 88 percent riparian vegetation by year 3 (USFWS and USACE 1990). In addition, through aerial analysis of the Lookout Slough project performance, restored tidal freshwater emergent vegetation naturally colonized almost completely within one year following reactivation of tidal hydrology to appropriate elevations (DWR 2025).

Riparian vegetation planting would be interspersed in the transition zone habitats, as described in Section 2.3.8, “Habitat Revegetation and Stabilization.”

2.3.5 Floodplain Habitat Construction

Floodplain habitat areas would require grading only where needed to ensure proper drainage and flow pathways, as elevations are already appropriate to support floodplain habitat. These areas would be used to support the beneficial reuse of soils to balance earthwork quantities on-site from earthmoving activities. Required equipment would include scrapers, excavators, haul trucks, and dozers.

2.3.6 Managed Floodplain Construction

The contractor would clear and dispose of existing non-native vegetation from the footprint of the new perimeter berms around each new managed wetland area and agricultural field. The contractor would preserve existing native vegetation elsewhere in the managed floodplain area as long as it does not conflict with site access and staging.

The perimeter berms would be constructed using suitable material generated from nearby excavation. For example, materials for berms associated with managed wetland areas may be acquired either from the excavation of new drainage swales in the managed wetland interior, from excavation to improve the irrigation canal, or from excavation of tidal wetland habitat areas. Materials for berms associated with floodplain agricultural fields may be generated from the existing fields. The material would be transported to the new berms using scrapers or haul trucks, then graders and dozers would be used to shape the berms to the desired geometry. Graders, dozers, and scrapers would also be used to level the interior of each managed wetland and agricultural field to the desired range of elevations, and to create desired micro-topography in the managed wetland areas, including small "pothole" depressions and habitat islands that would attract and benefit waterfowl. The perimeter berms around managed floodplain areas would be lightly compacted to support off-road vehicle access and farm equipment access along the berm crests.

Reconfigured and improved irrigation canals and drainage ditches would be needed to supply adequate water to managed floodplain areas, as well as the proposed Project area's western neighbors. This would require a combination of excavation to achieve the desired canal depths and bottom width and a raise of the berms on canal sides to the desired elevation. The contractor would clear existing vegetation in the footprint of the irrigation supply canals and would then perform grading using a combination of scrapers, excavators, haul trucks, and dozers. Where possible, the berms adjacent to each canal would be constructed using materials generated from the excavation of the canal itself. However, in some cases it may be necessary to haul additional material generated elsewhere on-site (for example, from excavation for the tidal wetland habitat areas), or to haul material away from the canal for placement elsewhere on-site (for example, to the floodplain habitat beneficial reuse areas). The irrigation canal berms would be lightly compacted to sufficiently support off-road vehicle access and farm equipment access along the berm crests.

Riparian vegetation planting would be interspersed along select edges of managed wetland areas, as described in Section 2.3.8, "Habitat Revegetation and Stabilization."

2.3.7 Facilities Improvements

The contractor would clear and grade proposed locations for restored/improved pumps and use an excavator to install driven piles, which would be installed using an excavator with a mounted pile driver.

Either a cast-in-place concrete foundation and steel frame would be installed using ready-mix concrete trucks and a forklift for drainage and pump structures, or a prefabricated structure would be assembled on-site and off-loaded using equipment available on-site such as an excavator and vibratory hammer. Sheetpile walls may also be installed with a vibratory hammer as a temporary or permanent wall. Pumps, piping, and power would be installed using both mechanical and electrical equipment such as a forklift. Excavation for a concrete reinforced sump basin associated with the northernmost pump station would account for the maximum depth of excavation proposed for proposed Project construction (18 feet below existing grade in a localized area 25 feet wide by 10 feet long).

Volitional fish passage on and off the floodplain would be enhanced by reconfiguring irrigation and drainage ditches and installing fish-passable structures, such as culverts and modified weir boxes. Irrigation and drainage ditches would be excavated and compacted to the desired channel geometry, and fish-passable water control devices would be installed manually.

2.3.8 Habitat Revegetation and Stabilization

To compensate for the disturbance of riparian forest and riparian scrub communities on the Toe Drain berm, the proposed Project would include a combination of riparian plantings and placement of riparian seed mix. Riparian forest vegetation would be planted in the transition zone habitat area along the Toe Drain in Capitol Oil, in areas that do not currently support riparian forest. Riparian scrub vegetation would be planted along select edges of managed wetland areas where dense riparian vegetation is not expected to adversely affect flood conveyance. See Section 3.10, “Hydrology and Water Quality,” for a discussion of hydraulic modeling completed for the proposed Project.

In addition, the proposed Project would involve targeted application of native seed mixes on graded slopes and crests of perimeter berms and irrigation canal berms throughout the managed floodplain area to stabilize the soil. Woody debris salvaged from excavation activities, if available, would be placed opportunistically throughout the floodplain habitat areas to enhance habitat complexity, as regulatory permits allow.

Decompaction and/or deconstruction of haul routes would occur using rippers mounted on bulldozers and or disks pulled by agricultural tractors to loosen, aerate, and improve infiltration of the compacted features. After construction, equipment and materials would be removed from the site, and staging areas and any temporary access roads would be restored to pre–proposed Project conditions. Any remaining construction debris would be hauled to an appropriate waste facility. Installation of erosion and stormwater best management practices required by the stormwater pollution prevention plan would also occur.

2.4 Operations, Monitoring, and Maintenance

Operations, monitoring, and maintenance of the proposed Project would include management of floodplain features (i.e., managed wetlands and floodplain agriculture) and more traditional operations, restoration monitoring, and maintenance of the proposed Project area as a whole. **Figure 2-7** presents a conceptual model illustrating how the different elements would be managed to achieve the proposed Project’s compatible goals and objectives.

Management / Habitat Element	Dominant Hydrology (management)	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Flood Season (Nov 1 - Apr 15)	Fremont Weir overtop/ spill events (inundation)		←					→					
Big Notch Project Operations (Nov 1 - Mar 15)	Fremont Weir notch flows (up to 6,000 cfs)		←					→					
Waterfowl Hunting Season (Sep 30 - Jan 31)	Fremont Weir overtop/ spill events, Fremont Weir notch flows												
Rice Growing / Harvest	Ag ditches/canals	harvest	fields flooded				prep and sowing		growing season				harvest
Fish and Wildlife Needs													
Salmonids (juvenile rearing)													
Floodplain	Fremont Weir overtop/ spill events (inundation)		juvenile rearing; variable inundation events										
Floodplain	Fremont Weir notch flows (up to 6,000 cfs)		juvenile rearing										
Tidal marsh	Toe Drain		juvenile rearing					temperature limited					
Managed wetlands	Ag ditches/canals		food production + export juvenile rearing					temperature limited					
Smelt (spawning, egg/larval, and rearing)													
Tidal marsh	Toe Drain				peak abundance								
Managed wetlands	Ag ditches/canals				manage for food production and export to Cache Slough Complex								
Waterfowl (stopover, foraging)													
Managed wetlands	Ag ditches/canals							drawdown and irrigation to promote swamp timothy				initiate fall	flood-up

Sources: 14 CCR Section 502; 23 CCR Section 112, Table 8.1; Reclamation and DWR 2019.

Figure 2-7

Tide's End Multibenefit Management Conceptual Model

2.4.1 Managed Floodplains

Managed floodplains under the proposed Project include managed wetlands and floodplain agriculture. Operations and maintenance required for these elements under the proposed Project include ongoing water management and agricultural practices related to flood-up and drawdown, irrigation, vegetation management (e.g., disking, mowing), grading, fertilizing, and planting. Some of these activities would require the use of heavy equipment, but these activities are similar to those occurring under existing conditions for the agricultural fields and managed waterfowl ponds currently located in the proposed Project area.

Additional monitoring and maintenance activities would be consistent with those evaluated under the Final SRGO Program EIR, including activities such as periodic dredging of sediment from tidal channels and irrigation and drainage canals; mechanical or chemical weed control and control of invasive species; manual vegetation management (e.g., replanting, watering, mowing); and maintenance, cleaning, and/or repair of berms, equipment, and infrastructure (Final SRGO Program EIR: Section 2.7, p. 2-27).

The long-term operations and adaptive management of these restoration elements is summarized below.

Managed Wetlands

Managed wetlands would be initially flooded between August and October, would remain flooded throughout the winter, and would be drawn down in the spring, between March and May.

During the fall-to-spring period, flooding would be conducted to activate the food web, provide resting habitat for waterfowl, and export food-rich water to downstream land uses/habitat features, including floodplain, transition zones, tidal wetlands, and the Toe Drain. Additionally, if water surface elevations in the Toe Drain exceed the managed wetland perimeter berms, juvenile salmonids that enter the Yolo Bypass through the Big Notch Project (or over the Fremont Weir in higher water conditions) would have access to these features and could use them as rearing habitat. Should Toe Drain water surface elevations be predicted to rise above the berms, boards with top notches and mid-elevation holes would be installed in the weirs to provide continuous flow-through and volitional passage for juvenile salmonids.

In March through May, water in the managed wetlands would be drawn down. Spring drawdown would convey juvenile fish (if present) into the Toe Drain (via drainage ditches and tidal wetland channels), export and concentrate food in receding wetlands (invertebrates for migratory waterfowl and shorebird foraging), and allow for germination of native moist-soil plants on exposed mudflats.

After drawdown, the managed wetland would typically remain dry for the summer. However, depending on conditions, they may require irrigation 1–2 months after drawdown to bring moist-soil plants, such as swamp timothy (*Crypsis schoenoides*), watergrass (*Echinochloa crus-galli*), or smartweed (*Persicaria lapathifolium*), to maturity and enhance their production of seed for waterfowl and other wildlife, and to serve as a method to control undesirable plant species and mosquitoes (Kwasny et al. 2004).

Depending on spring weather conditions, the desired promotion of moist-soil vegetation, or the need to suppress certain species, irrigation may occur anytime between May and July, with the number and duration of events varying accordingly. After irrigation, when soils dry sufficiently to support heavy

equipment, vegetation management (e.g., disking and mowing) may be conducted to limit the extent of undesirable vegetation, which would maintain flood flow conveyance and promote the growth of moist-soil plants that provide nutrition for waterfowl.

Managed Floodplain Agriculture

Managed floodplain agriculture in the proposed Project area would generally follow standard practices for rice production in the Yolo Bypass, consistent with current operations, with modifications targeted toward fish and waterfowl food production and juvenile salmonid rearing, starting in the late fall/early winter (November/December) and running through early spring (March).

In late March, or as soon as floodwaters recede and fields begin to dry and can be accessed, fields would be prepared for planting. At times, fields could be leveled with precision using Global Positioning System satellite-driven technology or laser-guided grading equipment to maximize water efficiency and drainage, depending on crop needs. Fertilizer may be added and shallow furrows rolled into the field. By April, the fields are expected be ready to be planted. Water would be conveyed onto the fields to a depth of approximately 10 inches to improve the rice plants' ability to compete against weeds for nutrients and sunlight, reducing the need for herbicides. The rice seed would be planted by direct seeding. By late summer, the grain would begin to appear in long panicles on the top of the plant, then the fields would be drained. About a month later, the field would be ready for harvest.

After harvest, fallow and production fields would have water reapplied to break down rice straw, activate the food web for fish rearing and/or export to neighboring land uses (floodplain, tidal wetlands, and the Toe Drain), and provide food and a resting place for migrating waterfowl. Water management during this period would be adaptive and could include periodic flood-up and drawdown cycles to promote maximum food production and subsequent export.

Similar to that described above for managed wetlands, if water surface elevations in the Toe Drain exceed the floodplain agriculture perimeter berms, juvenile salmonids that enter the Yolo Bypass would have access to these features and could use it as high-quality rearing habitat. If Toe Drain water surface elevations are predicted to rise above the berms, boards with top notches and mid-elevation holes would be installed in the rice check boxes to provide continuous flow through and volitional passage for juvenile salmonids.

In March, water in the rice fields would be drawn down. Spring drawdown would convey juvenile fish (if present) into the Toe Drain (via floodplain swales and tidal wetland channels), and export invertebrates and other lower order food web organisms (e.g., phytoplankton and zooplankton).

2.4.2 Tidal Wetland, Transition Zone, and Floodplain Habitats

Physical and biological monitoring would be conducted at the completion of proposed Project construction as needed for regulatory compliance and evaluating project efficacy. The restored tidal wetland, transition zone, and unmanaged floodplain habitats are expected to be largely self-maintaining after the initial period of vegetation establishment. Maintenance for the tidal wetlands and adjacent floodplain during the 3- to 5-year establishment period would include manual removal of invasive plants (including aquatic plants). Although it is unlikely, the use of localized herbicides could be employed if

highly invasive species and/or harmful algal blooms become present in the proposed Project area. If limited herbicide application is needed as part of a long-term management approach, all general and species protection measures outlined in the Final SRGO Program EIR related to herbicide use and application would be implemented. (See Table 1-5, "General Protection Measures," and Table 1-6, "Special-Status Species Protection Measures," in Section 1.1, "Eligibility for Coverage under the Statewide Restoration General Order and Program EIR"; see also Final SRGO Program EIR: Section 2.8, pp. 2-28 and 2-29, and Section 2.10, pp. 2-33 and 2-34.)

Post-construction monitoring for the proposed Project is anticipated to lead only to minor repair and maintenance activities, which may include the following:

- Manual removal (with hand equipment) of any obstructions that may be blocking tidal channels (e.g., debris), if needed.
- Periodic dredging of sediment to maintain the tidal channels and irrigation and drainage canals.
- Additional manual vegetation management beyond the initial establishment period, including weed control and replanting, and/or extended temporary watering, as needed.
- Vegetation (riparian) management to maintain flood flow conveyance, as needed.
- Maintenance or repair of agricultural and/or managed wetland berms.

As described above, operation of the managed floodplain, especially floodplain agriculture areas, would require equipment and infrastructure repair and agricultural practices (e.g., seeding, water management) consistent with existing ongoing practices with modifications to provide compatible management of fish food production and rearing habitat for juvenile salmonids.

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CHAPTER 3
Environmental Setting, Impacts, and Mitigation Measures

This chapter provides a definition of key terms and information, describes this document's approach to the impact analysis, and presents a summary of the resource areas for which potential impacts of the proposed Project are covered by the evaluation of environmental effects in the Final Statewide Restoration General Order (SRGO) Program Environmental Impact Report (EIR). The resource areas within the scope of the Final SRGO Program EIR, and for which no further analysis is required in this document, include:

- Aesthetics
- Energy Resources
- Forestry and Forestry Resources
- Geology and Soils
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Transportation
- Wildfire

The resource area topics requiring additional analysis with respect to the California Environmental Quality Act (CEQA) beyond the analysis in the Final SRGO Program EIR are presented in the following sections in this draft supplemental EIR (Draft SEIR):

- 3.4 Agriculture
- 3.5 Air Quality and Greenhouse Gas Emissions
- 3.6 Biological Resources – Terrestrial
- 3.7 Biological Resources – Aquatic
- 3.8 Cultural Resources
- 3.9 Hazards and Hazardous Materials
- 3.10 Hydrology and Water Quality
- 3.11 Recreation

- 3.12 Tribal Cultural Resources
- 3.13 Utilities and Service Systems

3.1 Impact Analysis Key Terms

This Draft SEIR uses the following key terms:

- **Thresholds of Significance:** The set of identifiable, quantitative, qualitative, or performance-level criteria used to determine the level or "threshold" at which an impact would be significant (see CEQA Guidelines Section 15064.7[a]). The thresholds of significance used in the Final SRGO Program EIR and in this Draft SEIR fall into the following categories:
  - Discussed in Appendix G of the CEQA Guidelines.
  - Based on factual or scientific information.
  - Based on regulatory standards of federal, State, and local agencies.
  - Adopted by the State Water Resources Control Board (State Water Board).

  In determining the level of significance, the analysis assumes that the proposed Project would comply with relevant federal and State regulations. The California Department of Water Resources (DWR), as a State agency, is not subject to local regulations and ordinances.
- **No Impact:** An impact conclusion is classified as "no impact" when the resource being discussed would not be adversely affected by the proposed Project, the proposed Project would not cause a change for existing conditions, or there is no reasonably foreseeable situation in which the proposed Project would result in a direct or indirect impact on a particular threshold of significance.
- **Less-than-Significant Impact (LTS):** An impact is considered "less than significant" when it does not surpass the threshold of significance and would therefore not cause a substantial adverse change in the physical environment. No mitigation is required for less-than-significant impacts (CEQA Guidelines Section 15126.4[a][3]). However, general protection measures and/or species protection measures may be applied to further reduce the less-than-significant level of impact.
- **Potentially Significant Impact (PS):** An impact is considered "potentially significant" if it could result in a substantial adverse change in the physical environmental conditions in the area affected by the proposed Project. General protection measures and mitigation measures may be applied to reduce such impacts to a less-than-significant level.
- **Less than Significant with Implementation of General Protection Measures (LTSG):** An impact is considered "less than significant with implementation of General Protection Measures" if and when incorporation of the general protection measures and species protection measures from the Final SRGO Program EIR would reduce the magnitude of a potential impact to less-than-significant levels (without the incorporation of mitigation measures).
- **Less than Significant with Implementation of Mitigation Measures (LTSM):** An impact is considered "less than significant with implementation of mitigation measures" when mitigation measures from the Final SRGO Program EIR or additional, project-specific mitigation measures are required to reduce the magnitude of a potential impact to a less-than-significant level.

- **Significant Impact:** An impact is considered "significant" if it would result in a substantial adverse change in the physical environmental conditions in the area affected by the proposed Project, even after implementation of all feasible mitigation measures (CEQA Guidelines Section 15002[g]). Significant impacts are identified by evaluating the effects of the proposed Project in the context of specified thresholds of significance. Mitigation measures and/or project alternatives are identified and adopted to reduce these effects on the environment, where feasible (CEQA Guidelines Section 15021[a]).
- **Significant and Unavoidable Impact:** An impact is considered "significant and unavoidable" if it would result in a substantial adverse change in the environment that cannot be feasibly avoided or mitigated to a less-than-significant level. A statement of overriding considerations must be adopted if impacts cannot be mitigated to a less-than-significant level (see CEQA Guidelines Section 15093[b]).
- **Beneficial Impact:** CEQA does not consider the beneficial impacts of a proposed project but rather focuses on the potentially significant adverse impacts on the physical environment. However, relative to restoration projects, a beneficial impact is defined in this document as an effect of the proposed Project that would reduce existing enumerated problems or hazards. In certain cases, it may be logical to clarify that an impact is purely beneficial, as opposed to less than significant or no impact.
- **General Protection Measures:** General protection measures are the best management practices developed and adopted by the Final SRGO Program EIR to support avoidance and/or minimization of effects on all covered species and their habitats and other resource areas (e.g., air quality, hazards and hazardous materials, geology and soils). See Table 1-5 in Chapter 1, "Introduction," of this Draft SEIR for a list of the general protection measures applicable to the proposed Project and Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for the full text.
- **Species Protection Measures:** Species protection measures are avoidance and/or minimization measures developed and adopted by the Final SRGO Program EIR to specifically address individual covered species or covered species guilds, based upon shared resource use and habitat requirements. Applicable species protection measures are to be implemented in addition to applicable general protection measures, described above, when suitable habitat exists within the currently occupied range of the species and/or a species is determined to be present. See Table 1-6 in Chapter 1, "Introduction," of this Draft SEIR for a list of the species protection measures applicable to the proposed Project and Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for the full text.
- **Mitigation Measures:** The CEQA Guidelines (Section 15370) define mitigation as all of the following:
  - Avoiding the impact altogether by not taking a certain action or parts of an action.
  - Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
  - Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
  - Reducing or eliminating the impact over time by conducting preservation and maintenance operations during the life of the action.
  - Compensating for the impact by replacing or providing substitute resources or environments, including through permanent protection of resources in the form of conservation easements.

3.2 Approach to Evaluate Impacts of the Proposed Project

As stated in Section 1.2, "Type of Environmental Impact Report," this Draft SEIR tiers from and supplements the previously certified Final SRGO Program EIR (State Clearinghouse No. 2019100230) and addresses proposed modifications, changed circumstances, and new information not described in that prior environmental document. This Draft SEIR provides additional information needed to make the Final SRGO Program EIR, as supplemented, adequate for the proposed Project. Consistent with CEQA Guidelines Section 15163, this Draft SEIR contains only the information needed to analyze the proposed Project, including changed circumstances and new information requiring additional environmental review. Where information and analysis provided in the Final SRGO Program EIR is applicable to the proposed Project, it is summarized and/or incorporated by reference.

3.2.1 Explanation of Baselines for this Draft SEIR

The primary basis for evaluation of existing conditions for this Draft SEIR refers to the physical environmental conditions as they existed at the time of the NOP publication (July 23, 2024), per CEQA Guidelines Section 15125(a)(1) (NOP baseline). However, a second baseline condition was developed in response to comments on the NOP, referred to in this Draft SEIR as the "future no-action baseline." The future no-action baseline reflects the environmental conditions in the vicinity of the proposed Project that are reasonably likely to be in effect at the time the proposed Project is planned to be operational (2028), including the additional operation of three specific projects: the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project (Lookout Slough), the Yolo Bypass Salmonid Habitat and Fish Passage Project (Big Notch Project), and the Prospect Island Tidal Habitat Restoration Project (Prospect Island). The application of the NOP baseline and future no-action baseline for purposes of hydraulic and salinity modeling are further described in more detail in Section 3.10, "Hydrology and Water Quality" of this Draft SEIR. See Appendix B to this Draft SEIR, "Tide's End Multibenefit Restoration Project Notice of Preparation and Comment Letters," for the NOP and comments received in response to the NOP.

The future no-action baseline was initially considered during preparation of the impact analyses for this chapter, because the additional projects considered under this second baseline (as compared to the NOP baseline) are significant restoration efforts within the Yolo Bypass region. However, as described in more detail in Section 3.10, "Hydrology and Water Quality," under "Methodology and Assumptions," "Evaluated Baseline Conditions," hydraulic modeling simulations of the effects of Lookout Slough, the Big Notch Project, and Prospect Island indicate that changes in water levels attributable to the proposed Project were minor and relatively localized. As such, differences between the effects of the proposed Project relative to the NOP baseline and the future no-action baseline are *de minimis* (i.e., would not affect impact conclusion statements) and the impact discussions provided in this Draft SEIR are therefore applicable to both baseline conditions. Section 3.10, "Hydrology and Water Quality," contains further discussion of the future no-action baseline, but the other resource sections refer only to the NOP baseline.

3.2.2 Resource Section Format

This chapter of the Draft SEIR presents the environmental setting; regulatory setting; significant effects on the environment (impacts); and general protection measures, species protection measures, and mitigation measures, as applicable, for each of the resource topics discussed in detail in Sections 3.4 through 3.13, as listed above.

For definitions of general protection measures, species protection measures, and mitigation measures, see Section 3.1, "Impact Analysis Key Terms." The cumulative impacts for each resource topic are analyzed in Chapter 4, "Cumulative Impacts," and comparative impacts of a reasonable range of alternatives to the proposed Project are discussed in Chapter 5, "Alternatives."

The "Impacts and Mitigation Measures" section of each resource topic section begins with a summary table that lists the impact statements, identifies the three types of potential impacts (Construction Activities; Constructed Restoration Elements; and Operations, Monitoring, and Maintenance Activities), and the significance conclusions (e.g., less than significant). The summary table also includes impact conclusions with implementation of general and species protection measures and/or mitigation measures (e.g., less than significant with implementation of general protection measures). Mirroring the general format of the Final SRGO Program EIR, the impact discussions are organized as follows:

1. Each impact discussion begins with an impact statement and analysis for three types of impacts. Where analysis does not differ between impact types, the discussion may be combined:
    a. Construction-related impacts: These are impacts of preconstruction (e.g., site preparation, haul route development) and construction-phase earthmoving activities. Construction-related impacts are often temporary.
    b. Effects of constructed restoration elements: These are impacts of constructed natural or artificial restoration elements (e.g., tidal channels, improved irrigation canals) that reflect a permanent change in land use or habitat type.
    c. Effects of operations, monitoring, and maintenance activities: These are impacts related to ongoing agricultural and duck club operations, water management, monitoring of established restoration areas, and other ongoing activities associated with the proposed Project. These types of ongoing routine activities may be of short duration but are usually reoccurring.
2. The discussion identifies the activities evaluated in the Final SRGO Program EIR related to each impact category, as well as any general or species protection measures and/or mitigation measures that were applied. The impact conclusion from the Final SRGO Program EIR is then provided.
3. A discussion of impacts specific to the proposed Project is provided that addresses any proposed modifications, changed circumstances, and/or new information not described in the Final SRGO Program EIR.
4. General protection measures and species protection measures from the Final SRGO Program EIR applicable to the proposed Project are identified and presented along with their effectiveness to reduce the magnitude of the impact.
5. If mitigation was needed to further reduce the magnitude of an impact, the applicable mitigation measures from the Final SRGO Program EIR are identified and a significance conclusion is provided.

For the purposes of this Draft SEIR, general protection measures and species protection measures are intended to be implemented and enforced in the same way as mitigation measures consistent with CEQA Guidelines Section 15126.4.

If the analysis determines that incorporating one or more general protection measures and/or species protection measures would reasonably mitigate an impact, then the impact conclusion is less than significant (with implementation of general protection measures). If the analysis determines that an impact would remain significant after the incorporation of appropriate general protection measures and species protection measures, then the impact conclusion is potentially significant, and mitigation measures from the Final SRGO Program EIR are incorporated to reduce the magnitude of the potentially significant impact to a less-than-significant level.

3.3 Environmental Resource Areas Not Requiring Further Analysis

The resource areas discussed in this section are those for which potential impacts of the proposed Project were determined to be covered by the evaluation of environmental effects in the Final SRGO Program EIR, where there is no impact, and/or where additional detail specific to the proposed Project was not required to augment the analysis.

3.3.1 Aesthetics

The proposed Project area is currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat. No permanent housing or permanent residents exist within the proposed Project area, only a duck hunting clubhouse that is used as a bunk house during hunting season. Lands in the vicinity of the proposed Project area can be characterized as rural in nature, dominated by agricultural fields and private hunting clubs, as well as the California Department of Fish and Wildlife (CDFW)–managed Yolo Bypass Wildlife Area (YBWA).

The Final SRGO Program EIR examined the potential for construction and operational activities to affect aesthetic resources in Section 3.2, “Aesthetic Resources,” under Section 3.2.4, “Impacts and Mitigation Measures” (see Final SRGO Program EIR: Section 3.2.4, pp. 3.2-11 through 3.2-17). The analysis found that construction activities (e.g., site preparation, vegetation clearing, access and haul routes, staging and storage of equipment, preparation of borrow sites) could result in temporary changes to local visual character and/or scenic vistas, which could be visible from nearby waterways, roads, cities, residences, and recreational areas. Following the completion of construction activities, construction-related equipment and facilities would be removed and no permanent change in visual character would occur; therefore, the analysis concluded that these impacts would be less than significant. The following general protection measures were applied to further reduce potential temporary impacts associated with construction activities: GPM-11: Material Disposal; GPM-14: Project Cleanup after Completion; GPM-15: Revegetate Disturbed Areas; VHDR-1: Avoidance of Vegetation Disturbance; VHDR-3: Revegetation Materials and Methods; VHDR-4: Revegetation Erosion Control Materials and Methods; and VHDR-5: Revegetation Monitoring and Reporting.

The analysis also found that constructed restoration projects and their long-term operations and maintenance (e.g., extending existing levee footprints, changes to habitat types/vegetation communities, placement of infrastructure, routine operations and maintenance) could result in permanent changes to local visual character and/or scenic vistas, which could be visible from nearby waterways, roads, cities, residences, and recreational areas. The Final SRGO Program EIR concluded that, even though restoration

projects permitted under the SRGO are expected to be beneficial or neutral relative to aesthetic resources by restoring natural character to disturbed sites, they could permanently alter the existing visual character of the landscape. Even with implementation of VHDR-5 listed above, the impact was found to be potentially significant; as such, Mitigation Measure AES-1: Minimize Degradation of Visual Quality was applied to reduce the impact to less than significant.

Lastly, the Final SRGO Program EIR found that restoration projects permitted under the SRGO could result in potentially significant impacts related to new sources of light or glare from reflective construction materials, nighttime flood lighting during construction, etc., requiring implementation of ***Mitigation Measure AES-2: Avoid Effects of Project Lighting*** to reduce impacts to less-than-significant levels.

Impacts related to constructed facilities and operations and maintenance of those facilities were found to be less than significant regarding light and glare, as restoration projects permitted under the SRGO would not be expected to include new permanent lighting, buildings, or other facilities that would include reflective materials.

Similar to restoration projects analyzed under the Final SRGO Program EIR, construction activities in the proposed Project area could temporarily adversely affect the visual character of the surrounding landscape over the course of one or two construction seasons, which could be visible from nearby waterways (i.e., the Toe Drain) and public roads (e.g., County Road [CR] 155 and CR 107). However, construction-related equipment and facilities would be removed after construction; therefore, there would be no permanent change to visual character. The proposed Project would also implement GPM-11, GPM-14, GPM-15, VHDR-1, VHDR-3, VHDR-4, and VHDR-5, consistent with the Final SRGO Program EIR, to further reduce this less-than-significant impact.

Constructed restoration elements and operations, monitoring, and maintenance associated with the proposed Project would reconfigure irrigation and drainage infrastructure and remove redundant water control and utility infrastructure. These infrastructure improvements and replacements would be consistent with or slightly improve the existing visual character of the proposed Project area and would not involve the construction of any new type of structure or infrastructure. The proposed Project would convert portions of the proposed Project area to tidal wetland and associated floodplain, but the introduction of natural systems would be neutral or beneficial from an aesthetic perspective and would not appear significantly altered for the average viewer. The proposed Project would require the continuation of ongoing water and agricultural management practices in the managed floodplain areas, similar to existing conditions, and the maintenance and monitoring activities required in tidal wetlands, transition zones, and floodplains would be periodic and of short duration. Therefore, the proposed Project would not be required to implement Mitigation Measure AES-1: Minimize Degradation of Visual Quality.

The proposed Project could include limited construction-related activities after hours, including nighttime fueling and repairing of construction equipment that could introduce temporary light sources. Consistent with restoration projects permitted under the SRGO, the proposed Project would not include new permanent lighting, buildings, or other facilities that would include highly reflective materials. Routine operations, monitoring, and maintenance activities would occur during daytime hours and would not introduce new sources of light and glare. The proposed Project would implement ***Mitigation Measure***

AES-2: Avoid Effects of Project Lighting during construction activities to reduce impacts associated with night lighting to a less-than-significant level.

The proposed Project is therefore consistent with and would not result in new or more severe potentially significant impacts than identified in the Final SRGO Program EIR (Section 3.2, "Aesthetics," under Section 3.2.4, "Impacts and Mitigation Measures") and the Final SRGO Program EIR adequately addresses potential impacts related to aesthetics.

Mitigation Measure AES-2: Avoid Effects of Project Lighting

Proposed lighting facilities shall use shields, and lighting shall be directed downward and inward toward the facilities.

3.3.2 Energy

Energy uses in the proposed Project area currently include agricultural uses, and managed waterfowl uses. No permanent housing or permanent residents exist within the proposed Project area, only a duck hunting clubhouse that is used as a bunk house during hunting season.

The Final SRGO Program EIR examined the potential for adverse effects associated with energy use during construction and operational activities in Section 3.8, "Energy Resources," under Section 3.8.4, "Impacts and Mitigation Measures" (see Final SRGO Program EIR: Section 3.8.4, pp. 3.8-6 through 3.8-12). The analysis evaluated energy use during construction activities attributed to (1) direct energy use associated with use of petroleum product and electricity to operation construction equipment, such as trucks or barges, earthmoving equipment, and power tools; and (2) indirect energy use associated with consumption of energy to extract raw materials, manufacture items, and transport the goods and people necessary for construction activities. The analysis found that various types of fuel-consuming equipment would be necessary for construction activities such as excavation, grading, demolishing structures, transporting materials, and transporting construction workers to and from the worksites.

The Final SRGO Program EIR also found that projects permitted under the SRGO would incorporate all feasible control measures to improve equipment efficiency and reduce energy use, as required by air pollution control or management districts, and would implement other policies consistent with State and local legislation to help reduce energy use during construction. Due to this, and because the work would be temporary and would not require long-term use of energy, the impact was found to be less than significant. No general protection measures or mitigation measures were identified.

The Final SRGO Program EIR found that energy impacts related to constructed facilities and operations and maintenance of those facilities would occur to a lesser degree than those during construction of restoration projects, because of the minimal use of vehicles, equipment, workers, and other fuel-consuming activities. This impact was found to be less than significant.

Similar to projects analyzed in the Final SRGO Program EIR, the proposed Project would require the direct and indirect use of energy resources for construction and operations, monitoring, and maintenance of restoration elements. Although construction-related energy consumption would be limited to the construction period, these activities would require commitments of finite nonrenewable energy resources, such as gasoline and diesel fuel. Operations and maintenance required for the proposed Project include

ongoing water management and agricultural practices that would require energy consumption for the use of equipment, which would be similar to practices occurring under existing conditions for the agricultural fields and managed wetlands for waterfowl currently located in the proposed Project area.

Consistent with the Final SRGO Program EIR, existing control measures to improve equipment efficiency and reduce energy use, as required by local air pollution control or management districts and State policies, would be adequate to ensure impacts related to energy consumption remain less than significant. Consistent with restoration projects analyzed under the Final SRGO Program EIR, the proposed Project would adhere to all federal and State regulations that would include energy efficiency standards and best management practices.

Therefore, the proposed Project is consistent with and would not result in new or more severe potentially significant impacts related to energy resources than identified in the Final SRGO Program EIR (Section 3.8, "Energy Resources," under Section 3.8.4, "Impacts and Mitigation Measures") and the Final SRGO Program EIR adequately addresses potential impacts related to energy resources.

3.3.3 Forestry and Forestry Resources

The proposed Project area is currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat; there are no forestry resources. The proposed Project area is not located in an area zoned for forest land, timberland, or timberland zoned Timberland Production (Yolo County 2025). Therefore, construction and operation of the proposed Project would not affect zoning for forest lands and would not result in a loss of forest land or conversion of forest land to non-forest use. No impact would occur associated with implementation of the proposed Project and impacts related to forestry and forestry resources are not further evaluated in this SEIR. The proposed Project is therefore consistent with and would not result in a new or more severe potentially significant impact than identified in Final SRGO Program EIR Section 3.3, "Agriculture and Forestry Resources," under Section 3.3.4, "Impacts and Mitigation Measures" (Final SRGO Program EIR: Section 3.3.4, pp. 3.3-7 through 3.3-16) and the Final SRGO Program EIR adequately addresses potential impacts related to forestry resources.

3.3.4 Geology and Soils

The topography of the proposed Project area is relatively flat, and it is currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat.

The proposed Project area is not located in an Alquist-Priolo Earthquake Zone of Required Investigation (DOC 2024). The closest known fault line is the Midland fault zone located approximately 7.5 miles west of the proposed Project area (USGS 2025). The majority of the proposed Project area consists of Holocene deposits, which are not considered paleontologically significant. However, there are pockets of the proposed Project area that consist of Pleistocene deposits, which are considered highly sensitive for paleontological resources. These deposits are located along the northern boundaries of Capitol Oil, and on the northern boundary of Lucky Five South.

The Final SRGO Program EIR examined potential impacts related to geology and soils during construction and operational activities in Section 3.9, "Geology and Soils," under Section 3.9.4, "Impacts and Mitigation Measures" (see Final SRGO Program EIR: Section 3.9.4, pp. 3.9-16 through 3.9-28).

The analysis in the Final SRGO Program EIR found that construction activities (e.g., workers, equipment), constructed facilities (e.g., fish screens, water control structures, setback levees), or operations and management activities (e.g., monitoring equipment) could be placed on or adjacent to a known fault and would therefore be exposed to risk of loss, injury, death, failure, etc., due to rupture or seismic ground shaking, or could be located on unstable soils. However, the Final SRGO Program EIR also acknowledges that structures would be designed according to federal, State, and local standards, taking into consideration site conditions and geologic hazards. The Final SRGO Program EIR also discusses how construction-related activities for restoration projects permitted under the SRGO could result in substantial soil erosion or the loss of topsoil by disturbing large volumes of soil through excavation, earthmoving, grading, filling, or stockpiling of soil material. These disturbed soils could be more susceptible to wind and water erosion, resulting in the loss of topsoil.

Impacts related to active faults, seismic ground shaking, unstable soils conditions, and/or loss of topsoil were concluded to be less than significant with the following general protection measures and mitigation measures: GPM-15: Revegetate Disturbed Areas; WQHM-1: Staging Areas and Stockpiling of Materials and Equipment; WQHM-2: Storm Water Pollution Prevention Plan; WQHM-3: Erosion and Sediment Control Measures; WQHM-4: Hazardous Materials Management and Spill Response Plan; VHDR-1: Avoidance of Vegetation Disturbance; VHDR-3: Revegetation Materials and Methods; VHDR-4: Revegetation Erosion Control Materials and Methods; Mitigation Measure GEO-1: Include Geotechnical Design Recommendations; Mitigation Measure GEO-2: Comply with the Alquist-Priolo Act; Mitigation Measure GEO-3: Conduct Individual Restoration Project Geotechnical Investigation and Report; Mitigation Measure GEO-4: Adhere to International Building Code; Mitigation Measure GEO-5: Conduct Expansive Clay Investigation; Mitigation Measure GEO-6: Implement Measures for Waterway Construction Activities; Mitigation Measure GEO-7: Implement Measures for Levee Construction and Other Fill Embankment Designs; Mitigation Measure GEO-8: Assess the Presence of Highly Organic Soils; Mitigation Measure GEO-9: Conduct a General Project-Level Analysis; and Mitigation Measure GEO-10: Conduct Worker Training.

The proposed Project involves the restoration and enhancement of tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) in the proposed Project area. No habitable structures would be constructed as part of the proposed Project that could be exposed to risks associated with seismic ground shaking; however, based on the age and activity of the Midland fault zone, proposed Project infrastructure could potentially be exposed to risk based on its proximity. However, due to the relatively flat topography of the area, proposed Project uses would not be exposed to potential risks associated with landslides. As part of the State Water Board or a regional water quality control board's issuance of a Notice of Approval for a restoration project under the SRGO, the proposed Project would comply with ***Mitigation Measure GEO-1: Include Geotechnical Design Recommendations***; however, given that the proposed Project area is not located in an Alquist-Priolo Earthquake Zone of Required Investigation, Mitigation Measure GEO-2: Comply with the Alquist-Priolo Act, would not be applicable. The proposed Project has already conducted a geotechnical investigation of existing geotechnical conditions (Blackburn Consulting 2024). The results of the geotechnical investigation informed project design in accordance with Mitigation Measure GEO-1 and ***Mitigation Measure GEO-3: Conduct Individual Restoration Project Geotechnical Investigation and Report.*** Consistent with potential restoration projects analyzed under the Final SRGO

Program EIR, the proposed Project would also implement ***Mitigation Measure GEO-4: Adhere to International Building Code*** to prevent potential impacts from seismic ground shaking.

As analyzed under the Final SRGO Program EIR, construction of the proposed Project, constructed restoration elements, and operations, monitoring, and maintenance of those restoration elements could directly or indirectly expose people or structures to unstable soil conditions, including landslides, expansive soils, subsidence, high organic matter soils, or increased runoff. As noted above, the proposed Project area is relatively flat and would not be exposed to landslide risk; however, proposed Project uses could be exposed to other unstable soil conditions. To minimize that risk, the proposed Project would adhere to all applicable design guidelines under the Final SRGO Program EIR and would adhere to all geotechnical recommendations. Additionally, the proposed Project would adhere to ***Mitigation Measure GEO-5: Conduct Expansive Clay Investigation, Mitigation Measure GEO-6: Implement Measures for Waterway Construction Activities, Mitigation Measure GEO-7: Implement Measures for Levee Construction and Other Fill Embankment Designs***, and ***Mitigation Measure GEO-8: Assess the Presence of Highly Organic Soils***.

Given that portions of the proposed Project area are located in a paleontologically sensitive unit, ***Mitigation Measure GEO-9: Conduct a General Project-Level Analysis*** and ***Mitigation Measure GEO-10: Conduct Worker Training*** would be applicable.

With adherence to the above mitigation measures, the proposed Project would be consistent with the restoration projects analyzed under the Final SRGO Program EIR. Therefore, the proposed Project is consistent with and would not result in new or more severe potentially significant impacts related to geology and soils than identified in the Final SRGO Program EIR (Section 3.9, "Geology and Soils," under Section 3.9.4, "Impacts and Mitigation Measures") and the Final SRGO Program EIR adequately addresses potential impacts related to geology and soils.

Mitigation Measure GEO-1: Include Geotechnical Design Recommendations

To minimize potential impacts from seismic events and the presence of adverse soil conditions, lead agencies shall ensure that geotechnical design recommendations are included in the design of facilities and construction specifications. Recommended measures to address adverse conditions shall conform to applicable design codes, guidelines, and standards.

Mitigation Measure GEO-3: Conduct Individual Restoration Project Geotechnical Investigation and Report

When a restoration project involves and warrants consideration of geotechnical factors and/or constraints (e.g., work on flood control levees, work in areas with certain soil types subject to liquefaction), the project proponent shall conduct and prepare a geotechnical report to address potential issues and concerns. The geotechnical report shall include a quantitative analysis to determine whether excavation or fill placement would result in a potential for damage due to soil subsidence during and/or after construction. Project designs shall incorporate measures to reduce the potential damage to a less-than-significant level. Measures shall include but not be limited to:

- Removal and recompaction of existing soils susceptible to subsidence.
- Ground improvement (such as densification by compaction or grouting, soil cementation).
- Reinforcement of structural components to resist deformation due to subsidence.

The assessment of subsidence for specific projects shall analyze the individual restoration projects potential for and severity of cyclic seismic loading. A geotechnical investigation shall also be performed by an appropriately licensed professional engineer and/or geologist to determine the presence and thickness of potentially liquefiable sands that could result in loss of bearing value during seismic shaking events. Project designs shall incorporate measures to mitigate potential damage to a less-than-significant level. Measures shall include but not be limited to:

- Ground improvement (such as grouting or soil cementation).
- Surcharge loading by placement of fill, excavation, soil mixing with non-liquefiable finer-grained materials, and replacement of liquefiable materials at shallow depths.
- Reinforcement of structural components to resist deformation due to liquefaction.

An analysis of individual restoration projects' probable and credible seismic acceleration values, conducted in accordance with current applicable standards of care, shall be performed to provide for a suitable project design. Geotechnical investigations shall be performed, and geotechnical reports shall be prepared in the responsible care of California licensed geotechnical professionals including professional civil engineers, certified geotechnical engineers, professional geologists, certified engineering geologists, and certified hydrogeologists, all of whom practice within the current standards of care for such work.

Mitigation Measure GEO-4: Adhere to International Building Code

Constructed facilities shall be required to adhere to the current approved version of the International Building Code (IBC), and to comply with the IBC for critical structures (e.g., levees).

Mitigation Measure GEO-5: Conduct Expansive Clay Investigation

In areas where expansive clays exist, a licensed professional engineer or geologist shall perform a hydrogeological/geotechnical investigation to identify and quantify the potential for expansion, particularly differential expansion of clayey soils caused by leakage and saturation beneath new improvements. Measures could include but are not limited to removing and recompacting problematic expansive soils, stabilizing soils, and/or reinforcing the constructed improvements to resist deformation from expansion of subsurface soils.

Mitigation Measure GEO-6: Implement Measures for Waterway Construction Activities

For projects that involve the engineered subsurface structural components (e.g., of surface impoundments, levees, bridge footings/abutments) project design shall provide for protection from leakage to the subsurface. Measures could include but are not limited to rendering concrete less permeable by specifying concrete additives such as bentonite, designing impermeable liner systems, designing leakage collection and recovery systems, and constructing impermeable subsurface cutoff walls.

For restoration projects that could cause subsurface seepage of nuisance water onto adjacent lands, the following measures shall be implemented:

- Perform seepage monitoring studies by measuring the level of shallow groundwater in the adjacent soils, to evaluate baseline conditions. Continue monitoring for seepage during and after project implementation.
- Develop a seepage monitoring plan if subsurface seepage constitutes nuisance water on the adjacent land.

- If it is determined that seepage from the restoration project is responsible for making adjacent lands not usable, implement seepage control measures, such as installing subsurface agricultural drainage systems to avoid raising water levels into crop root zones. Cutoff walls and pumping wells can also be used to mitigate the occurrence of subsurface nuisance water.

Mitigation Measure GEO-7: Implement Measures for Levee Construction and Other Fill Embankment Designs

For projects that involve the construction of setback levees, surface impoundments, and other fill embankments, the project design shall place fill in accordance with State and local regulations and the prevailing standards of care for such work. Measures could include but are not limited to blending the soils most susceptible to landsliding with soils that have higher cohesion characteristics; installing slope stabilization measures; designing top-of-slope berms or v-ditches, terrace drains, and other surface runoff control measures; and designing slopes at lower inclinations.

Mitigation Measure GEO-8: Assess the Presence of Highly Organic Soils

For projects that would result in a significant or potentially significant risk to structures because of the presence of highly organic soils, the lead agencies shall require a geotechnical evaluation before construction to identify measures to mitigate organic soils. The following measures may be considered:

- Over-excavation and import of suitable fill material.
- Structural reinforcement of constructed works to resist deformation.
- Construction of structural supports below the depth of highly organic soils into materials with suitable bearing strength.

Mitigation Measure GEO-9: Conduct a General Project-Level Analysis

During project development and project-level analysis, a paleontological resource monitoring and recovery plan shall be developed and implemented for all actions determined by the project proponent to be located on a paleontological sensitive unit. The plan shall include protocols for paleontological resources monitoring in areas where construction-related excavation would affect sediment with moderate to high paleontological sensitivity.

The paleontological resource monitoring and recovery plan shall provide guidelines for the establishment of a yearly or biannual monitoring program led by a qualified paleontologist to determine the extent of fossiliferous sediment being exposed and affected by erosion, and determine whether paleontological resources are being lost. If the loss of scientifically significant paleontological resources is documented, then a recovery program should be implemented.

Mitigation Measure GEO-10: Conduct Worker Training

For projects that are determined to have moderate to high paleontological sensitivity, before the start of any ground-disturbing activity (e.g., excavation or clearing), a qualified paleontologist shall prepare paleontological resources sensitivity training materials for use during project worker environmental training or equivalent. This training shall be conducted by a qualified environmental trainer under the supervision of the qualified paleontologist. For restoration projects that involve construction crew phases, additional trainings shall be conducted for new construction personnel. The paleontological resource sensitivity training shall focus on the types of resources that could be encountered within the individual restoration project site and the procedures to follow if they are found. Project proponents and/or project contractors shall retain documentation demonstrating that all construction personnel attended the paleontological

resource sensitivity training before the start of work on the site, and shall provide documentation to the project manager upon request.

3.3.5 Land Use/Planning

The proposed Project area is currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat. No permanent housing or permanent residents exist within the proposed Project area, only a duck hunting clubhouse that is used as a bunk house during hunting season. Lands in the vicinity of the proposed Project area can be characterized as rural, dominated by agricultural fields and private hunting clubs and the CDFW-managed YBWA.

The Final SRGO Program EIR examined the potential for construction and operational activities to affect land use and planning in Section 3.12, "Land Use and Planning," under Section 3.12.4, "Impacts and Mitigation Measures" (see Final SRGO Program EIR: Section 3.12.4, pp. 3.12-4 through 3.12-8). The analysis found that potential temporary conflicts with plans, policies, or regulations adopted to avoid or mitigate an environmental effect related to noise, air quality, and/or traffic are addressed in those resources sections of Chapter 3 of the Program EIR. Further, the Final SRGO Program EIR found that the types of construction activities anticipated for restoration projects permitted under the SRGO would not be expected to physically divide an established community or change existing land use, given the nature and necessary location of restoration projects in undeveloped areas. For example, elements of floodplain restoration projects are meant to reconnect floodplains and historical estuaries to tidal influence; therefore, construction activities for these types of projects would most likely take place on the periphery of a community, rather than through the community, and would not physically divide the community. Impacts related to construction were found to be less than significant.

Relative to constructed facilities and operations and maintenance of those facilities, the Final SRGO Program EIR found that restoration projects could result in new long-term or permanent features that could alter land uses, thereby conflicting with land use plans, policies, or regulations adopted to avoid or mitigate environmental effects, or could physically divide an established community by removing roads or inducing periodic inundation that prohibits access. Therefore, the Final SRGO Program EIR found the impact to be significant and unavoidable. No general protection measures or mitigation measures were identified.

DWR, as a State agency, is not subject to local plans, policies, or ordinances; however, consistent with restoration projects analyzed under the Final SRGO Program EIR, temporary construction-related conflicts with plans, policies, or regulations adopted to avoid or mitigate an environmental effect related to noise, air quality, agriculture, recreation, and/or traffic are addressed in those sections of this Draft SEIR. The proposed Project involves the restoration and enhancement of tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) in the proposed Project area. It is located in an undeveloped area, so neither construction nor operations, monitoring, or maintenance of the proposed Project would physically divide an established community. Land uses on the proposed Project area are currently limited to agriculture and recreation (i.e., private duck clubs). Impacts regarding permanent conversion of agricultural lands to non-agricultural land uses due to constructed restoration elements and operations, monitoring, and maintenance activities are discussed in Section 3.4, "Agriculture," of this Draft SEIR. Impacts related to the alteration or degradation of existing recreational resources or facilities are evaluated in Section 3.11, "Recreation."

The proposed Project is therefore consistent with and would not result in new or more severe potentially significant impacts than identified in the Final SRGO Program EIR (Section 3.12, "Land Use and Planning," under Section 3.12.4, "Impacts and Mitigation Measures") and the Final SRGO Program EIR adequately addresses potential impacts related to land use and planning.

3.3.6 Mineral Resources

The proposed Project area is not located in a mineral resource zone.[1] The proposed Project area is located in an area of natural gas fields and there are 25 abandoned natural gas wells in the proposed Project area. All of the natural gas wells had depleted the available natural gas, ceased production, and were plugged and formally abandoned by the end of 2012.

Because the proposed Project area is not located in a mineral resources zone and the natural gas wells have been abandoned and plugged, implementation of the proposed Project would not result in loss of availability of a known mineral resource or of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Therefore, no impact would occur; impacts on mineral resources are not further evaluated in this SEIR. Potential hazards associated with the abandoned gas wells are evaluated in Section 3.9, "Hazards and Hazardous Materials," of this Draft SEIR.

The proposed Project is therefore consistent with and would not result in new or more severe potentially significant impacts than identified in the Final SRGO Program EIR (Section 3.13, "Mineral Resources," under Section 3.13.4, "Impacts and Mitigation Measures") and the Final SRGO Program EIR adequately addresses potential impacts related to mineral resources.

3.3.7 Noise

The proposed Project area is currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat. No permanent housing or permanent residents exist within the proposed Project area, only a duck hunting clubhouse that is used as a bunk house during hunting season. Lands in the vicinity of the proposed Project area can be characterized as rural, dominated by agricultural fields and private hunting clubs and the CDFW-managed YBWA; the nearest sensitive receptor to the proposed Project area is an occupied residence located approximately 0.70 mile (3,700 feet) to the east, on the opposite side of the Toe Drain. There are no airports or airport influence areas located within 2 miles of the proposed Project area.

The Final SRGO Program EIR examined potential construction and operational noise, including effects of noise on humans (e.g., auditory effects) and ground vibration (e.g., vibratory hammers) in Section 3.14, "Noise," under Section 3.14.4, "Impacts and Mitigation Measures" (see Final SRGO Program EIR: Section 3.14.4, pp. 3.14-8 through 3.14-17). The analysis in the Final SRGO Program EIR found that construction activities could result in increases in ambient noise levels in excess of standards established in applicable plans and ordinances and could expose sensitive receptors to excessive groundborne vibration and excessive groundborne noise levels. The Final SRGO Program EIR concluded that these construction-related impacts would be potentially significant. Therefore, the Final SRGO Program EIR

[1] The Surface Mining and Reclamation Act of 1975 mandates the State Geologist to classify mineral lands in California into four mineral resource zones (MRZs). MRZs are used by the State to define areas containing valuable deposits.

applied the following general protection measures and mitigation measure: GPM-2: Construction Work Windows; GPM-3: Construction Hours; GPM-6: Work Area and Speed Limits; IWW-9: In-Water Pile Driving Plan for Sound Exposure; and Mitigation Measure NOISE-1: Minimize Noise Conflicts. Even with implementation of the general protection measures and mitigation measure, construction impacts were found to be significant and unavoidable.

The Final SRGO Program EIR also considered the effects of constructed restoration projects and routine operations and maintenance on ambient noise. The analysis in the Final SRGO Program EIR found that there could be increases in ambient noise levels in excess of standards established in applicable plans and ordinances and sensitive receptors could be exposed to excessive groundborne vibration and excessive groundborne noise levels. However, the Final SRGO Program EIR concluded that elevated noise levels would be less frequent than during construction of these projects because maintenance would be less frequent than ongoing construction activities. Compliance with Mitigation Measure NOISE-2: Minimize Operations and Maintenance Noise Conflicts would reduce impacts to a less-than-significant level.

Lastly, the Final SRGO Program EIR evaluated the potential for implementation of restoration projects to expose people residing or working in the project area to excessive noise levels, if located within the vicinity of a private airstrip, an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport. Given the scope of construction activities for restoration projects, construction in the vicinity of an airport could expose people working in the project area to excessive noise impacts. The Final SRGO Program EIR found this to be a potentially significant impact. Implementing Mitigation Measure NOISE-3: Prepare Preconstruction Safety Plans would reduce impacts to a less-than-significant level. Routine operations and maintenance activities would be temporary; therefore, the Final SRGO Program EIR found this impact to be less than significant.

Similar to restoration projects analyzed under the Final SRGO Program EIR, construction activities associated with the proposed Project would require the use of heavy equipment, such as dozers, scrapers, and excavators and generators to power nighttime light sources for occasional refueling and construction equipment repair. Such construction activities could result in increases in ambient noise levels in excess of standards established in applicable plans and ordinances. However, there are no sensitive receptors in or adjacent to the proposed Project area that would be exposed to excessive groundborne vibration and excessive groundborne noise levels. Even so, the proposed Project would implement GPM-2, GPM-3, GPM-6, and IWW-9, consistent with the Final SRGO Program EIR and ***Mitigation Measures NOISE-1: Minimize Noise Conflicts***, to reduce impacts on noise from construction activities. Mitigation Measure NOISE-2: Minimize Operations and Maintenance Noise Conflicts does not apply to the proposed Project, because there are no sensitive receptors on or near the proposed Project area. In addition, the proposed Project area is not located within 2 miles of a public airport or airstrip and does not involve construction of habitable uses. The proposed Project's uses would not expose workers or occupants to excessive noise levels due to aircraft and other noise related to airports; therefore, Mitigation Measure NOISE-3: Prepare Preconstruction Safety Plans, does not apply to the proposed Project.

Long-term, the proposed Project involves the restoration and enhancement of tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) in the proposed Project area. Constructed restoration elements and any short-term, periodic monitoring and maintenance activities associated with restoration elements

are not anticipated to create noise or groundborne vibration. Operations, monitoring, and maintenance activities required for the proposed Project would also include ongoing water management and agricultural practices related to flood-up and draw-down, irrigation, vegetation management (e.g., disking, mowing), grading, fertilizing, and planting. Some of these activities would require the use of heavy equipment, but these activities are similar to those occurring under existing conditions for the agricultural fields and managed waterfowl ponds currently located in the proposed Project area.

The proposed Project is therefore consistent with and would not result in new or more severe potentially significant impacts than identified in the Final SRGO Program EIR (Section 3.14, "Noise," under Section 3.14.4, "Impacts and Mitigation Measures") and the Final SRGO Program EIR adequately addresses potential impacts related to noise.

Mitigation Measure NOISE-1: Minimize Noise Conflicts

The following measures shall be implemented during construction of any restoration project permitted under the Order:

- Noise-generating activities shall follow the applicable general plan and/or noise ordinances for the jurisdiction located within the vicinity of the project.
- Construction equipment shall be located away from sensitive receptors to the extent feasible, to reduce noise levels below applicable local standards.
- Construction equipment shall be maintained to manufacturers' recommended specifications, and all construction vehicles and equipment shall be equipped with appropriate mufflers and other approved noise-control devices.
- Idling of construction equipment shall be limited to the extent feasible to reduce the time that noise is emitted.
- An individual traffic noise analysis of identified haul routes shall be conducted and mitigation, such as reduced speed limits, shall be provided at locations where noise standards cannot be maintained for sensitive receptors.
- The project shall incorporate the use of temporary noise barriers, such as acoustical panel systems, between construction activities and sensitive receptors if it is concluded that they would be effective in reducing noise exposure to sensitive receptors.

3.3.8 Population and Housing

The proposed Project area is currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat. No permanent housing or permanent residents exist within the proposed Project area, only a duck hunting clubhouse that is used as a bunk house during hunting season. Lands in the vicinity of the proposed Project area can be characterized as rural, dominated by agricultural fields and private hunting clubs and the CDFW-managed YBWA.

The Final SRGO Program EIR examined potential for adverse effects related to population and housing associated with construction and operational activities in Section 3.15, "Population and Housing," under Section 3.15.4, "Impacts and Mitigation Measures" (see Final SRGO Program EIR: Section 3.15.4, pp. 3.15-3 through 3.15-7). The analysis concluded that while construction activities could have the potential to result in an increase in temporary and long-term population growth (depending on the size,

type, and length of construction activities), restoration projects would not be expected to result in substantial population or demand for housing. Additionally, operations and maintenance of constructed facilities would likely be similar to those in the project area, and existing vacant units in and around the project area could accommodate any workers who temporarily relocate to the area. The Final SRGO Program EIR found that construction of restoration projects, constructed facilities, and operations and maintenance of those facilities permitted under the SRGO would not be expected to displace substantial numbers of housing or people. The Final SRGO Program EIR concluded that impacts associated with population and housing would be less than significant. The Final SRGO Program EIR does not contain any general protection measures related to these impacts.

Consistent with the Final SRGO Program EIR, construction activities associated with the proposed Project could result in a temporary increase in the need for construction crews (approximately 15 to 20 workers). The number of workers needed for the proposed Project would be a small fraction of the overall population of Yolo County and would likely be sourced from the local labor pool. The increase in the workforce associated with the construction of the proposed Project would be negligible compared to the overall population of the county, and therefore would not result in a need for housing over current conditions.

Long-term, the proposed Project involves the restoration and enhancement of tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) in the proposed Project area. The proposed Project would not include new land development or induce substantial population growth that would result in the need for new housing over current conditions. Ongoing agricultural and water management operations would be similar to those occurring under existing conditions, and additional monitoring and maintenance activities associated with constructed restoration elements would be periodic and short term; therefore, these activities would not result in an increased need for permanent workers or additional housing.

The proposed Project is therefore consistent with and would not result in new or more severe potentially significant impacts than identified in the Final SRGO Program EIR (Section 3.15, “Population and Housing,” under Section 3.15.4, “Impacts and Mitigation Measures”) and the Final SRGO Program EIR adequately addresses potential impacts related to population and housing.

3.3.9 Public Services

The proposed Project area is currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat. No permanent housing or permanent residents exist within the proposed Project area, only a duck hunting clubhouse that is used as a bunk house during hunting season. Lands in the vicinity of the proposed Project area can be characterized as rural, dominated by agricultural fields and private hunting clubs and the CDFW-managed YBWA.

The Final SRGO Program EIR examined the potential for adverse effects related to public service demands associated with construction and operational activities in Section 3.19, “Utilities and Public Services,” under Section 3.19.4, “Impacts and Mitigation Measures” (see Final SRGO Program EIR: Section 3.19.4, pp. 3.19-11 through 3.19-18). The Final SRGO Program EIR describes that the need for new or altered police and fire protection services, emergency medical facilities, and school and library facilities is prompted by increased demand, typically because of new land development or population growth. Implementation of future restoration projects permitted under the SRGO would not include new

land development or occupied structures that would increase population and add new public service demands. Any changes to public service demands would be negligible and would not require new or altered public service facilities. Therefore, the Final SRGO Program EIR concluded that impacts would be less than significant. The Final SRGO Program EIR does not include any general protection measures applicable to this impact.

Consistent with the Final SRGO Program EIR, construction activities associated with the proposed Project could result in a temporary increase in the need for construction crews (approximately 15 to 20 workers). The number of workers needed for the proposed Project would be a small fraction of the overall population of Yolo County and would likely be sourced from the local labor pool. Any short-term increases in demand for law enforcement, fire protection, and medical services related to construction worker population would be negligible. Increases in demands for public services, such as from jobsite accidents or jobsite security during future proposed Project actions, would be temporary or short-term and are unlikely to require new or altered public service facilities because the overall numbers of workers at permitted projects would typically be a small portion of the population.

Construction activities associated with the proposed Project could temporarily increase response times for fire protection, law enforcement, and emergency medical services because the transportation and relocation of construction materials could increase traffic levels. However, as discussed in Section 2.3.2, "Construction Access," of Chapter 2, "Project Description," public access roads such as CR 155 and CR 107 would remain accessible to the public and emergency services throughout construction. Routine maintenance activities associated with long-term operation of the proposed Project would be similar to those occurring under existing conditions and would not result in substantially adverse physical traffic impacts that would lead to increased response times for fire protection, police protection, schools, and other public facilities.

Long-term, the proposed Project involves the restoration and enhancement of tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) in the proposed Project area. The proposed Project would not include new land development or induce substantial population growth that would include development of occupied structures that would result in any increase in demand for public services. In addition, demand for public services associated with the proposed Project area would be similar to existing conditions.

Ongoing agricultural and water management operations would be similar to those occurring under existing conditions, and additional monitoring and maintenance activities associated with constructed restoration elements would be periodic and short term; therefore, these activities would not result in an increased need for permanent workers or additional housing that would increase demand on public services.

The proposed Project is therefore consistent with and would not result in new or more severe potentially significant impacts than identified in the Final SRGO Program EIR (Section 3.19, "Utilities and Public Services," under Section 3.19.4, "Impacts and Mitigation Measures") and the Final SRGO Program EIR adequately addresses potential impacts related to public services.

3.3.10 Transportation

As described in Section 2.3.2, "Construction Access," of Chapter 2, "Project Description," the proposed Project area would be accessed via CR 155 and CR 107. Both roads are public County roads that terminate at the proposed Project area's boundary. The proposed Project area is currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat. No permanent housing or permanent residents exist within the proposed Project area, only a duck hunting clubhouse that is used as a bunk house during hunting season. Lands in the vicinity of the proposed Project area can be characterized as rural, dominated by agricultural fields and private hunting clubs and the CDFW-managed YBWA. Because the proposed Project area is primarily agricultural, traffic includes small numbers of farm workers and agricultural vehicles visiting the area on an occasional basis. During hunting season, small groups of duck hunters travel on the county roads to access the site. For a description of the proposed Project and proposed Project area, see Chapter 2, "Project Description," of this Draft SEIR.

The Final SRGO Program EIR examined potential for adverse effects associated with transportation during construction and operational activities in Section 3.17, "Transportation," under Section 3.17.4, "Impacts and Mitigation Measures" (see Final SRGO Program EIR: Section 3.17.4, pp. 3.17-7 through 3.17-17). The analysis in the Final SRGO Program EIR found that construction activities could result in temporary partial or full road closures that could conflict with a plan, ordinance, or policy addressing the circulation system. This would result in a potentially significant impact. The Final SRGO Program EIR identified the following general protection measures and mitigation measures to reduce impacts on the circulation system: GPM-6: Work Area and Speed Limits; GPM-10: Equipment Maintenance and Materials Storage; WQHM-1: Staging Areas and Stockpiling of Materials and Equipment; Mitigation Measure TRA-1: Prepare Construction Traffic Management Plan; Mitigation Measure TRA-2: Prepare Waterway Traffic Control Plan; Mitigation Measure TRA-3: Develop Channel Closure Plan for Affected Facilities; Mitigation Measure TRA-4: Reduce Project Effects on Boat Passage and Transit Facilities; and Mitigation Measure TRA-5: Minimize Effects on Trails and Bicycle and Pedestrian Circulation and Identify Alternatives.

The Final SRGO Program EIR also considered the impacts of constructed facilities and operations and maintenance of those facilities on the circulation system. It determined that substantial increases in traffic or circulation problems associated with transit, roadways, bicycle, and pedestrian facilities would be unlikely. Restoration projects would be required to adhere to applicable regulations or ordinances governing traffic and circulation systems. Therefore, the Final SRGO Program EIR determined that this impact would be less than significant.

Section 15064.3(a) of the CEQA Guidelines calls for evaluation of a project's transportation impacts in terms of vehicle miles traveled (VMT), which refers to the amount and distance of automobile travel attributable to a project. The Final SRGO Program EIR found that restoration project had the potential to exceed the threshold of significance set for transportation impacts by the CEQA lead agency, or to conflict or be inconsistent with CEQA Guidelines 15064.3(b), which would be a potentially significant impact. Therefore, the Final SRGO Program EIR found that compliance with Mitigation Measure TRA-6: Reduce Emissions would be required when applicable to a given project. The Final SRGO Program EIR concluded that implementation of Mitigation Measure TRA-6: Reduce Emissions may not reduce

significant impacts to a less-than-significant level in all cases. Therefore, the Final SRGO Program EIR found the impact of construction activities to be significant and unavoidable.

The Final SRGO Program EIR concluded that potential impacts associated with constructed facilities and operations and maintenance of those facilities would be less than significant because substantially fewer trips are anticipated to occur than during construction. The Final SRGO Program EIR does not contain any general protection measures for this impact.

Lastly, the Final SRGO Program EIR found that construction, constructed facilities, and operations and maintenance of those facilities could affect transportation infrastructure such as roads, bridges, railroads, and navigable waterways, and infrastructure elements such as boat docks, boat haul-out locations, campgrounds and campsites, day-use sites, roads and trails, and off-highway/off-road vehicle routes. Construction and/or operations of some projects would affect navigation in waterways and deep-water channels, potentially increasing hazards associated with channel design and geometric features. The Final SRGO Program EIR identified Mitigation Measure TRA-7: Conduct Routine Inspections and Mitigation Measure TRA-8: Repair Damaged Roadways and Trails Following Construction.

During proposed Project construction activities, some work may cross CR 107 and CR 155 to reinstall or reconfigure water control structures, canals, or other irrigation and drainage supply infrastructure, but both roads would remain accessible to the public throughout construction. Heavy equipment entering and exiting the proposed Project area could temporarily disrupt traffic; however, the proposed Project would not result in street closures or lane blockages that could reduce the number of travel lanes and require rerouting of traffic because of the limited number of vehicle trips due to the rural nature of the surrounding area. Haul routes to and from construction sites would be installed on top of temporary berms within the proposed Project area alongside CR 107. Construction equipment would remain on-site for the duration of construction, therefore limiting traffic nearby. Once construction is complete, only periodic operations, maintenance, and monitoring associated with the constructed restoration elements would utilize the same access roads.

Long-term, the proposed Project involves the restoration and enhancement of tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) in the proposed Project area. The proposed Project would not involve transportation infrastructure and infrastructure elements that would increase hazards due to a geometric design feature or incompatible use.

Implementation of the proposed Project would not result in temporary partial or full road closures that could conflict with a plan, ordinance, or policy addressing the circulation system; result in an amount and duration of vehicle use that would result in accelerated road deterioration or significant emissions; or increase hazards due to a geometric design feature or incompatible use. Therefore, Mitigation Measures TRA-1, TRA-2, TRA-3, TRA-4, TRA-5, TRA-6, TRA-7, and TRA-8 do not apply to the proposed Project.

The proposed Project is therefore consistent with and would not result in new or more severe potentially significant impacts than identified in the Final SRGO Program EIR (Section 3.17, “Transportation,” under Section 3.17.4, “Impacts and Mitigation Measures”) and the Final SRGO Program EIR adequately addresses potential impacts related to transportation. In addition, the proposed Project would also be consistent with CEQA Guidelines Section 15064.3(b).

3.3.11 Wildfire

The proposed Project area is not located in a designated Fire Hazard Safety Zone (CAL FIRE 2023); therefore, risks associated with wildfire are low.

The Final SRGO Program EIR examined the potential for adverse effects associated with wildfire during construction and operational activities in Section 3.20, "Wildfire," under Section 3.20.4, "Impacts and Mitigation Measures" (see Final SRGO Program EIR: Section 3.20.4, pp. 3.20-5 through 3.20-11). The analysis in the Final SRGO Program EIR found that construction work could occur in, or staging areas could be in or near, areas of dense vegetation and/or be susceptible to high winds. Construction equipment or heated mufflers could throw sparks, or oils, lubricants, and other combustible materials could accidentally ignite, resulting in a fire. For restoration projects located in areas with a High or Very High Fire Hazard Severity rating, potential for wildfire associated with construction activities would be potentially significant.

The analysis in the Final SRGO Program EIR also found that similar to construction activities, operations and maintenance could occur in areas subject to the threat of wildfires. Additionally, if a restoration project included reestablishment of native vegetation in areas where vegetation has previously been removed, fuel loading may increase after the native vegetation has grown in and may result in increased fire danger. For restoration projects located in areas with a High or Very High Fire Hazard Severity rating, potential for wildfire associated with operations and maintenance activities would be potentially significant.

The analysis in the Final SRGO Program EIR also examined the potential impacts of construction activities, constructed facilities, and operations and maintenance of those facilities on downslope or downstream risks as a result of runoff, post-fire slope instability, or drainage changes. Construction activities would include grading and drainage changes and removal of non-native vegetation, all of which could increase runoff. In areas with High or Very High Fire Hazard Severity rating, wildfire can also remove vegetation, reducing the ability of the soil surface to absorb rainwater. While some restoration project types would not increase the rate or amount of surface runoff in a manner that would increase flooding and thereby result in downstream or downslope risk, some restoration project types could exacerbate conditions in a post-fire environment and could result in post-fire slope instability. This impact would be potentially significant.

The Final SRGO Program EIR does not apply any general protection measures to reduce impacts of restoration projects on wildfire risk or on downslope or downstream risks as a result of runoff, post-fire slope instability, or drainage changes. The Final SRGO Program EIR does apply the following mitigation measure to reduce impacts of construction, constructed facilities, and operations and maintenance of those facilities to a less-than-significant level: Mitigation Measure FIRE-1: Develop and Implement a Fire Prevention Plan.

The proposed Project is not located in a designated Fire Hazard Safety Zone; therefore, risks associated with wildfire are low. Implementation of the proposed Project would not result in impacts related to wildfire, and Mitigation Measure FIRE-1: Develop and Implement a Fire Prevention Plan does not apply to the proposed Project.

The proposed Project is therefore consistent with and would not result in new or more severe potentially significant impacts than identified in the Final SRGO Program EIR (Section 3.20, "Wildfire," under Section 3.20.4, "Impacts and Mitigation Measures") and the Final SRGO Program EIR adequately addresses potential impacts related to wildfire.

3.3.12 Other CEQA Issues

Growth-Inducing Impacts

Per CEQA Guidelines Section 15126.2(e), a project can have direct and/or indirect growth inducement potential. Direct growth inducement would result if a project involved construction of substantial new housing or commercial development, as this would directly result in a demand for new public services, facilities, or infrastructure. A project would have indirect (or secondary) growth inducement potential if it would establish substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises), if it would involve a short or long-term construction effort with substantial employment opportunities, or if it would remove an obstacle to additional growth and development, such as removing a constraint or increasing the capacity of a required public service, such as increased water supply capacity.

The Final SRGO Program EIR examined the potential for direct and indirect growth inducement to result from covered restoration projects in Section 5.1, "Growth-Inducing Impacts" (see Final SRGO Program EIR: Section 5.1, pp. 5-1 through 5-3). It determined that the SRGO would not induce direct or indirect growth because covered restoration projects would not require or cause construction of new housing or commercial or industrial development, would cause negligible temporary population increases, and would be consistent with local plans and guidelines. This impact was found to be less than significant.

As described in Chapter 2 "Project Description," construction of the proposed Project would require 15 to 20 construction workers over one or two construction seasons to perform anticipated construction activities: site preparation and mobilization/demobilization; development of staging areas, access routes, and haul routes; grading and excavation; and installation of water control structures and utilities. The number of workers needed for the proposed Project would be a small fraction of the overall population of Yolo County and would likely be sourced from the local labor pool. The increase in the workforce associated with the construction of the proposed Project would be temporary and negligible compared to the overall population of Yolo County, and therefore would not result in a need for new housing or development of other services.

Long-term, the proposed Project involves the restoration and enhancement of tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) in the proposed Project area. The proposed Project does not involve new land development or public services that would remove an impediment to new development (see Section 3.3.5, "Land Use and Planning," and Section 3.3.9, "Public Services"). Ongoing agricultural (see Section 3.4, "Agriculture") and water management operations (see Section 3.10, "Hydrology and Water Quality," and Section 3.13, "Utilities and Service Systems") would be similar to those occurring under existing conditions, and additional monitoring and maintenance activities associated with constructed restoration elements would be periodic and short term; therefore, these activities would not result in an increased need for permanent workers or additional housing.

The proposed Project does not involve a short- or long-term construction effort that would establish permanent or substantial employment opportunities that would spur demand for new housing, development, or public services. Constructed restoration elements would not involve the removal of an impediment to growth, such as a change to water supply or installation of new public services beyond what exists under current conditions (see Section 3.3.9, "Public Services," and Section 3.13, "Utilities and Service Systems"). Long-term operations, monitoring, and maintenance of the constructed restoration elements would be periodic and short term, involving minimal workers, and would not require new housing or development. Impacts related to growth inducement would be less than significant.

The proposed Project is therefore consistent with and would not result in new or more severe potentially significant impacts than identified in the Final SRGO Program EIR (Section 5.1, "Growth-Inducing Impacts") and the Final SRGO Program EIR adequately addresses potential growth inducement.

Significant and Unavoidable Impacts

CEQA Guidelines Section 15126.2(c) states that an EIR must describe the impacts identified as significant and unavoidable should a proposed project be implemented. Impacts are determined to be significant and unavoidable when either no mitigation, or only partial mitigation, is feasible to reduce impacts to less-than-significant levels. DWR, as lead agency, will make the final determination of impact significance and of the feasibility of mitigation measures as part of the certification action. The environmental impacts that would result from implementation of the proposed Project are presented throughout this chapter (Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures"). No new significant and unavoidable impacts not identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 5.3, pp. 5-5 through 5-7) were identified for the proposed Project.

Significant Irreversible Environmental Changes

CEQA Guidelines Section 15126.2[d] requires an evaluation of the significant irreversible environmental changes that would be caused by a project if implemented, as described below:

> *Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse there after unlikely. Primary impacts, and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.*

In general, the CEQA Guidelines refer to the need to evaluate and justify the consumption of nonrenewable resources and the extent to which a project would commit future generations to similar uses of nonrenewable resources. In addition, CEQA requires the evaluation of irreversible damage resulting from an environmental accident associated with a proposed project.

The Final SRGO Program EIR examined potential for significant irreversible environmental changes resulting from covered restoration projects in Section 5.2, "Significant Irreversible Environmental Changes" (see Final SRGO Program EIR: Section 5.2, pp. 5-3 and 5-4). It determined that implementing restoration projects permitted under the SRGO could indirectly result in the commitment of nonrenewable natural resources used in the construction process and during operation, including gravel, petroleum

products, steel, fossil fuels, and other materials. Projects would also result in the commitment of slowly renewable resources, such as wood products. Such use would be short term and would comply with energy standards, and therefore would not result in the unnecessary, inefficient, or wasteful use of resources. It was also found that construction and operation of restoration projects permitted under the SRGO have the potential to result in accidental release of hazardous materials that could cause irreversible damage. Potential impacts associated with the release of hazardous materials are addressed in Section 3.9, "Hazards and Hazardous Materials."

The proposed Project involves the restoration and enhancement of tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) in the proposed Project area. Duration and intensity of construction activities associated with the proposed Project are in line with similar projects and would require 15 to 20 construction workers over one or two construction seasons to perform anticipated construction activities: site preparation and mobilization/demobilization; development of staging areas, access routes, and haul routes; grading and excavation; and installation of water control structures and utilities.

Operations and maintenance required for the proposed Project include ongoing water management and agricultural practices related to flood-up and draw-down, irrigation, vegetation management (e.g., disking, mowing), grading, fertilizing, and planting. Some of these activities would require the use of heavy equipment, but these activities are similar to those occurring under existing conditions for the agricultural fields and managed waterfowl ponds currently located on the proposed Project area. Additional monitoring and maintenance activities would be consistent with those evaluated under the Final SRGO Program EIR, including activities such as periodic dredging of sediment from tidal channels and irrigation and drainage canals; mechanical or chemical weed control and control of invasive species; manual vegetation management (e.g., replanting, watering, mowing); and maintenance, cleaning, and/or repair of berms, equipment, and infrastructure. While operations and maintenance activities associated with the proposed Project would require an ongoing commitment of nonrenewable resources, the use would be similar to baseline conditions.

See Section 3.3.2, "Energy," for a discussion of potential proposed Project impacts (from construction, operations, monitoring, and maintenance) related to the commitment of nonrenewable resources, which were determined to be less than significant. See Section 3.9, "Hazards and Hazardous Materials," for a discussion of potential proposed Project impacts (from construction, operations, monitoring, and maintenance) related to the accidental release of a hazardous substance, which were determined to be less than significant with mitigation measures.

The proposed Project is therefore consistent with and would not result in new or more severe potentially significant impacts than identified in the Final SRGO Program EIR (Section 5.2, "Significant Irreversible Environmental Changes") and the Final SRGO Program EIR adequately addresses potential significant irreversible environmental changes.

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3.4 Agriculture

3.4.1 Introduction

This Draft SEIR supplements the previously certified Final SRGO Program EIR and addresses proposed modifications, changed circumstances, and new information not described in that prior environmental document. This section of the Draft SEIR discusses the potential for the proposed Project to result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR related to agricultural resources (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-7 through 3.3-16). The environmental setting and evaluation of impacts on agricultural resources are based on a review of existing, publicly available literature and data, and on Appendix D to this Draft SEIR, "Tide's End Multibenefit Restoration Project Land Use Constraints Analysis."

See Section 3.3, "Environmental Issues Not Requiring Further Analysis," for a discussion of forestry resources.

Comments regarding agricultural resources were received in response to the NOP. See Appendix B to this Draft SEIR for NOP comment letters. These comments in response to the NOP were considered during preparation of this Draft SEIR.

The impact analysis in Section 3.4.4 evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities on agricultural resources in the proposed Project area. The impact analysis concluded that implementation of the proposed Project would result in less-than-significant impacts on agricultural resources with the implementation of mitigation measures.

3.4.2 Environmental Setting

The following sections describe the existing agricultural resources in the region and proposed Project area that could be affected by construction of the proposed Project or by the constructed restoration elements or operations, monitoring, and maintenance activities associated with the proposed Project.

Regional Existing Conditions for Agricultural Resources—Central California Valley

The Great Valley of California (Central Valley) is one of the most productive agricultural regions in the United States, covering approximately 20,000 square miles and generating about 8 percent of the nation's agricultural output by value (USGS 2025). The Central Valley's diverse agricultural landscape supports more than 230 crops, including key products such as almonds, grapes, cotton, and tomatoes (CDFA 2021). This agricultural success is due primarily to the region's fertile soils, favorable climate, and extensive irrigation systems that deliver water sourced primarily from the Sacramento and San Joaquin rivers, which feed into the Sacramento–San Joaquin Delta (Delta) (DWR 2021a). The Central Valley benefits from a long growing season and mild winters, which allow for multiple crop cycles each year. The region is also home to significant agricultural infrastructure, such as processing plants and transportation networks, which facilitate the efficient movement of products to national and international markets. The Central Valley is integral to both California's economy and the national food supply, with

the agricultural sector providing thousands of jobs and driving economic activity across the region (USDA 2020).

Existing Conditions for Agricultural Resources in the Yolo Bypass

The Yolo Bypass is located on the western floodplain of the Sacramento River, historically referred to as the "Yolo Basin" (see Figure 2-1 in Chapter 2, "Project Description"). This low-lying area was subject to the seasonal inundation of floodwaters from the nearby Sacramento River and its numerous tributaries (CDFG 2008). The Yolo Bypass was established as the primary flood control mechanism in the Sacramento River Basin and acts as a relief valve for floodwaters in the Sacramento River. Hydrology and operations of the Yolo Bypass are described in further detail in Section 3.10, "Hydrology and Water Quality." Additional land uses within the Yolo Bypass provide multiple benefits including flood protection, agricultural production, and fish and wildlife habitat.

The Yolo Bypass is a productive agricultural region, supported by fertile soils and a unique floodplain environment. Covering approximately 59,000 acres, the Yolo Bypass is nourished by alluvial soils deposited by the Sacramento River, which makes the land nutrient-rich and highly suitable for farming (DWR 2021b). The soils in the area are primarily silty and clayey, providing good moisture retention. Combined with the region's Mediterranean climate (hot, dry summers and mild, wet winters), this makes the area conducive to the cultivation of diverse crops such as rice, corn, wheat, and seasonal vegetables (Yolo County Agricultural Commissioner 2020). Rice in particular thrives in the area due to this seasonal flooding; the Yolo Bypass experiences high-flow events in approximately 70 percent of years in winter and early spring as part of the floodplain management strategy (Reclamation and DWR 2019). The nutrient-rich floodplain environment makes the area a productive agricultural region, with 75 percent of the land area supporting privately owned agriculture, as well as additional agricultural uses on public lands within the Yolo Bypass Wildlife Area held under leases managed by the California Department of Fish and Wildlife (Yolo County RCD 2025; Napa County WICC 2025). The location of the Yolo Bypass makes it a critical area for regional agricultural production in addition to its flood management purpose, contributing significantly to the state's rice industry (DWR 2021b).

The frequent seasonal inundation of the Yolo Bypass introduces unique challenges for agricultural production. Seasonal inundation creates limitations for crops that require drier, well-drained soils and cannot withstand prolonged water exposure, such as almonds and citrus, which are not viable in the bypass. Despite the challenges posed by its frequent inundation, the Yolo Bypass remains a productive agricultural area due to its fertile soil, strategic location, and crop adaptability (Yolo County Agricultural Commissioner 2020).

Existing Conditions for Agricultural Resources in the Proposed Project Area

The proposed Project area is located at the southern end of the Yolo Bypass (Figure 2-2 in Chapter 2, "Project Description"). Within the proposed Project area, farming is limited to the Capitol Oil property, which was historically farmed for rice, corn, and other general field crops and is currently managed for rice production. Due to their topography, elevations, and conservation easement restrictions, the Laurel G, Yolo Basin, Kleary, and Williams properties are operated as seasonal wetland habitat for duck hunting, and the Lucky Five South property is managed mainly as upland bird habitat. Current agricultural land

management practices within the proposed Project area include flood-up and drainage, irrigation, vegetation management (e.g., disking, mowing), grading, fertilizing, and planting, consistent with typical seasonal rice cultivation practices in the regional vicinity. The proposed Project area is adjacent to the southeastern drainage channel (Toe Drain) for the Yolo Bypass, and regional water management occurs to support agricultural and other land use activities through an expansive system of irrigation and drainage channels that start and end at the Toe Drain (Figures 5 and 6 in Appendix D to this Draft SEIR).

The entire proposed Project area is located in Yolo County and is designated Agriculture (AG) by the *County of Yolo 2030 Countywide General Plan* and zoned Agricultural Intensive (A-N) by Yolo County's (County's) Code of Ordinances. See Section 3.4.3, "Regulatory Setting," for a discussion of local agricultural designations and zoning. In addition, **Figure 3.4-1** shows farmland classifications for the proposed Project area, based on the California Department of Conservation (DOC), Division of Land Resource Protection's Farmland Mapping and Monitoring Program (FMMP). See Section 3.4.3 for definitions and discussion of FMMP classifications and "Special Designation Farmland" under CEQA.

The only Special Designation Farmland present in the proposed Project area is on the Capitol Oil property, with approximately 1,153 acres of this property mapped as Unique Farmland (**Table 3.4-1**). As shown in Table 3.4-1 and Figure 3.4-1, other FMMP lands occur in the proposed Project area that are not defined as Special Designation Farmland (including "Grazing Land" and "Other Land"). No land in the proposed Project area is designated as Prime Farmland or Farmland of Statewide or Local Importance.

TABLE 3.4-1
FARMLAND MAPPING AND MONITORING PROGRAM CLASSIFICATIONS WITHIN THE PROPOSED PROJECT AREA

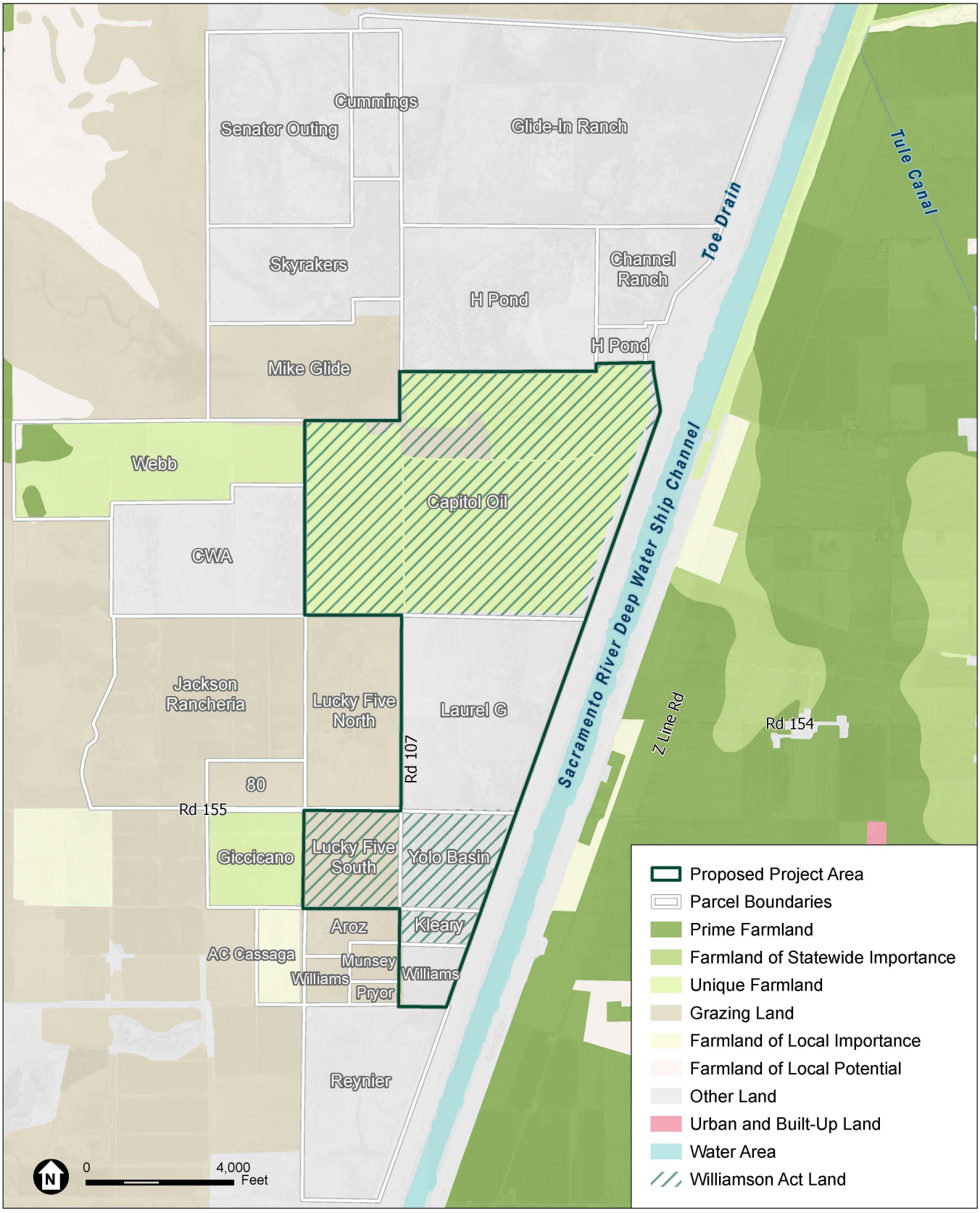
Property	Unique Farmland (acres)	Grazing Land[1] (acres)	Other Land[2] (acres)	Total (acres)
Capitol Oil	1,153.0	62.4	66.3	***1,281.7***
Laurel G	—	10.6	487.7	***498.3***
Kleary	—	2.2	43.2	***45.4***
Lucky Five South	—	161.7	—	***161.7***
Williams	—	4.6	56.8	***61.4***
Yolo Basin	—	5.1	158.8	***163.9***
Total	***1,153.0***	***246.6***	***812.8***	***2,212.4***

NOTES:

1. Although the proposed Project area contains Grazing Land as defined by the Farmland Mapping and Monitoring Program, livestock grazing has been expressly prohibited by recorded easements with California Department of Fish and Wildlife and Natural Resources Conservation Service (sometimes excepting seasonal grazing for vegetation management) on the Yolo Basin and a portion of Laurel G since 1993, and on Lucky Five South since 2006.
2. The "Other Land" category applies to land not included in any other mapping category and does not necessarily indicate agricultural use or potential. This category includes a variety of land cover types, including low-density rural development, wetland and riparian areas, confined livestock, borrow pits and vacant lands, waterbodies smaller than 40 acres, and more.

SOURCE: Data compiled by Environmental Science Associates in 2025

Figure 3.4-1 also notes Williamson Act contract statuses for the proposed Project area properties, based on DOC's Yolo County Williamson Act map data for 2018. See Section 3.4.3, "Regulatory Setting," for a description of the Williamson Act. The Capitol Oil, Yolo Basin, Kleary, and Lucky Five South properties all have active Williamson Act contracts.



Ecosystem Investment Partners

TIDE'S END

DEPARTMENT OF WATER RESOURCES · STATE OF CALIFORNIA

Tide's End Multibenefit Restoration Project

Figure 3.4-1
Agricultural Land Designations

Prepared by: ESA

SOURCE: NAIP 2022, FMMP 2020, Yolo County, 2024: ESA 2025

3.4.3 Regulatory Setting

Federal and State regulations discussed in Section 3.3.3, "Regulatory Setting," of Section 3.3, "Agriculture and Forestry Resources," of the Final SRGO Program EIR were reviewed for relevance to the proposed Project and are summarized below, as appropriate, along with any applicable new or updated policies since certification of the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.3.3, pp. 3.3-5 through 3.3-7). As a statewide, program-level document, the Final SRGO Program EIR did not discuss regional and local regulations; this Draft SEIR provides project-specific regional and local goals and policies to supplement the regulatory setting information provided in the Final SRGO Program EIR.

Federal

Farmland Protection Policy Act

The Natural Resources Conservation Service (NRCS) is the agency primarily responsible for implementing the federal Farmland Protection Policy Act (FPPA). The purpose of the FPPA is to minimize federal contributions to the conversion of farmland to nonagricultural uses by ensuring that federal programs are administered in a manner compatible with state, local, and private programs to protect farmland.

NRCS administers the FPPA through a voluntary program that provides funds to help purchase development rights to keep productive farmland in agricultural use. The program provides matching funds to state, local, or tribal government entities and nongovernmental organizations with existing farmland protection programs to purchase conservation easements. Participating landowners agree not to convert the land to nonagricultural uses and retain all rights to the property for future agriculture. A minimum 30-year term is required for conservation easements, and priority is given to applications with perpetual easements (NRCS 2025a).

The FPPA established the Farmland Protection Program and the Land Evaluation and Site Assessment system. The system is a tool used to rank lands for suitability and inclusion in the Farmland Protection Program. The land evaluation involves rating soils and placing them into groups ranging from the best to the least suited for a specific agricultural use, such as for cropland, forestland, or rangeland. The site assessment involves three major areas: non-soil factors related to agricultural use of a site, factors related to development pressures, and other public values of a site. Each factor is assigned a range of possible values according to local needs and objectives (NRCS 2025b).

Central Valley Project Improvement Act

The U.S. Bureau of Reclamation and U.S. Fish and Wildlife Service, in coordination with the State of California, participating CALFED Bay-Delta Program agencies, and other partners, have implemented numerous programs, projects, and actions to meet the goals of the Central Valley Project Improvement Act, many of which have affected land use and agriculture throughout the Central Valley, especially in the Delta watershed.

To achieve the Central Valley Project Improvement Act's purposes and the identified goals and objectives, numerous provisions for agriculture were incorporated into the statute. Specific programs, measures, and operational and management directives address water, habitat, and land management.

Among these are directives for the retirement of drainage-impaired farmlands through the Land Retirement Program and implementation of an Agricultural Waterfowl Incentives Program. The goal of the Land Retirement Program is to retire 15,000 acres of agricultural lands (Reclamation and USFWS 2014:ES-9). As of 2013, the program had acquired more than 9,300 acres of farmland in the Delta and completed restoration on more than 6,800 acres (Reclamation and USFWS 2014:73). In the Agricultural Waterfowl Incentives Program, farmers are paid to keep private agricultural fields flooded during the winter months to increase the amount of habitat and the availability of food for waterfowl.

State

California Farmland Conservancy Program

DOC's California Farmland Conservancy Program was established in 1996 to encourage the permanent conservation of productive agricultural lands in collaboration with local entities. In creating this program, the California Legislature recognized the important contribution made by farmland to the state's food supply and the additional benefits of farmland: conserving wildlife habitat, protecting wetlands, and preserving scenic open space.

The California Farmland Conservancy Program supports local efforts to conserve farmland by providing grant funds for the purchase of agricultural conservation easements. These easements are deed restrictions to ensure that a given piece of agricultural land can never be used for purposes that would interfere with farming, leaving farmers free to make all ongoing agricultural management decisions on their land.

California Farmland Mapping and Monitoring Program

In 1980, DOC started the FMMP as a system of mapping and monitoring important farmland in California based on soil and climatic characteristics. CEQA lead agencies are required to evaluate agricultural resources in environmental assessments based at least in part on the FMMP. The State's system was designed to document the amount of agricultural land in California that was being converted to nonagricultural land or transferred in or out of Williamson Act contracts.

The FMMP currently maps farmland within the state of California to produce Important Farmland Maps that represent a combination of soil quality information (physical and chemical features) and land use information (type and degree of vegetative cover and/or type and intensity of land disturbance or development). The maps are updated every 2 years using aerial infrared photographs and field reconnaissance to map existing land uses (e.g., urban, rural residential, natural vegetation, water, agriculture) in combination with NRCS digital soil survey data. Important Farmland Maps account for factors such as existing vegetation, the chemical and physical features of underlying soil, and development intensity, but they do not consider land use regulations or restrictions, such as local land use plans, rights-of-way, or uses prohibited by easements or other ownership restrictions.

The California Public Resources Code (Sections 21060.1 and 21095) defines "agricultural land" under CEQA as those lands designated by the FMMP as either Prime Farmland, Farmland of Statewide Importance, and/or Unique Farmland. Appendix G of the CEQA Guidelines refers to these same three

categories as "Farmland." Definitions of these FMMP categories, referred to in this Draft SEIR as "Special Designation Farmland," are as follows:

- **Prime Farmland**—Land that has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the 4 years prior to mapping.
- **Farmland of Statewide Importance**—Land similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the 4 years prior to mapping.
- **Unique Farmland**—Land of lesser quality soils used for the production of the state's leading agricultural cash crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California.

California Land Conservation Act (Williamson Act)

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners to restrict specific parcels of land to agricultural or related open space use for a term of at least 10 years. In return, landowners receive property tax assessments that are much lower than normal, because they are based on farming and open space uses as opposed to full market value.

The Williamson Act was amended in August 1998 to establish Farmland Security Zones and Farmland Security Zone contracts. These contracts, colloquially called "Super Williamson Act contracts," are limited to higher quality farmlands, have a larger tax break, and have higher cancellation fees. Landowners can receive an additional 35 percent reduction in the land's value for property tax purposes. This additional tax reduction can be earned only if farmers and ranchers keep their property under contract for at least 20 years. Farmland Security Zone contracts are comparable to the Williamson Act contracts in that each year, another year is added to the agreement unless the landowner or county government does not renew the contract. Lands under a Williamson Act contract may be used for purposes other than agriculture, including for managed wetlands, wildlife habitat areas, recreation, and open space (California Government Code, Section 51205). Open space use includes "use or maintenance of land in a manner that preserves its natural characteristics, bounty, or openness for the benefit and enjoyment of the public [or] to provide habitat for wildlife" (California Government Code, Section 51201).

Regional and Local

The following regional and local policies relevant to the proposed Project based on location, project type, and/or environmental setting have been included for context; however, as a State agency, DWR is not subject to local ordinances.

County of Yolo 2030 Countywide General Plan

The Yolo County 2030 General Plan (Yolo County 2009) outlines goals and policies that seek to preserve and foster the rural character of the county and establishes goals for regional collaboration and equity, green building standards, sustainable community design, and net community benefits from new growth.

The General Plan also includes the County's land use map and sets forth the land use designations upon which policies are applied. The zoning regulations outlined in Section 8, Chapter 2 of the Yolo County Code of Ordinances are provided to implement the goals and policies for various land use types designated by the General Plan. The proposed Project area is designated Agriculture (AG) by the General Plan and is zoned Agricultural Intensive (A-N). Lands that are designated as AG and zoned A-N are intended primarily for agricultural uses, and the general principle is to preserve and protect agricultural land for farming and related activities. Allowable uses include agricultural production and support facilities; agricultural buildings, farmworker housing, and rural residential and retail development; and certain types of low-impact recreational activities (e.g., hunting or fishing) that do not interfere with agricultural activities. The AG designation is designed to prevent urban sprawl and incompatible development in areas that are vital to agricultural production. It encourages long-term agricultural viability and minimizes urban encroachment into farming areas (Yolo County 2009).

The following goal and policy in Section C, Section 1, "Land Use Policies," of the Land Use and Community Character Element are relevant to the proposed Project:

> **Goal LU-2: Agricultural Preservation.** Preserve farmland and expand opportunities for related business and infrastructure to ensure a strong local agricultural economy. (See the Agriculture and Economic Development Element for a more comprehensive treatment of this issue.)
>
> > ***Policy LU-2.4:*** Vigorously conserve, preserve, and enhance the productivity of the agricultural lands in areas outside of adopted community growth boundaries and outside of city spheres of influence.

The Yolo County General Plan's Agriculture and Economic Development Element outlines goals and policies that emphasize wildlife-friendly farming, local food preference, community revitalization, creation of jobs and economic health, business outreach, expansion of tourism, and collaboration with the Rumsey Tribe and University of California, Davis (Yolo County 2009).

The following goals and policies in Section B, "Agriculture," of the Agriculture and Economic Development Element are relevant to the proposed Project:

> **Goal AG-1: Preservation of Agriculture.** Preserve and defend agriculture as fundamental to the identity of Yolo County.
>
> > ***Policy AG-1.3:*** Prohibit the division of agricultural land for non-agricultural uses.
> >
> > ***Policy AG-1.4:*** Prohibit land use activities that are not compatible within agriculturally designated areas.
> >
> > ***Policy AG-1.5:*** Strongly discourage the conversion of agricultural land for other uses. No lands shall be considered for redesignation from Agricultural or Open Space to another land use designation unless all of the following findings can be made:
> >
> > A. There is a public need or net community benefit derived from the conversion of the land that outweighs the need to protect the land for long-term agricultural use.
> >
> > B. There are no feasible alternative locations for the proposed project that are either designated for non-agricultural land uses or are less productive agricultural lands.

C. The use would not have a significant adverse effect on existing or potential agricultural activities on surrounding lands designated Agriculture.

Policy AG-1.22: Protect the integrity of irrigation conveyance systems and related infrastructure from the impacts of adjoining non-agricultural development.

Goal AG-2: Natural Resources for Agriculture. Protect the natural resources needed to ensure that agriculture remains an essential part of Yolo County's future.

Policy AG-2.1: Protect areas identified as significantly contributing to groundwater recharge from uses that would reduce their ability to recharge or would threaten the quality of the underlying aquifers.

Policy AG-2.3: Work proactively with regional and watershed-based groups to protect and preserve Yolo County's agricultural water supply.

Policy AG-2.8: Facilitate partnerships between agricultural operations and habitat conservation efforts to create mutually beneficial outcomes.

Policy AG-2.9: Support the use of effective mechanisms to protect farmers potentially impacted by adjoining habitat enhancement programs, such as "safe harbor" programs and providing buffers within the habitat area.

Policy AG-2.10: Encourage habitat protection and management that does not preclude or unreasonably restrict on-site agricultural production.

Goal AG-6: Delta Agriculture. Enhance agriculture in the Clarksburg area to complement the broader values of the Delta region.

Policy AG-6.3: Within the Delta Primary Zone, ensure compatibility of permitted land use activities with applicable agricultural policies of the Land Use and Resource Management Plan of the Delta Protection Commission.

Delta Protection Commission Land Use and Resource Management Plan

The Delta Protection Commission's Land Use and Resource Management Plan (LURMP) is a comprehensive planning document designed to guide local land use and resource management within the Delta, particularly in the Primary Zone of the Delta. The plan provides a framework for balancing preservation of the Delta's unique agricultural, recreational, and environmental resources with development and infrastructure needs. It addresses key issues such as flood control, water quality, habitat protection, and the viability of agricultural lands, aiming to protect and enhance the region's character and resources.

The LURMP identifies appropriate land uses for different areas of the Delta, promotes policies that preserve the rural and agricultural character of the region, and encourages the protection of critical habitats and natural resources. The plan also incorporates strategies for dealing with challenges like climate change, rising sea levels, and increasing development pressures. By establishing specific land use policies, zoning recommendations, and resource management practices, the LURMP serves as a tool for local governments, stakeholders, and agencies involved in managing the Delta's resources and ensuring its long-term sustainability.

The proposed Project area is located within the Primary Zone of the Delta. For such areas, the LURMP establishes policies that are derived from and build upon the designations, zoning, and programs and policies set by local governments, such as Yolo County.

The following goals and policies from the LURMP are relevant to the proposed Project area:

Land Use Goals: Protect the unique character and qualities of the Primary Zone by preserving the cultural heritage, strong agricultural/economic base, unique recreational resources, and biological diversity of the Primary Zone. Encourage a critical mass of farms, agriculturally-related businesses and supporting infrastructure to ensure the economic vitality of agriculture within the Delta.

Policy P-2: Local government general plans, as defined in Government Code Section 65300 et seq., and zoning codes shall continue to promote and facilitate agriculture and agriculturally supporting commercial and industrial uses as the primary land uses in the Primary Zone; recreation and natural resources land uses shall be supported in appropriate locations and where conflicts with agricultural land uses or other beneficial uses can be minimized.

Policy P-3: New non-agriculturally oriented residential, recreational, commercial, habitat, restoration, or industrial development shall ensure that appropriate buffer areas are provided by those proposing new development to prevent conflicts between any proposed use and existing adjacent agricultural parcels. Buffers shall adequately protect integrity of land for existing and future agricultural uses and shall not include uses that conflict with agricultural operations on adjacent agricultural lands. Appropriate buffer setbacks shall be determined in consultation with local Agricultural Commissioners, and shall be based on applicable general plan policies and criteria included in Right-to-Farm Ordinances adopted by local jurisdictions.

Policy P-14: The conversion of an agricultural parcel, parcels, and/or an agricultural island for water impoundment, including reservoirs, water conveyance or wetland development may not result in the seepage of water onto or under the adjacent parcel, parcels, and/or island. These conversions shall mitigate the risks and adverse effects associated with seepage, levee stability, subsidence, and levee erosion, and shall be consistent with the goals of this Plan.

Agriculture Goals: To support long-term viability of agriculture and to discourage inappropriate development of agricultural lands. Support the continued capability for agricultural operations to diversify and remain flexible to meet changing market demands and crop production technology. Promote the ability for agriculture operations to change the crops or commodities produced to whatever is most economically viable at the time. Support the use of new crop production technologies that keep Delta agricultural operations competitive and economically sustainable.

The priority land use of areas in the Primary Zone shall be oriented toward agriculture and open space. If agriculture is no longer appropriate, land uses that protect other beneficial uses of Delta resources and that would not adversely affect agriculture on surrounding lands or the viability or cost of levee maintenance, may be permitted. If temporarily taken out of agriculture production due to lack of adequate water supply or water quality, the land shall remain reinstatable to agriculturally-oriented uses for the future.

Policy P-2: Conversion of land to non-agriculturally-oriented uses should occur first where productivity and agricultural values are lowest.

Policy P-6: Encourage acquisition of agricultural conservation easements from willing sellers as mitigation for projects within each county. Promote use of environmental mitigation in agricultural areas only when it is consistent and compatible with ongoing agricultural operations

and when developed in appropriate locations designated on a countywide or Delta-wide habitat management plan.

Policy P-7: Encourage management of agricultural lands which maximize wildlife habitat seasonally and year-round, through techniques such as fall and winter flooding, leaving crop residue, creation of mosaic of small grains and flooded areas, wildlife friendly farming, controlling predators, controlling poaching, controlling public access, and others.

Policy P-8: Encourage the protection of agricultural areas, recreational resources and sensitive biological habitats, and the reclamation of those areas from the destruction caused by inundation.

Yolo County Agricultural Conservation and Mitigation Program

The County's Code of Ordinances includes the Agricultural Conservation and Mitigation Program in Section 8.2-404, under Article 4, "Special Agricultural Regulations." The program is designed to implement the agricultural land conservation policies in the Yolo County General Plan, discussed above, and permanently protect agricultural land located within the unincorporated area of the county. The program requires agricultural mitigation for conversion or change from agricultural use to a predominantly nonagricultural use before or concurrent with any discretionary approval by the County. The program requires a mitigation ratio of 2:1 for conversion of non–Prime Farmland to nonagricultural use, and a mitigation ratio of 3:1 for conversion of Prime Farmland (as classified by the FMMP), unless mitigation lands are located within the County's priority conservation areas, in which case a 1:1 ratio may be acceptable. Although it is used as part of relevant mitigation conservation ratios, the program's definition of agricultural land is not based on zoning or on FMMP categories. Rather, "agricultural land" is defined as "lands currently used for agricultural purposes or that are substantially undeveloped and capable of agricultural production."

Yolo County Williamson Act Guidelines

The Yolo County Williamson Act Guidelines are a planning document prepared by the County to record the County's existing policies for implementing Williamson Act contracts. The guidelines were adopted by the County on December 12, 2017. The guidelines state that uses for agricultural and open spaces reflected in guidelines Table 1 that are permitted by right or allowed by non-discretionary review by the County's zoning code for their respective zones are compatible with agriculture for lands under Williamson Act contract. The guidelines further specify that any use requiring a use permit or other discretionary approval on lands under Williamson Act contract will only be approved by the County if the proposed use does not: (1) significantly compromise the long-term productive agricultural capability of the subject parcel(s); (2) displace or impair current or reasonably foreseeable agricultural operations on the subject parcel(s); and (3) result in the significant removal of adjacent contracted land from agricultural open-space use. However, if the parcel(s) are on non–Prime Farmland, a use may be approved despite these conditions if the productive capability of the subject land has been considered, and mitigation has been applied to avoid impacts to the greatest extent possible while maintaining the purpose of the use.

3.4.4 Impact Analysis and Mitigation Measures

Significance Criteria

In accordance with Appendix G of the CEQA Guidelines, an impact related to agriculture is considered significant if the proposed Project would do any of the following:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (referred to in this section as "Special Designation Farmland"), as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to nonagricultural use.
- Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Special Designation Farmland to nonagricultural use.

Issues Not Analyzed Further in this Draft SEIR

Impacts of operations, monitoring, and maintenance activities related to conversion of Special Designation Farmland or conflicts with existing zoning for agricultural use or a Williamson Act contract.

Related to operations and maintenance activities of restoration projects permitted under the SRGO, the Final SRGO Program EIR evaluated activities such as the following: mechanical and chemical weed control; control of invasive and other non-native species, including predatory and nuisance species; replanting and reseeding; installation of fencing and signage; adjustments to grading or soils composition; installation and operation of monitoring equipment, including fish counters, flow gages, depth gages, cameras, stakes, and similar equipment; maintenance and repair of instream structures installed to improve or manage habitat or hydrologic function (e.g., grade control structures); maintenance and cleaning of fish screens; removal of debris and sediment from stream crossings; and maintenance and operation of fishways (see Final SRGO Program EIR: Section 2.7.2, p. 2-27).

The Final SRGO Program EIR found that operations and maintenance activities would be limited to the footprint created during construction of restoration projects, which would often occur in streams or channels that would not affect agricultural lands. These activities would not be of sufficient scale or duration to directly or indirectly result in conversion of Special Designation Farmland to nonagricultural use or conflict with zoning or a Williamson Act contract. This impact was determined to be less than significant. The general protection measures applied to reduce other agricultural impacts would further reduce the impact (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-15 and 3.3-16).

Long-term operations for the proposed Project include a variety of activities reflecting the multibenefit nature of the anticipated land uses under proposed Project conditions. Operations and maintenance required for the proposed Project include ongoing water management and agricultural practices related to flood-up and drawdown, irrigation, vegetation management (e.g., disking, mowing), grading, fertilizing, and planting. Some of these activities would require the use of heavy equipment, but these activities are similar to those occurring under existing conditions for the agricultural fields and managed waterfowl ponds currently located in the Project area and would be supportive of, rather than detrimental to, the remaining agricultural fields under the proposed Project. Additional operations, monitoring, and maintenance activities required for the proposed Project would be consistent with those evaluated under

the Final SRGO Program EIR, described above, including activities such as the following: periodic dredging of sediment from tidal channels and irrigation and drainage canals; mechanical or chemical weed control and control of invasive species; manual vegetation management (e.g., replanting, watering, mowing); and maintenance, cleaning, and/or repair of berms, equipment, and infrastructure. These activities would be periodic and limited in nature; would occur within tidal channels, irrigation canals, and/or in the construction footprint of other restored elements; and would not affect agricultural land. This impact would be ***less than significant*** and is not evaluated in further detail in the impact analyses below.

Methodology and Assumptions

As discussed in Chapter 1, "Introduction," the proposed Project is a "restoration project" as defined in Section V of the SRGO (State Water Board 2022a: Section V, p. 2); therefore, this Draft SEIR supplements and incorporates by reference the Final SRGO Program EIR, including its appendices (State Water Board 2022b). As provided by CEQA Guidelines Section 15163(b), a supplement to an EIR need contain only the information necessary to make the previous EIR adequate for the project as revised. This means that only those project-specific activities that would introduce new significant environmental effects or cause a substantial increase in the severity of significant effects identified in the SRGO Program EIR need to be evaluated. Where existing information and analysis in the SRGO Program EIR are considered sufficient to evaluate the impacts of the proposed Project, no additional environmental review is provided.

As further outlined in Chapter 1, this Draft SEIR incorporates by reference the general protection measures and species protection measures outlined in Final SRGO Program EIR Appendices E and F, which are intended to avoid and minimize impacts on sensitive resources. Consistent with the Final SRGO Program EIR, the impact analysis for each resource area assumes that applicable general protection measures and species protection measures would be implemented and enforced in the same way as mitigation measures, consistent with Section 15126.4 of the CEQA Guidelines, and that the proposed Project would be constructed and operated in compliance with relevant federal and State regulations and ordinances. Therefore, if the analysis has determined that incorporating one or more general protection measures and/or species protection measures into the proposed Project would reasonably mitigate an impact, then the impact conclusion is less than significant. If the analysis has determined that an impact would remain significant after the incorporation of appropriate general protection measures and species protection measures, then mitigation measures from the Final SRGO Program EIR and/or Project-specific mitigation measures have been recommended to further reduce the magnitude of the impact. All mitigation measures are from the Final SRGO Program EIR unless specifically stated otherwise.

The following impact analysis considers the potential impacts related to agricultural resources associated with implementation of the proposed Project. The impact analysis evaluates the effects of construction activities (short-term, temporary) and the effects of constructed restoration elements (long-term, permanent), while the minimal potential impacts related to operations, monitoring, and maintenance have been described above.

Impacts and Mitigation Measures

Table 3.4-2 summarizes the impact conclusions presented in this section for easy reference.

TABLE 3.4-2
SUMMARY OF IMPACT CONCLUSIONS—AGRICULTURE

Impact Statement	Construction Activities	Constructed Restoration Elements	Operations, Monitoring, and Maintenance Activities
3.4-1: Implementation of the proposed Project could convert Special Designation Farmland to nonagricultural use.	LTS	LTSM	LTS
3.4-2: Implementation of the proposed Project could conflict with existing zoning for agricultural use or a Williamson Act contract.	LTS	LTSM	LTS
3.4-3: Implementation of the proposed Project could involve other changes in the existing environment which, due to their location or nature, could result in conversion of Special Designation Farmland to nonagricultural use.	LTSG	LTS	LTS

NOTES: LTS = less than significant; LTSG = less than significant with implementation of general protection measures; LTSM = less than significant with implementation of mitigation measures.

SOURCE: Data compiled by Environmental Science Associates in 2025.

Impact 3.4-1: Implementation of the proposed Project could convert Special Designation Farmland to nonagricultural use.

Because temporary impacts on Special Designation Farmland during construction could differ from those associated with the conversion of Special Designation Farmland to nonagricultural use following construction, impacts associated with construction and post-construction activities are addressed separately below.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities for restoration projects on Special Designation Farmland. The Final SRGO Program EIR found that these activities could result in temporary conversion of Special Designation Farmland if they would occur on such lands. However, even with the acknowledgement that the time to construct restoration projects could be as long as several years, these conversions were found to be temporary, as the land disturbed by construction activities could be returned to agricultural use after construction. This impact was therefore determined to be less than significant in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-9 and 3.3-10).

Related to the proposed Project, the Final SRGO Program EIR evaluated the installation of infrastructure such as culverts, fish screens, and other water control structures that improve water management capabilities; removal of legacy structures; creation of depressions, berms, and drainage features; and the installation of cofferdams during construction. Project construction work covered by the Final SRGO Program EIR included grading and excavation; the use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and demobilization; stockpiling of construction materials; and disposal of excess materials (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-9 and 3.3-10).

Consistent with the types of construction activities evaluated by the Final SRGO Program EIR, construction of the proposed Project would require site preparation and demobilization; use of staging

areas, access routes, and haul routes; grading and excavation; the installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; removal and salvage and/or disposal of existing pumps, pipes, and other water control structures and utility lines that are no longer needed under proposed Project conditions; reconfiguration and modification of irrigation and drainage features, such as canals, ditches, and berms; and installation of temporary cofferdams.

Consistent with the evaluation provided by the Final SRGO Program EIR, construction activities associated with the proposed Project would be temporary, and temporarily affected areas could be returned to agricultural use after construction. This impact would be ***less than significant***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-9 and 3.3-10). The Final SRGO Program EIR adequately addresses the potential construction impacts of the proposed Project on conversion of Special Designation Farmland to nonagricultural use.

Effects of Constructed Restoration Elements

The Final SRGO Program EIR evaluated the potential impacts of constructed restoration projects permitted under the SRGO, including the following: improvements to stream crossings and fish passage; removal of small dams, tide gates, flood gates, and legacy structures; bioengineered bank stabilization; restoration and enhancement of off-channel and side-channel habitat; water conservation projects; floodplain restoration; removal or remediation of pilings and other in-water structures; removal of non-native invasive species and revegetation with native plants; establishment, restoration, and enhancement of tidal, subtidal, and freshwater wetlands; and establishment, restoration, and enhancement of stream and riparian habitat and upslope watershed sites (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-10 and 3.3-11).

The Final SRGO Program EIR found that some project activities (such as fish screens, fishways, and bioengineered bank stabilization) would have a neutral long-term effect on agricultural lands, because these activities would be located along streambanks or channels and would not affect agricultural land. The Final SRGO Program EIR also found that some project types (including floodplain restoration) would reduce soil erosion, recharge groundwater, and provide water quality buffers, thus benefiting existing Special Designation farmland (see Final SRGO Program EIR: Section 3.3.4, p. 3.3-11).

However, the Final SRGO Program EIR found this impact to be potentially significant because restoration project types permitted under the SRGO (including floodplain restoration and establishment, restoration, and enhancement of subtidal and freshwater wetlands) could result in long-term or permanent changes to land use that would convert Special Designation Farmland to nonagricultural uses (see Final SRGO Program EIR: Section 3.3.4, p. 3.3-11). The Final SRGO Program EIR does not include any general protection measures applicable to this impact, but implementation of ***Mitigation Measure AG-1: Minimize and Avoid Loss of Special Designation Farmland*** and ***Mitigation Measure GEO-6: Implement Measures for Waterway Construction*** would be required when applicable to a given project.

Despite these mitigation measures, the Final SRGO Program EIR found that this impact would be significant and unavoidable because, as a programmatic document, the extent and location of potential actions under the SRGO was not known and project-specific components could not be analyzed; it was

therefore not possible to conclude that the mitigation measures would reduce impact to a less-than-significant level in all cases (see Final SRGO Program EIR: Section 3.3.4, p. 3.3-13).

Consistent with the analysis presented in the Final SRGO Program EIR, constructed restoration elements resulting from the proposed Project could result in long-term or permanent changes to land use that would convert Special Designation Farmland to nonagricultural uses.

The proposed Project would use a combination of landscape modifications, new infrastructure, and operational actions to create tidal wetland and associated floodplain habitat and managed wetlands for waterfowl. As discussed in Section 3.4.2, "Environmental Setting," the proposed Project area contains 1,153 acres of Unique Farmland on the Capitol Oil Property (see Figure 3.4-1 and Table 3.4-1). As discussed in Section 2.2.5, "Managed Floodplain," in Chapter 2, under the proposed restoration design condition, 709.9 acres would be managed as agricultural farmland, of which approximately 671.6 acres is currently designated as Unique Farmland and 38.3 acres is designated as Grazing Land. The 671.6 acres of Unique Farmland and the 38.3 acres of Grazing Land would be retained as farmland and associated infrastructure would be improved (Table 2-3 in Chapter 2, "Project Description"). The proposed Project would permanently convert approximately 481.4 acres of Unique Farmland on the Capitol Oil property from irrigated farmland to tidal wetland and associated floodplain or nontidal habitat, to a nonagricultural use, or to managed wetlands under easements that permanently preclude agriculture.

As described in Chapter 2, the proposed Project would reconfigure on-site irrigation and drainage infrastructure to manage wetland water levels and floodplain agriculture irrigation effectively. Proposed infrastructure improvements including the removal of tide gates and widening and deepening the Main Drain would allow the Main Drain to receive enhanced flows from the Toe Drain and provide continuous water availability to neighboring agricultural properties. Specifically, proposed improvements would expand water accessibility to neighboring lands to the west and facilitate access to existing water diversions for both irrigation and drainage. The proposed improvements would also allow lands that are not currently under cultivation to be farmed, potentially increasing the amount of actively farmed land in the Yolo Bypass. Increased water availability would also allow lands that are currently being farmed to diversify their crops and improve crop production. For example, the 881.7-acre Jackson Rancheria property, west of the proposed Project area, is designated as Grazing Land, of which approximately 160 acres is currently under rice cultivation and 721.7 acres is grazed (cattle). The Project's proposed improvements would lower the cost of irrigation and improve water reliability across the entire 881.7 acres and allow a shift from grazing to rice production (G. Williams, pers. comm., 2025; Letter from land manager). This would enable 721.7 acres of the property to qualify as other Specially Designated Farmland, such as Unique or Prime Farmland, instead of Grazing Land as defined by the California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program (DOC, 2025). In addition, the Webb property, which includes 37.05 acres of Prime Farmland and 350.42 acres of Unique Farmland currently in irrigated pasture, could continue as irrigated pasture, and potentially improve the existing yield, or alternatively allow potential irrigated crop production instead of pasture due to improved water reliability. In addition, the lowering the cost of agricultural water usage through the proposed improvements removes a significant barrier to agriculture in the Delta and directly benefits the 881-acres of Jackson Rancheria and 410-acre Webb property.

The Lucky Five North property receives its irrigation supply from the Clubhouse Pump. Agriculture on that property would benefit from the rehabilitation of the Clubhouse Pump and the installation of a new fish screen. Agriculture on the Jackson Rancheria, CWA, and Webb properties would benefit from the proposed Project improvements to widen, deepen, and notch the Main Drain canal to full tidal connectivity, resulting in increased and more reliable water conveyance of the Main Drain canal. Jackson Rancheria and CWA currently withdraw irrigation water from the Main Drain canal; however, the limited capacity of the existing canal limits the amount of water available for these properties during periods of peak irrigation demand. The Webb property currently does not receive water from the Main Drain due to inadequate canal capacity, and the improvements to the Main Drain would greatly increase the reliability of irrigation supply to the Webb property.

Despite these potential improvements to agricultural production in the proposed Project area, the proposed Project would convert Special Designation Farmland to a nonagricultural use; therefore, ***Mitigation Measure AG-1*** would apply to the proposed Project.

Mitigation Measure AG-1: Minimize and Avoid Loss of Special Designation Farmland.

The following measures shall be implemented before and during construction of restoration projects permitted under the Order to minimize and avoid loss of Special Designation Farmland, as applicable:

- Restoration projects shall be designed to minimize, to the greatest extent feasible, the loss of agricultural land with the highest values.
- Restoration projects that will result in permanent conversion of Special Designated Farmland shall preserve other Special Designation Farmland in perpetuity by acquiring an agricultural conservation easement, or by contributing funds to a land trust or other entity qualified to preserve Special Designation Farmland in perpetuity (at a target ratio of 1:1, depending on the nature of the conversion and the characteristics of the Special Designated Farmland to be converted, to compensate for the permanent loss).

  Based upon the cost and availability of farmland, whether the landowner is sponsoring the project, recent (within 5 years) and ongoing farmland viability, and other factors, the CEQA lead agency for the individual restoration project should consider whether a 1:1 ratio is appropriate and feasible on a case-by-case basis. For example, contributions to a program such as the California Farmland Conservancy Program, which establishes conservation easements to preserve existing farmland in California, may be prohibitively expensive at a 1:1 ratio where there is a significant amount of affected Special Designated Farmland because it is based on a farm real estate average value per acre. For example, the farm real estate average value per acre in 2019 was $10,000 (USDA 2019).
- Restoration project features shall be designed to minimize fragmentation or isolation of Special Designation Farmland. Where a project involves acquiring land or easements, the remaining non-project area shall be of a size sufficient to allow viable farming operations. The project proponents shall be responsible for acquiring easements, making lot line adjustments, and merging affected land parcels into units suitable for continued commercial agricultural management.
- Any utility or infrastructure serving agricultural uses shall be reconnected if it is disturbed by project construction. If a project temporarily or permanently cuts off roadway access or removes utility lines, irrigation features, or other infrastructure, the project proponents shall be

responsible for restoring access as necessary to ensure that economically viable farming operations are not interrupted.

- Where applicable to a project site, buffer areas shall be established between restoration projects and adjacent agricultural land. The buffers shall be sufficient to protect and maintain land capability and flexibility in agricultural operations. Buffers shall be designed to protect the feasibility of ongoing agricultural operations and reduce the effects of construction-related or operational activities (including the potential to introduce special-status species in the agricultural areas) on adjacent or nearby properties. Buffers shall also serve to protect restoration areas from noise, dust, and the application of agricultural chemicals. The width of each buffer shall be determined on a project-by-project basis to account for variations in prevailing winds, crop types, agricultural practices, ecological restoration, or infrastructure. Buffers can function as drainage swales, trails, roads, linear parkways, or other uses compatible with ongoing agricultural operations.

Approximately 671.6 acres of on-site agricultural lands currently designated as Unique Farmland and 38.3 acres of on-site Grazing Land used for operations and staging of farm equipment (which are not currently under a conservation easement) would be retained and would be placed under agricultural conservation easement in perpetuity, which satisfies more than the 1:1 mitigation ratio required by Mitigation Measure AG-1 (**Table 3.4-3**).

TABLE 3.4-3
APPROXIMATE MITIGATION FOR UNIQUE FARMLAND IN THE PROPOSED PROJECT AREA

Existing Unique Farmland	Restoration Element/ Use under the Proposed Project	Acres	Proposed Land Management	Potential Unique Farmland Mitigation Ratio	Anticipated Mitigation Requirement (acres)
Unique Farmland (1,153.0 acres)	Managed Floodplain Agriculture	671.6	Continued agricultural land management practices to be placed under agricultural conservation easement	None	0
	Managed Wetlands	285.5	Managed water levels optimized for waterfowl	1:1 ratio	285.5
	Tidal Wetland and Associated Floodplain Habitat, Non-tidal Wetland, and Open Water	195.9	Permanent conversion from irrigated farmland	1:1 ratio	195.9
Total	**—**	***1,153.0***	**—**	**—**	***481.4***

SOURCE: Data compiled by Environmental Science Associates in 2025

In addition, the proposed Project includes a number of on-site linear features (roads, managed berms, and irrigation and drainage canals) that would act as buffer areas between agricultural lands and neighboring restoration areas. These buffers are proposed to maintain a minimum width of 25 feet from agricultural land and restoration elements.

The proposed Project has been designed to retain and improve Unique Farmland to the extent possible while maintaining the purpose and goals of the restoration project, in keeping with State law and consistent with Mitigation Measure AG-1, which requires that projects minimize fragmentation or isolation of Special Designation Farmland and that said farmland be of a size that can sustain viable

farming activities. As discussed above, the proposed Project would retain approximately 709.9 acres of existing agricultural lands, of which 671.6 acres are currently designated as Unique Farmland and 38.3 acres are currently designated as Grazing Land (both of which are not currently under a conservation easement). These lands would be placed under an agricultural conservation easement in perpetuity; this would be a contiguous area and would not be fragmented or designed in a way that would otherwise preclude viable agricultural production.

The proposed Project would modify the drainage patterns of on-site agricultural areas and managed ponds and has been designed to increase dry-season water flow to floodplain wetlands, transition zones, and tidal wetlands, which would filter out sediments, nutrients, and pesticides from agricultural runoff before they reach waterways, improving water quality in the floodplain and downstream ecosystems. In addition to increasing the retention of irrigation waters within the managed areas of the proposed Project area to enhance ecosystem function (ESA 2024a), the proposed Project would improve flow conveyance during low-flow conditions in the Yolo Bypass (ESA 2024b). Consistent with the SRGO Program EIR (pp. 3.3-10 to 3.3-11), the proposed Project would provide improved water quality protection and buffers between restoration components and adjacent agricultural land.

Further, as described above, proposed facilities improvements would improve the efficiency of the irrigation and drainage network to the benefit of agricultural lands within the proposed Project area and in the vicinity.

Because the proposed Project also would include installation of subsurface concrete reinforced sump basin associated with the northernmost pump station, GEO-6 would apply to the proposed Project.

Mitigation Measure GEO-6: Implement Measures for Waterway Construction Activities

For projects that involve the engineered subsurface structural components (e.g., of surface impoundments, levees, bridge footings/abutments) project design shall provide for protection from leakage to the subsurface. Measures could include but are not limited to rendering concrete less permeable by specifying concrete additives such as bentonite, designing impermeable liner systems, designing leakage collection and recovery systems, and constructing impermeable subsurface cutoff walls.

For restoration projects that could cause subsurface seepage of nuisance water onto adjacent lands, the following measures shall be implemented:

- Perform seepage monitoring studies by measuring the level of shallow groundwater in the adjacent soils, to evaluate baseline conditions. Continue monitoring for seepage during and after project implementation.
- Develop a seepage monitoring plan if subsurface seepage constitutes nuisance water on the adjacent land.
- If it is determined that seepage from the restoration project is responsible for making adjacent lands not usable, implement seepage control measures, such as installing subsurface agricultural drainage systems to avoid raising water levels into crop root zones. Cutoff walls and pumping wells can also be used to mitigate the occurrence of subsurface nuisance water.

The proposed Project would apply Mitigation Measure AG-1 and Mitigation Measure GEO-6, consistent with the Final SRGO Program EIR Therefore, this impact would be ***less than significant with implementation of mitigation measures***.

Constructed restoration elements associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-10 through 3.3-13), and the Final SRGO Program EIR adequately addressed such impacts related to the conversion of Special Designation Farmland to nonagricultural use or conflicts with existing zoning for agricultural use or a Williamson Act contract. Although the Final SRGO determined that this impact would remain significant and unavoidable even with implementation of Mitigation Measure AG-1 because project-specific components could not be analyzed, implementation of Mitigation Measure AG-1 would reduce impacts of the proposed Project to less than significant.

Impact 3.4-2: Implementation of the proposed Project could conflict with existing zoning for agricultural use or a Williamson Act contract.

Because temporary impacts on lands zoned for agricultural use and land under a Williamson Act contract during construction can differ from those associated with impacts attributed to post-construction activities, impacts associated with construction and post-construction activities are addressed separately below.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities for restoration projects on lands zoned for agricultural use and land under a Williamson Act contract. The Final SRGO Program EIR found that these activities could conflict with agricultural zoning or Williamson Act contracts if they would occur on such lands. However, even with the acknowledgement that the time to construct restoration projects could be as long as several years, these conversions were found to be temporary, as the land disturbed by construction activities could be returned to agricultural use after construction. This impact was therefore determined to be less than significant in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-9 and 3.3-10).

Related to the proposed Project, the Final SRGO Program EIR evaluated the installation of infrastructure such as culverts, fish screens, and other water control structures that improve water management capabilities; removal of legacy structures; creation of depressions, berms, and drainage features; and the installation of cofferdams during construction. Project construction work covered by the Final SRGO Program EIR included grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and demobilization; stockpiling of construction materials; and disposal of excess materials (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-9 and 3.3-10).

Consistent with the types of construction activities evaluated by the Final SRGO Program EIR, construction of the proposed Project would require site preparation and demobilization; use of temporary staging areas, access routes, and haul routes; grading and excavation; the installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; removal and salvage

and/or disposal of existing pumps, pipes, and other water control structures and utilities that are no longer needed under proposed Project conditions; reconfiguration and modification of irrigation and drainage features, such as canals, ditches, and berms; and installation of temporary cofferdams.

Consistent with the evaluation provided by the Final SRGO Program EIR, construction activities for the proposed Project would be temporary and agricultural uses could resume on approximately 709.9 acres of the proposed Project area after construction. This impact would be ***less than significant***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-9 and 3.3-10), and the Final SRGO Program EIR adequately addresses the potential construction impacts of projects such as the proposed Project related to conflicts with existing zoning for agricultural use or a Williamson Act contract.

Effects of Constructed Restoration Elements

The Final SRGO Program EIR evaluated the potential impacts of constructed restoration projects permitted under the SRGO, including the following: improvements to stream crossings and fish passage; removal of small dams, tide gates, flood gates, and legacy structures; bioengineered bank stabilization; restoration and enhancement of off-channel and side-channel habitat; water conservation projects; floodplain restoration; removal or remediation of pilings and other in-water structures; removal of non-native invasive species and revegetation with native plants; establishment, restoration, and enhancement of tidal, subtidal, and freshwater wetlands; and establishment, restoration, and enhancement of stream and riparian habitat and upslope watershed sites (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-9 through 3.3-11).

The Final SRGO Program EIR found that some project activities (such as fish screens, fishways, and bioengineered bank stabilization) would have a neutral long-term effect on agricultural lands, because they would be located along streambanks or channels and would not affect agricultural land. The Final SRGO Program EIR also found that some project types (including floodplain restoration) would reduce soil erosion, recharge groundwater, and provide water quality buffers, thus benefiting existing agricultural zoning areas or land under Williamson Act contracts (see Final SRGO Program EIR: Section 3.3.4, p. 3.3-11).

However, the Final SRGO Program EIR found this impact to be potentially significant because restoration project types permitted under the SRGO (including floodplain restoration and establishment, restoration, and enhancement of subtidal and freshwater wetlands) could result in long-term or permanent changes to land use that would conflict with agricultural zoning or conflict with Williamson Act contracts (see Final SRGO Program EIR: Section 3.3.4, p. 3.3-11). The Final SRGO Program EIR does not include any general protection measures applicable to this impact, but ***Mitigation Measure AG-2: Minimize Impacts on Lands Protected by Agricultural Zoning or Williamson Act Contract*** and ***Mitigation Measure GEO-6: Implement Measures for Waterway Construction*** would be required when applicable to a given project.

Despite these mitigation measures, the Final SRGO Program EIR found that this impact would be significant and unavoidable because the extent and location of potential action was not known; it was

therefore not possible to conclude that the mitigation measures would reduce the impact to a less-than-significant level in all cases (see Final SRGO Program EIR: Section 3.3.4, p. 3.3-13).

Consistent with the analysis presented in the Final SRGO Program EIR, constructed restoration elements resulting from the proposed Project could result in long-term or permanent changes to land use that would conflict with agricultural zoning or conflict with Williamson Act contracts.

The proposed Project area is zoned as Agriculture Intensive (A-N); however, DWR, as a State agency, is not subject to local plans, policies, or ordinances such as local zoning ordinances. Further, the Capitol Oil, Yolo Basin, Kleary, and Lucky Five South properties are under Williamson Act contracts. California Government Code Sections 51290–51295 establish requirements when a public agency (such as DWR) acquires lands subject to a Williamson Act contract. California Government Code Section 51292 requires public agencies not to locate proposed public improvements, which include easements and rights-of-way, within an agricultural preserve (based primarily on consideration of the cost of acquiring land); however, California Government Code Section 51293(e)(2) provides an exemption to this requirement when the acquisition of land is for purposes of flood control works or public works for fish and wildlife enhancement and preservation.

The proposed Project area is subject to five Williamson Act contracts: Agreement No. 91-30 (Resolution No. 91-35, adopted on February 26, 1991), Agreement No. 71-532 (Resolution No. 71-171, adopted on November 8, 1971), Agreement No. 71-260 (Resolution No. 71-18, adopted on February 1, 1971), Agreement No. 70-546 (Resolution No. 70-185, adopted on December 7, 1970), and Agreement No 70-488 (Resolution No. 70-174, adopted on November 16, 1970). The terms of each contract state:

> [B]oth OWNER and COUNTY desire to limit the use of subject property to agricultural, related and compatible uses in order to preserve a maximum amount of agricultural land, to conserve the State's economic resources, to maintain the agricultural economy, to assure a food supply for future residents, and to discourage premature and unnecessary conversion of agricultural land to urban uses, recognizing that such land has public value as open space and constitutes an important physical, social, aesthetic, and economic asset to the County…

(See Agreement No. 70-546, p. 1; Agreement No. 91-30, p. 1; Agreement No. 70-488, p. 1; Agreement No. 71-532, p. 1; and Agreement No. 71-260, p. 1 [emphasis added].) The proposed Project satisfies several compatible open space uses described in the Williamson Act, including wildlife habitat and submerged area, both of which may be included in an agricultural preserve pursuant to Government Code Section 51205. Furthermore, Government Code Section 51205 states that, for the purposes of the Williamson Act, "the term 'agricultural use'…shall be deemed to include recreational and open space use." For example, the proposed Project may satisfy the Williamson Act principles of compatibility via open space use, because the proposed Project would not "significantly compromise the long-term productive [open space] capability of the subject contracted parcel" (California Government Code Section 51238.1[a][1]). Thus, the proposed Project would introduce land uses consistent with the requirements of the subject properties' Williamson Act contracts.

Yolo County adopted Resolution No. 17-149 on or about December 12, 2017, which established the Yolo County Williamson Act Guidelines and addresses compatible uses. However, the Williamson Act contracts for the proposed Project area were executed before 1994. Pursuant to Government Code Section

51238.3, any Williamson Act contract in place before June 7, 1994, is not required to comply with the principles of compatibility requirements listed in Government Code Sections 51238.1 through 51238.2 and reflected in the County's Rules if the proposed compatible uses are listed in the contracts themselves. Here, all of the contracts specifically reference "related and compatible uses," and the public value of the land as open space. Thus, the proposed Project would be a compatible use under all three contracts. Although the proposed Project is exempt from the local ordinances and policies, the Yolo County Williamson Act Guidelines have been considered in the analysis of potential impacts and identification of mitigation, as appropriate.

Under Yolo County provisions regarding Williamson Act contracts, land within an agricultural preserve can include agricultural, recreational, or open space use (including wildlife habitat area), or any combination of these uses. For proposed compatible uses within existing agricultural preserves, the County guidelines consider whether such uses significantly compromise the long-term productive agricultural capability of the land, displace or impair current or reasonably foreseeable agricultural operations, or result in the significant removal of adjacent contracted land from agricultural open-space use. In this case, the proposed Project would retain managed floodplain agriculture and maintain and/or enhance existing agricultural uses in the Project area by improving existing irrigation systems, enhancing the existing canal, rehabilitating and replacing existing pumps, and installing a fish screen (see Impact 3.4-1, above; see also Chapter 2). Long-term operations of the proposed Project would also integrate open space uses, such as managed wetlands for waterfowl and tidal wetland and associated floodplain habitat. The proposed Project would not significantly compromise future long-term use of the properties for managed floodplain agriculture, managed wetlands, tidal wetland habitat, and other open space uses.

Consistent with the Williamson Act, the proposed Project's contracted land providing open space and habitat for wildlife is a compatible use under both the terms of the contracts and the Williamson Act. The proposed Project would implement **Mitigation Measure AG-2**, consistent with the Final SRGO Program EIR; however, **Mitigation Measure GEO-6** does not apply to the proposed Project because engineered subsurface structural components are not included as part of restoration design.

> **Mitigation Measure AG-2: Minimize Impacts on Lands Protected by Agricultural Zoning or Williamson Act Contract.**
>
> Restoration projects shall be designed to minimize, to the greatest extent feasible, conflicts and inconsistencies with land protected by agricultural zoning or a Williamson Act contract and the terms of the applicable zoning/contract.

The proposed Project has been designed to minimize impacts on lands protected by agricultural zoning (see Impact 3.4-1 discussion, above), and it is consistent with existing Williamson Act contracts, in keeping with State law, and consistent with Mitigation Measure AG-2. The facilities improvements described in Chapter 2, "Project Description," Section 2.2.6, "Facilities Improvements," would improve the efficiency of the irrigation and drainage network to the benefit of agricultural lands within the proposed Project area and in the vicinity. The proposed Project would implement Mitigation Measure AG-2, consistent with the Final SRGO Program EIR; however, Mitigation Measure GEO-6 does not apply to the proposed Project because engineered subsurface structural components are not included as part of the restoration design. Finally, as discussed above, the proposed Project would retain approximately 709.9 acres of existing agricultural lands, of which 671.6 acres are currently designated as

Unique Farmland and 38.3 acres are currently designated as Grazing Land (both of which are not currently under a conservation easement). These lands would be placed under agricultural conservation easement in perpetuity, and this would be a contiguous area and would not be fragmented or designed in a way that would otherwise preclude viable agricultural production. Therefore, this impact would be ***less than significant with implementation of mitigation measures***.

Constructed restoration elements associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-10 through 3.3-13), and the Final SRGO Program EIR adequately addressed such impacts related to conflicts with existing zoning for agricultural use or a Williamson Act contract. Although the Final SRGO determined that this impact would remain significant and unavoidable even with implementation of Mitigation Measure AG-2 because project-specific components could not be analyzed, implementation of Mitigation Measure AG-2 would reduce impacts of the proposed Project to less than significant.

Impact 3.4-3: Implementation of the proposed Project could involve other changes in the existing environment which, due to their location or nature, could result in conversion of Special Designation Farmland to nonagricultural use.

Effects of Construction Activities

The Final SRGO Program EIR found that construction activities for restoration projects permitted under the SRGO could negatively affect the viability of surrounding agricultural uses, impede or restrict access to agricultural areas (including Special Designation Farmland), or disrupt agricultural infrastructure. For example, storing construction materials could block access points, temporary stockpiling of excavated material or vegetation could impede use of lands, irrigation systems could be disrupted and drainage could be affected by soil compaction, and/or construction activity could create dust that affects crop growth or promotes the spread of invasive species. However, the Final SRGO Program EIR found that implementation of the following general protection measures would reduce the impact to a less-than-significant level: GPM-8: Prevent Spread of Invasive Species, GPM-10: Equipment Maintenance and Materials Storage, GPM-11: Material Disposal, GPM-12: Fugitive Dust Reduction, GPM-15: Revegetate Disturbed Areas, IWW-13: Dredging Operations and Dredging Materials Reuse Plan, VHDR-1: Avoidance of Vegetation Disturbance, VHDR-2: Native and Invasive Vegetation Removal Materials and Methods, VHDR-3: Revegetation Materials and Methods, VHDR-4: Revegetation Erosion Control Materials and Methods, VHDR-5: Revegetation Monitoring and Reporting, and VHDR-6: General Herbicide Use (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-15 and 3.3-16). Potential construction impacts of the proposed Project are consistent with those analyzed under the Final SRGO Program EIR. Access to agricultural lands, including Special Designated Farmland, could be temporarily impeded by the storage of construction equipment or stockpiling of excavated materials or vegetation. Irrigation and drainage infrastructure could be temporarily disrupted during the installation of facilities improvements and/or other earthmoving activities. As evaluated under the Final SRGO Program EIR, these impacts would be temporary and would be reduced to a less-than-significant level with implementation of all the applicable general protection measures.

All the general protection measures listed above as outlined in the Final SRGO Program EIR would be applied to the proposed project, except IWW-13 (which is not applicable because dredging is not

proposed during the construction phase of the proposed Project). Therefore, with applicable measures, this impact would be ***less than significant with implementation of general protection measures***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-15 and 3.3-16), and the Final SRGO Program EIR adequately addressed such impacts related to indirect conversion of Special Designation Farmland.

Effects of Constructed Restoration Elements

The Final SRGO Program EIR found that some restoration project types permitted under the SRGO—bank stabilization, restoration and enhancement of off-channel and side-channel habitat, floodplain restoration, water conservation, and removal of non-native terrestrial and aquatic invasive species and revegetation with native plants—would reduce soil erosion, recharge groundwater, use off-stream water storage during the dry season, provide natural pest control, and provide water quality buffers. Therefore, these actions would be beneficial for existing Special Designation Farmland. No other potential impacts related to changes in the environment caused by restoration projects that could indirectly cause conversion of Special Designation Farmland were identified. Therefore, this impact was found to be less than significant (see Final SRGO Program EIR: Section 3.3.4, p. 3.3-16).

Consistent with the analysis in the Final SRGO Program EIR, the proposed Project, once constructed, would not lead to additional changes in the environment that would cause indirect conversion of Special Designated Farmland. Irrigation and drainage infrastructure serving the proposed Project area and surrounding lands would be improved and reconnected to continue to allow for water management supporting agricultural lands. This impact would be ***less than significant***.

Constructed restoration elements associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.3.4, p. 3.3-16), and the Final SRGO Program EIR adequately addressed such impacts related to indirect conversion of Special Designation Farmland.

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3.5 Air Quality and Greenhouse Gas Emissions

3.5.1 Introduction

This Draft SEIR supplements the previously certified Final SRGO Program EIR and addresses proposed modifications, changed circumstances, and new information not described in that prior environmental document. This section of the Draft SEIR discusses the potential for the proposed Project to result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR related to air quality and greenhouse gas (GHG) emissions (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-17 through 3.4-34). The environmental setting and evaluation of impacts on air quality and GHG emissions are based on a review of existing, publicly available literature and data.

Comments were received in response to the NOP. See Appendix B to this Draft SEIR, "Tide's End Multibenefit Restoration Project Notice of Preparation and Comment Letters," for NOP comment letters. These comments in this response to the NOP were considered during preparation of this Draft SEIR.

The impact analysis in Section 3.5.4 evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities on air quality and GHG emissions in the proposed Project area. The SEIR impact analysis concluded that implementation of the proposed Project would have less-than-significant impacts on air quality with implementation of general protection measures and no impacts related to GHG emissions.

3.5.2 Environmental Setting

Air Quality

Regional Existing Conditions for Air Quality—Sacramento Valley Air Basin

Air quality is affected by the rate, amount, and location of existing pollutant emissions and the associated meteorological conditions that influence pollutant movement and dispersal. The combined effects of atmospheric conditions (for example, wind speed, wind direction, and air temperature) and local surface topography (for example, geographic features such as mountains and valleys) determine how air pollutant emissions affect local air quality.

The proposed Project area is located within Yolo County, California, which for air quality regulation purposes is under the jurisdiction of the Yolo-Solano Air Quality Management District (YSAQMD). YSAQMD is the primary local air quality agency for all of Yolo County. Yolo County is within the Sacramento Valley Air Basin (SVAB).

The climate of the SVAB is Mediterranean in character, with mild, rainy winter weather from November through March and warm to hot, dry weather from May through September. Sacramento Valley temperatures range from 20 to 115 degrees Fahrenheit and the average annual rainfall is 20 inches. The topographic features that give shape to the SVAB are the Coast Ranges to the west, the Sierra Nevada to the east, and the Cascade Range to the north. These mountain ranges channel winds through the SVAB but also inhibit the dispersion of pollutant emissions.

The predominant annual and summer wind pattern in the Sacramento Valley is the full sea breeze, commonly referred to as the "Delta breeze." These cool winds originate from the Pacific Ocean and flow through a sea-level gap in the Coast Ranges called the Carquinez Strait. In the winter (December–February), northerly winds predominate. Wind directions in the Sacramento Valley are influenced by the predominant wind flow pattern associated with each season. However, on about half the days from July through September, a phenomenon called the "Schultz Eddy" occurs. This event is a large isotropic vertical-axis eddy on the north side of the Carquinez Strait that prevents the Delta breeze from transporting pollutants north and out of the Sacramento Valley and causes the wind pattern to circle back south, causing air pollutants to remain within the Sacramento Valley. This phenomenon's effect exacerbates the pollution levels in the area and increases the likelihood that State or federal air quality standards (Houlton and Lund 2018) will be violated.

The vertical and horizontal movement of air is an important atmospheric component involved in the dispersion and subsequent dilution of air pollutants. Without movement, air pollutants can collect and concentrate in a single area, increasing the associated health hazards. For instance, in the winter, the SVAB typically experiences calm atmospheric conditions that result in stagnant air and increased air pollution. As a result, persistent inversions occur frequently in the SVAB, especially during autumn, and restrict the vertical dispersion of pollutants released near ground level.

Air pollutants of concern within the SVAB include criteria air pollutants and toxic air contaminants (TACs).

Existing Conditions for Air Quality in Yolo County

Criteria Air Pollutants

The federal Clean Air Act (CAA) was enacted in 1970 (United States Code Title 42, Section 7401 et seq.). As required by the CAA, the U.S. Environmental Protection Agency (EPA) has identified six criteria air pollutants, for which both State and national health-based ambient air quality standards have been established: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$), and lead. EPA calls these pollutants "criteria air pollutants" because the agency has regulated them by developing specific public health– and welfare-based criteria as the basis for setting permissible levels. Reactive organic gases (ROG) are not among the criteria pollutants but act as ozone precursors together with oxides of nitrogen (NO_X).

Of these six criteria pollutants, the pollutants of concern for Yolo County are ozone, PM_{10}, and $PM_{2.5}$, because their levels are generally the highest (as discussed further below), reflecting their association with vehicle exhaust and fugitive dust.

Although CO is emitted in vehicle exhaust, regional concentrations of CO have not exceeded federal or State standards for more than two decades. Occurrences of elevated localized CO concentrations, known as "hot spots," are often associated with heavy traffic congestion, which occurs most frequently at signalized intersections of high-volume roadways. YSAQMD does not provide screening volumes for potential CO hot spots and its guidance has not been updated since 2007. However, a nearby air district, the Bay Area Air District,[1] recommends in its recent CEQA Air Quality Guidelines that a peak-hour vehicle screening level of 44,000 vehicles per hour be used as a level contributing to a potential CO hot

[1] The Bay Area Air Quality Management District changed its name to "Bay Area Air District" in January 2025.

spot. Intersections with vehicle volumes lower than 44,000 per hour are not expected to lead to any CO hot spots (BAAQMD 2023).

Regional concentrations of SO_2 and NO_2 in the SVAB have not exceeded State standards for more than two decades (SMAQMD 2025). Emissions of SO_2 result predominantly from the combustion of sulfur-containing fuels (oil, coal, high-sulfur diesel), which are no longer used in California (CARB 2003). NO_2 is a byproduct of fuel combustion in vehicles. Because the SVAB is in attainment for State standards for NO_2, it is not a pollutant of concern. Ambient concentrations of NO_2 also have not exceeded State or federal standards for many years.

"NO_2" and "NO_X" are related but distinct terms in air quality. "NO_X" is a general term for nitrogen oxides, a group of gases containing nitrogen and oxygen that are emitted from a given source. NO_2 (nitrogen dioxide) is one specific gas within that group, and the ambient air quality standards are based on a ground-level concentration of NO_2 as opposed to an emitted amount of all NO_X compounds. NO_x emissions are a concern as an ozone precursor. The two most prevalent nitrogen oxides are NO_2 and nitric oxide (NO), and the combination is often referred to as NO_X. These compounds react in sunlight with other pollutants (e.g., volatile organic compounds, another ozone precursor) to form ozone, which itself is a criteria pollutant with ambient standards (EPA 2025). Ozone is discussed below.

At the time the ambient air quality standard for lead was promulgated, the ambient air was the source of a large portion of people's total lead exposure because of emissions from motor vehicles that ran on leaded gasoline. Since lead has been removed from gasoline, air emissions of lead from motor vehicles have greatly declined (CARB 2025a).

Based on this information, these pollutants—CO, SO_2, NO_2, and lead—will not be discussed further in this section.

Ozone

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) (as defined by California Code of Regulations Title 13, Section 2752[a][26]) and NO_X. The main sources of ROG and NO_X, often referred to as "ozone precursors," are products of combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. Ozone is a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath, and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Particulate Matter

PM_{10} and $PM_{2.5}$ consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Major pollutant sources of PM_{10} include dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays). Major pollutant sources of $PM_{2.5}$ include fuel combustion in motor vehicles, equipment, and industrial sources, as well as residential and agricultural burning. Some sources of particulate matter, such as wood burning in

fireplaces, demolition, and as applicable to the proposed Project, construction activities, are more local; others, such as vehicular traffic, have a more regional effect.

Attainment Status

The CAA and the California Clean Air Act (CCAA) (Health & Safety Code Section 40000 et seq.) require that all areas of California be classified as attainment, nonattainment, or unclassified to indicate their status regarding the national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS). If the air quality in a geographic area meets or is cleaner than the national standard, it is called an "attainment area" (designated "attainment/unclassified"); areas that do not meet the national standard are called "nonattainment areas." EPA has established subclassifications for the ozone standards; "serious" refers to an area with a value of 0.093 up to 0.105 part per million (ppm), while "severe" refers to an area with a value of 0.105 up to 0.163 ppm (EPA 2024a). Under the CAA and the CCAA, the California Air Resources Board (CARB) designates portions of the state's attainment status based on air quality monitoring data. Section 3.5.3, "Regulatory Setting," includes a more detailed discussion of these federal and State standards. California does not require that the CAAQS be met by specified dates; rather, the State requires incremental progress toward attainment.

Table 3.5-1 shows the federal and State attainment statuses for Yolo County for the criteria pollutants of concern. Because of the differences between the NAAQS and CAAQS, the designation of nonattainment areas is different under the federal and State legislation.

TABLE 3.5-1
YOLO COUNTY ATTAINMENT STATUS RELATIVE TO THE NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant and Averaging Time	Designation/Classification	
	California Standards	Federal Standards
Ozone (1 hour)	Nonattainment	No Federal Standard
Ozone (8 hours)	Nonattainment/Serious	Nonattainment/Severe
Respirable Particulate Matter (PM_{10})	Nonattainment	Unclassified
Fine Particulate Matter ($PM_{2.5}$)	Unclassified	Attainment

NOTES: $PM_{2.5}$ = particulate matter that is 2.5 microns or less in diameter; PM_{10} = particulate matter that is 10 microns or less in diameter
SOURCE: CARB 2023

Existing Conditions for Air Quality for the Proposed Project Area

Existing Air Quality

YSAQMD has jurisdiction to regulate air quality within the proposed Project area. Ambient air quality measurements from air monitoring stations maintained by CARB help to determine the levels of air quality in region. There are two air monitoring stations in Yolo County. One station is located at the University of California, Davis, campus and takes measurements for ozone, and the second station is located at Gibson Road in Woodland and takes measurements for PM_{10} and $PM_{2.5}$. **Table 3.5-2** shows a 3-year (2022–2024) summary of available pollutants monitored at the air monitoring stations. The table also compares monitored data to the CAAQS and NAAQS.

TABLE 3.5-2
SUMMARY OF AMBIENT AIR QUALITY MONITORING DATA

Pollutant Standards	2022	2023	2024
Ozone—UC Davis Campus			
Maximum 1-hour concentration (ppm)	0.078	0.080	0.077
Maximum 8-hour concentration (ppm)	**0.071**	0.068	0.068
Number of days standard exceeded[a]			
NAAQS 1-hour (>0.12 ppm)	0	0	0
CAAQS 1-hour (>0.07 ppm)	0	0	0
NAAQS 8-hour (>0.07 ppm)	1	0	0
Particulate Matter ($PM_{2.5}$)[b]—Woodland-Gibson Road			
Maximum 24-hour concentration (µg/m^3)	21.5	**148.5**	17.6
Annual average concentration (µg/m^3)[e]	5.9	10.3	*
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 µg/m^3)[f]	0	14	0
Particulate Matter (PM_{10})[b]—Woodland-Gibson Road			
Maximum 24-hour concentration (µg/m^3)	64.2	63.8	53.0
Annual average concentration (µg/m^3)[e]	20.0	18.5	16.5
Number of days standard exceeded[a]			
NAAQS 24-hour (>150 µg/m^3)[f]	0	0	0
CAAQS 24-hour (>50 µg/m^3)[f]	2	2	2

NOTES: µg/m^3 = micrograms per cubic meter; CAAQS = California ambient air quality standards. NAAQS = national ambient air quality standards; $PM_{2.5}$ = particulate matter that is 2.5 microns or less in diameter; PM_{10} = particulate matter that is 10 microns or less in diameter; ppm = parts per million; UC Davis = University of California, Davis. Values in **bold** font indicate an exceedance.

* Insufficient data to determine a value.
a. An exceedance is not necessarily a violation. It should be noted that the federal ozone 1-hour standard has been revoked by the U.S. Environmental Protection Agency.
b. Measurements are usually collected every 6 days.
c. National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.
d. State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California-approved samplers.
e. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
f. Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored.

SOURCE: CARB 2025b

Sensitive Receptors

Air quality does not affect every individual or group in the population in the same way, and some groups are more sensitive than others to adverse health effects caused by exposure to air pollutants. Population subgroups sensitive to the health effects of air pollutants include the elderly and the young, those with higher rates of respiratory disease such as asthma and chronic obstructive pulmonary disease, and those with other environmental or occupational health exposures (e.g., bad indoor air quality) that affect cardiovascular or respiratory diseases. Land uses such as schools, children's day care centers, hospitals, and nursing and convalescent homes are more sensitive than the general public to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress.

Parks and playgrounds are considered moderately sensitive to poor air quality because people engaged in strenuous work or exercise also have increased sensitivity to poor air quality; however, exposure times are generally far shorter in parks and playgrounds than in residential locations and schools, which typically reduces overall exposure to pollutants. Residential areas are more sensitive to air quality conditions than commercial and industrial areas because people, including children, generally spend longer periods of time at their residences, with associated greater exposure to ambient air quality conditions.

Workers (such as farmworkers) are not considered sensitive receptors because children and the chronically ill are not present at a workplace, the exposure time is shorter, and all employers must follow regulations set forth by the U.S. Occupational Safety and Health Administration to ensure the health and well-being of their employees. Health risks are based on exposure duration of a sensitive receptor, typically for receptors who spend the majority of their time in one location over a 30-year period.

The proposed Project area is located in a rural area surrounded by agricultural land uses. There are no parks or playgrounds in the proposed Project area. In rural areas, the primary sensitive receptor would be rural residences. The nearest sensitive receptor to the proposed Project area is an occupied residence located approximately 0.7 mile (3,700 feet) to the east. Although there is a clubhouse in the proposed Project area, it is only occasionally occupied, primarily during hunting season.

Toxic Air Contaminants

Non-criteria air pollutants, or TACs, are airborne substances that can cause short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer-causing) adverse human health effects—injury or illness. TACs include both organic and inorganic chemical substances. They are emitted by a variety of common sources, including gasoline stations, automobiles, diesel engines, dry cleaners, industrial operations, and painting operations. TACs are regulated differently from criteria air pollutants at both the federal and State levels. At the federal level, these airborne substances are referred to as “hazardous air pollutants” (HAPs). The State list of TACs identifies 243 substances (CARB 2025c) and the federal list of HAPs identifies 187 substances (EPA 2024b).

CARB identified diesel particulate matter (DPM) as a TAC in 1998, based primarily on evidence demonstrating cancer effects in humans. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and DPM concentrations are higher near heavily traveled highways and rail lines with diesel locomotive operations. Diesel engine emissions are believed to be responsible for about 70 percent of California’s estimated known cancer risk attributable to TACs.

In addition, DPM composes about 8 percent of outdoor $PM_{2.5}$, which is a known health hazard. As a substantial fraction of $PM_{2.5}$, DPM contributes to numerous health impacts that have been attributed to PM exposure, including increased hospital admissions—particularly for heart disease, but also for respiratory illnesses, and even premature death. CARB estimates that DPM contributes to approximately 1,400 premature deaths from cardiovascular disease annually in California. Additionally, exposure to diesel exhaust may contribute to the onset of new allergies; a clinical study of human subjects has shown that diesel exhaust particles, in combination with potential allergens, may be able to produce new allergies that did not exist previously.

In 2000, CARB approved a comprehensive diesel risk reduction plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. Despite notable emission reductions, CARB recommends considering proximity to sources of DPM emissions in the siting of new sensitive land uses. CARB notes that these recommendations are advisory and should not be interpreted as defined "buffer zones," and states that local agencies must balance other considerations, including transportation needs, the benefits of urban infill, community economic development priorities, and other quality-of-life issues. With careful evaluation of exposure, health risks, and affirmative steps to reduce risk where necessary, CARB's position is that infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level (CARB 2005).

Another notable TAC is asbestos, a fibrous mineral that is both naturally occurring in ultramafic rock (a rock type commonly found in California) and used as a processed component of building materials. Because asbestos has been proven to cause serious adverse health effects, including asbestosis and lung cancer, it is strictly regulated based on its natural widespread occurrence and its use as a building material.

The land uses associated with the proposed Project area include sources of TACs such as automobile traffic, diesel engines, and potentially asbestos (from the waterfowl hunting clubhouse).

Odorous Emissions

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. Odor impacts are considered in this section of this Draft SEIR for any proposed new odor sources located near existing receptors, as well as any new sensitive receptors located near existing odor sources. Generally, increasing the distance between the receptor and the odor source will mitigate odor impacts.

Although offensive odors from stationary sources rarely cause any physical harm, they remain unpleasant and can lead to public distress, generating complaints by residents to local governments. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

Sources of odor generation that may be present in and near the proposed Project area include decaying material in waterlogged areas; anaerobic decomposition of organic materials; and agricultural sources such as dairy and poultry farms and the application of pesticides, fertilizer, and herbicides.

Greenhouse Gas Emissions

Regional Existing Conditions for Greenhouse Gas Emissions

GHGs in the atmosphere naturally trap heat by impeding the exit of solar radiation that has hit the earth and is reflected back into space—a phenomenon referred to as the "greenhouse effect." Some GHGs occur naturally and are necessary for keeping the earth's surface habitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have trapped solar radiation and

decreased the amount that is reflected into space, intensifying the natural greenhouse effect and resulting in an increase in global average temperature.

Carbon dioxide (CO_2), methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons are the principal GHGs. CO_2, methane, and nitrous oxide occur naturally and are also generated by human activity. Emissions of CO_2 are largely byproducts of fossil fuel combustion, while methane results from off-gassing, natural gas leaks from pipelines and industrial processes, and incomplete combustion associated with agricultural practices, landfills, energy providers, and other industrial facilities. Nitrous oxide emissions are also largely attributable to agricultural practices and soil management. CO_2 sinks include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution and are two of the largest reservoirs of CO_2 sequestration. Other human-generated GHGs include fluorinated gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, which have much higher potential for heat absorption than CO_2 and are byproducts of certain industrial processes.

CO_2 is the reference gas for climate change, as it is the GHG emitted in the highest volume and is a dominant contributor to anthropogenic global warming. The effect of each GHG on global warming is the product of the mass of their emissions and their global warming potential (GWP). The GWP of a gas indicates how much the gas is predicted to contribute to global warming relative to the amount of warming that would be predicted to be caused by the same mass of CO_2. In emissions inventories, GHG emissions are typically reported as metric tons of carbon dioxide equivalent ($MTCO_2e$). Carbon dioxide equivalent (CO_2e) is calculated as the product of the mass emitted of a given GHG and its specific GWP. Methane and nitrous oxide have much higher GWPs than CO_2, but CO_2 is emitted in higher quantities and accounts for the majority of GHG emissions in CO_2e, both from commercial developments and from human activity in general.

Existing Conditions for Greenhouse Gas Emissions for the Proposed Project Area

Agricultural practices, dominant in the proposed Project area, remain a significant source of GHG emissions. CARB estimates that agriculture is responsible for the emissions of 32 million $MTCO_2e$, making it the fifth largest source of California's GHG emissions (LAO 2021). Agricultural emissions represent the sum of emissions from agricultural energy use (from pumping and farm equipment), agricultural residue burning, agricultural soil management (the practice of using fertilizers, soil amendments, and irrigation to optimize crop yield), enteric fermentation (fermentation that takes place in the digestive system of animals), cultivation of histosols (soils composed mainly of organic matter), manure management, and rice cultivation. About 70 percent of the emissions from the agricultural sector are methane emissions from livestock (LAO 2021).

3.5.3 Regulatory Setting

Federal and State regulations discussed in Section 3.4.3, "Regulatory Setting," of Section 3.4, "Air Quality and Greenhouse Gas Emissions," of the Final SRGO Program EIR were reviewed for relevance to the proposed Project and are identified below as appropriate, along with any applicable new or updated policies since certification of the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.4.3, pp. 3.4-10 through 3.4-17). As a statewide, program-level document, the Final SRGO Program EIR did not discuss regional and local regulations; this Draft SEIR provides project-specific regional and local goals and policies to supplement the regulatory setting information provided in the Final SRGO Program EIR.

Federal

U.S. Environmental Protection Agency Programs and Standards

EPA is in charge of implementing national air quality programs. EPA's air quality mandates are drawn primarily from the federal CAA. As required by the CAA, EPA established primary and secondary NAAQS for the following criteria air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The primary standards protect public health and the secondary standards protect public welfare. As discussed previously, only ozone, PM_{10}, and $PM_{2.5}$ are pollutants of concern for purposes of the proposed Project because of their status in Yolo County as nonattainment pollutants. **Table 3.5-3** lists the current NAAQS, along with the current CAAQS discussed later in this section, for the pollutants of concern.

The CAA also requires each state to prepare an air quality control plan, referred to as a "state implementation plan," for areas that do not attain the NAAQS. Table 3.5-1 lists the NAAQS nonattainment status in Yolo County. The state implementation plans comprise air quality plans from each of the state's air districts; these plans include strategies to reduce air pollution and achieve attainment of standards.

TABLE 3.5-3
NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standard	National Standard
Ozone	1 hour	0.09 ppm	—
	8 hours	0.070 ppm	0.070 ppm
	Annual average	—	0.030 ppm
Respirable Particulate Matter (PM_{10})	24 hours	50 µg/m^3	150 µg/m^3
	Annual average	20 µg/m^3	—
Fine Particulate Matter ($PM_{2.5}$)	24 hours	—	35 µg/m^3
	Annual average	12 µg/m^3	12.0 µg/m^3

NOTES: µg/m^3 = micrograms per cubic meter; $PM_{2.5}$ = particulate matter that is 2.5 microns or less in diameter; PM_{10} = particulate matter that is 10 microns or less in diameter; ppm = parts per million

SOURCE: CARB 2025d

Air quality regulations also cover TACs, which federal agencies refer to as HAPs. In general, for TACs that cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. Instead, EPA and (in California) CARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum available control technology or best available control technology for toxics to limit emissions. These are discussed further below.

"Endangerment" and "Cause or Contribute" Findings

The U.S. Supreme Court held that EPA must consider the regulation of motor vehicle GHG emissions. In *Massachusetts v. Environmental Protection Agency et al.* 127 S. Ct. 1438 (2007), 12 states and cities, including California, together with several environmental organizations sued to require EPA to regulate GHGs as pollutants under the Clean Air Act, or CAA. The Supreme Court ruled that GHGs fit within the CAA's definition of a pollutant and that EPA had the authority to regulate GHGs.

On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- **Endangerment Finding:** The current and projected concentrations of the six key GHGs—CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

These findings did not, by themselves, impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

Vehicle Emissions Standards

In 1975, Congress enacted the Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to this law, EPA and the National Highway Traffic Safety Administration are responsible for establishing additional vehicle standards. In August 2012, standards were adopted for model years 2017–2025 for passenger cars and light-duty trucks. The standards required vehicles to achieve both 54.5 miles per gallon (mpg) (if GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO_2 per mile by 2025. According to EPA, GHG emissions from a model year 2025 vehicle would be half the emissions from a model year 2010 vehicle (EPA 2012). Notably, the State of California harmonized its vehicle efficiency standards through 2025 with the federal standards.

In January 2017, EPA issued its Mid-Term Evaluation of the GHG emissions standards, finding that it would be practical and feasible for automakers to meet the model year 2022–2025 standards through a number of existing technologies. In August 2018, EPA revised its 2017 determination, issuing a proposed rule to maintain the 2020 Corporate Average Fuel Economy and CO_2 standards for model years 2021–2026. The estimated Corporate Average Fuel Economy and CO_2 standards for model year 2020 were 43.7 mpg and 204 grams of CO_2 per mile for passenger cars and 31.3 mpg and 284 grams of CO_2 per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012. On February 7, 2019, the State of California, joined by 16 other states and the District of Columbia, filed a petition challenging EPA's proposed rule to revise the vehicle emissions standards, arguing that EPA had reached erroneous conclusions about the feasibility of meeting the existing standards. In August 2020, a decision was made by the Second Circuit Court of Appeals to vacate the rule, and EPA's existing Corporate Average Fuel Economy standards will remain unchanged.

State

Criteria Air Pollutants

CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California, and for implementing the California Clean Air Act, or CCAA. The CCAA, adopted in 1988, required CARB to establish CAAQS. CARB has established standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particulate matter in addition to the above-mentioned federal criteria air pollutants. However, these pollutants are no longer a concern in California

and are not monitored by CARB in its annual monitoring network plan (CARB 2024). Therefore, they will not be discussed further (CARB 2025d).

Table 3.5-1 lists the CAAQS nonattainment status for Yolo County. In most cases, the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health-effects studies considered during the standard-setting process and the interpretation of those studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals. The CCAA requires that all local air districts in the state endeavor to achieve and maintain the CAAQS by the earliest date practical. The law specifies that local air districts should focus attention on reducing the emissions from transportation and areawide emission sources and provides air districts with the authority to regulate indirect sources.

Toxic Air Contaminants

TACs are regulated in California primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807, Chapter 1047, Statutes of 1983) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588, Chapter 1252, Statutes of 1987). AB 1807 established a formal procedure for CARB to designate substances as TACs. Research, public participation, and scientific peer review are required before CARB can designate a substance as a TAC. See additional information on TACs in the "Existing Conditions for Air Quality for the Proposed Project Area" section above.

Off-Road Diesel Vehicle Emissions

The CARB In-Use Off-Road Diesel-Fueled Fleets Regulation (California Code of Regulations Title 13, Section 2449 et seq.) applies to all self-propelled off-road diesel vehicles 25 horsepower or greater used in California and most two-engine vehicles (except on-road two-engine sweepers). This includes vehicles that are rented or leased (rental or leased fleets). CARB's goal is to gradually reduce emissions from the statewide construction vehicle fleet through turnover, repowering, or retrofits. CARB groups emissions requirements for new engines into tiers based on the year in which the engine was built (CARB 2025e). The emissions requirement tiers range from Tier 0, the most polluting, to Tier 4 Final, the least polluting. In 2014, new engines were required to meet Tier 4 Final standards, which to date are the most stringent emissions standards for off-road vehicle engines.

The goal of the In-Use Off-Road Diesel-Fueled Fleets Regulation is to reduce exhaust emissions of DPM (PM_{10} and $PM_{2.5}$) and NO_X from off-road heavy-duty diesel vehicles in California (CARB 2025f). This regulation also limits idling to five minutes, requires a written idling policy for larger vehicle fleets, and requires fleet operators to provide information about their engines to CARB and label vehicles with a CARB-issued vehicle identification number.

California Environmental Quality Act Guidelines—Greenhouse Gas Emissions

On March 18, 2010, the California Natural Resources Agency adopted amendments to the CEQA Guidelines to include provisions for evaluating the significance of GHG emissions. The amended guidelines give the lead agency leeway in determining whether GHG emissions should be evaluated quantitatively or qualitatively, but they require that the following factors be considered when assessing the significance of impacts from GHG emissions (CEQA Guidelines Section 15064.4):

- The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting.

- Whether the project emissions exceed a threshold of significance that the lead agency determines apply to the project.
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The amended CEQA Guidelines also specify that lead agencies must analyze potentially significant impacts associated with placing projects in locations susceptible to hazardous conditions (e.g., floodplains, coastlines, and wildfire risk areas), including those that could be affected by climate change (CEQA Guidelines Section 15126.2[a]).

Furthermore, the guidelines suggest measures to mitigate GHG emissions, including implementing project features to reduce emissions, obtaining carbon offsets to reduce emissions, or sequestering GHGs.

Assembly Bill 32 and Senate Bill 32

In 2006, the Legislature enacted the California Global Warming Solutions Act of 2006 (AB 32), which created a comprehensive, multi-year program to reduce GHG emissions in California (CARB 2018). AB 32 required CARB to develop a climate change scoping plan (Scoping Plan) describing the approach to achieve the goal of reducing emissions to 1990 levels by 2020. The Scoping Plan was first approved by CARB in 2008 and must be updated at least every 5 years. This reduction was to be accomplished by enforcing a statewide cap on GHG emissions that would be phased in starting in 2012. The Scoping Plan is described in more detail below.

The emissions limit under the California Global Warming Solutions Act of 2016—Senate Bill (SB) 32—expanded upon AB 32 to reduce GHG emissions. It established a new climate pollution reduction target of 40 percent below 1990 levels by 2030 and included provisions to ensure that the benefits of State climate policies would reach disadvantaged communities. SB 32 was contingent on the passage of AB 197, which increased legislative oversight of CARB, and specified that CARB must report to the Legislature. AB 197 was also enacted and was signed into law in 2016.

Climate Change Scoping Plan

As mentioned previously, a specific requirement of AB 32 was to prepare a Scoping Plan for achieving the maximum technologically feasible and cost-effective reduction of GHG emissions by 2020. CARB developed and approved the initial Scoping Plan in 2008, outlining the regulations, market-based approaches, voluntary measures, policies, and other emissions reduction programs that would be needed to meet the 2020 statewide GHG emissions limit and initiate the transformations needed to achieve the State's long-range climate objectives (CARB 2008). CARB approved the Final 2013 Scoping Plan Update in May 2014. In December 2017, CARB approved the *2017 Climate Change Scoping Plan Update*, which outlines the proposed framework of action for achieving the 2030 target of a 40 percent reduction in GHG emissions relative to 1990 levels (CARB 2017).

The more recent *2022 Scoping Plan for Achieving Carbon Neutrality* lays out a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045, as directed by AB 1279 (CARB 2022). The actions and outcomes in the plan will achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-

lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon.

California Department of Water Resources Greenhouse Gas Emissions Reduction Plan

The Greenhouse Gas Emissions Reductions Plan (GGERP) was established by DWR in 2012 as a guide for decision-making regarding energy use and GHG emissions. The GGERP was first updated in 2020 to stay consistent with changes in legislation established by SB 32, SB 100, and Executive Order B-18-12, Executive Order B-30-15, and Executive Order B-55-18 (DWR 2024). In January 2024, DWR adopted GGERP updates to further reduce emissions and to stay consistent with reduction targets established by SB 1020 and SB 1203, and Executive Order S-3-05 and AB 32 (DWR 2024). DWR also adopted the Initial Study/Negative Declaration prepared for the GGERP in accordance with CEQA's public review process. The GGERP provides estimates of historical (back to 1990), current, and future GHG emissions related to operations, construction, maintenance, and business practices (e.g., building-related energy use). The GGERP specifies 2020 and 2050 emission reduction goals and identifies a list of GHG emissions reduction measures to achieve these goals. The GGERP also sets thresholds of significance for construction emissions that represent levels of emissions that would adversely affect DWR's ability to reach its emissions reduction goals (DWR 2024).

Regional and Local

The following regional and local policies relevant to the proposed Project based on location, project type, and/or environmental setting have been included for context; however, DWR, as a State agency, is not subject to local ordinances or policies.

Yolo-Solano Air Quality Management District Air Quality Management Plans

YSAQMD regulates air quality through its planning and review activities. The district has permitting authority over most types of stationary emission sources; it can require operators of stationary sources to obtain permits and can impose emission limits, set fuel or material specifications, and establish operational limits to reduce air pollutant emissions (YSAQMD 2022).

Yolo County is designated as a nonattainment area for the federal 1-hour ozone, State 1-hour ozone, State 8-hour ozone, and State PM_{10} standards. As a result, YSAQMD is required to prepare air quality plans under the federal CAA and CCAA to meet the NAAQS and CAAQS for these pollutants. Maintenance plans are required for attainment areas that had previously been designated nonattainment to ensure the continued attainment of the standards.

Current air quality plans for the Yolo County include the following:

- *Sacramento Regional 2015 NAAQS 8-Hour Ozone Attainment & Reasonable Further Progress Plan* (YSAQMD 2023).
- *$PM_{2.5}$ Implementation/Maintenance Plan and Redesignation Request* (YSAQMD 2013).

The air quality plans include emissions inventories that identify sources of air pollutants, evaluations for the feasibility of implementing potential opportunities to reduce emissions, sophisticated computer modeling to estimate future levels of pollution, and a strategy for further reducing air pollution.

Yolo County 2030 General Plan

The Yolo County 2030 General Plan (Yolo County 2009) outlines goals and policies aimed at improving air quality and reducing GHG emissions. These policies promote regional air quality and GHG objectives through effective transportation management, sustainable economic development, and sound land use planning, including the use of detailed project-specific technical information. The General Plan also encourages the implementation of agricultural best management practices (BMPs) and YSAQMD-recommended BMPs to reduce emissions from agricultural and construction activities. Relevant goals and policies from this planning document include the following:

Goal CI-4: Environmental Impacts. Minimize environmental impacts caused by transportation.

Policy CI-4.2: Support regional air quality and greenhouse gas objectives through effective management of the county's transportation system.

Goal AG-3: Healthy Farm Economy. Promote a healthy and competitive farm economy to expand the County's agricultural base.

Policy AG-3.21: Promote best management practices in agricultural operations (including animal operations) to reduce emissions, conserve energy and water, and utilize alternative energy source.

Goal CO-6: Air Quality. Improve air quality to reduce the health impacts caused by harmful emissions.

Policy CO-6.1: Improve air quality through land use planning decisions.

Policy CO-6.2: Support local and regional air quality improvement efforts.

Policy CO-6.6: Encourage implementation of YSAQMD Best Management Practices, such as those listed below, to reduce emissions and control dust during construction activities:

- Water all active construction areas at least twice daily.
- Haul trucks shall maintain at least two feet of freeboard.
- Cover all trucks hauling soil, sand, and other loose materials.
- Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut-and-fill operations and hydroseed area.
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land.
- Plant vegetative ground cover in disturbed areas as soon as possible.
- Cover inactive storage piles.
- Sweep streets if visible soil material is carried out from the construction site.
- Treat accesses to a distance of 100 feet from the paved road with a 6 to 12 inch layer of wood chips or mulch.
- Treat access to a distance of 100 feet from the paved road with a 6-inch layer of gravel.

3.5.4 Impact Analysis and Mitigation Measures

Significance Criteria

In accordance with Appendix G of the CEQA Guidelines, an impact related to air quality and GHG emissions is considered significant if the proposed Project would do any of the following:

- Conflict with or obstruct implementation of an applicable air quality plan.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard.
- Expose sensitive receptors to substantial pollutant concentrations.
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Methodology and Assumptions

As discussed in Chapter 1, "Introduction," the proposed Project is a "restoration project" as defined in Section V of the SRGO (State Water Board 2022a: Section V, p. 2); therefore, this Draft SEIR supplements and incorporates by reference the Final SRGO Program EIR, including its appendices (State Water Board 2022b). As provided by CEQA Guidelines Section 15163(b), a supplement to an EIR needs to contain only the information necessary to make the previous EIR adequate for the project as revised. This means that only those project-specific activities that would introduce new significant environmental effects or cause a substantial increase in the severity of significant effects identified in the SRGO Program EIR need to be evaluated. Where existing information and analysis in the SRGO Program EIR is considered sufficient to evaluate the impacts of the proposed Project, no additional environmental review is required.

As further outlined in Chapter 1, this Draft SEIR incorporates by reference the general protection measures and species protection measures outlined in Final SRGO Program EIR Appendices E and F, which are intended to avoid and minimize impacts on sensitive resources. Consistent with the Final SRGO Program EIR, the impact analysis for each resource area assumes that applicable general protection measures and species protection measures would be implemented and enforced in the same way as mitigation measures, consistent with Section 15126.4 of the CEQA Guidelines, and that the proposed Project would be constructed and operated in compliance with relevant federal and State regulations and ordinances, as applicable. Therefore, if the analysis has determined that incorporating one or more general protection measures and/or species protection measures into the proposed Project would reasonably mitigate an impact, then the impact conclusion is less than significant. If the analysis has determined that an impact would remain significant after the incorporation of appropriate general protection measures and species protection measures, then mitigation measures from the Final SRGO Program EIR and/or project-specific mitigation measures have been recommended to further reduce the magnitude of the impact to less-than-significant levels. All mitigation measures are from the Final SRGO Program EIR unless specifically stated otherwise.

The following impact analysis considers the potential air quality and GHG impacts associated with implementation of the proposed Project. The impact analysis evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities.

For the evaluation of significance for air quality impacts, the *Handbook for Assessing and Mitigating Air Quality Impacts* has established emissions-based thresholds of significance for criteria air pollutants (YSAQMD 2007), which are shown in **Table 3.5-4**. As described previously, only ozone, PM_{10}, and $PM_{2.5}$ are pollutants of concern, given their status in Yolo County as nonattainment pollutants. YSAQMD has the same significance thresholds for construction-related and operational emissions and recommends evaluating impact significance for these categories separately. These thresholds of significance are based on a calendar-year basis, although construction emissions are assessed on a rolling 12-month period.

TABLE 3.5-4
YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT AIR QUALITY THRESHOLDS OF SIGNIFICANCE—CRITERIA AIR POLLUTANTS

Pollutant	Construction-Related Emissions	Operational Emissions
ROG	10 (tpy)	10 (tpy)
NO_X	10 (tpy)	10 (tpy)
PM_{10}	80 (lb/day)	80 (lb/day)
CO	Violation of a State ambient air quality standard for CO	Violation of a State ambient air quality standard for CO

Notes: CO = carbon monoxide; lb/day = pounds per day; NO_X = oxides of nitrogen; PM_{10} = particulate matter that is 10 microns or less in diameter; ROG = reactive organic gases; tpy = tons per year

Source: YSAQMD 2007: Section 3.1, Table 1

Emission thresholds for ROG and NO_X are set in tons per year and emission thresholds for PM_{10} are set in pounds per day, while the significance thresholds for CO are the State ambient air quality standards of 20 ppm for the 1-hour average and 9.0 ppm for the 8-hour average. Although YSAQMD has not set a threshold for $PM_{2.5}$ emissions, the $PM_{2.5}$ emissions from construction (in pounds per day) are presented in the analysis below for informational purposes only.

YSAQMD has not specified thresholds for GHG emissions, and the district recommends discussing GHGs in a qualitative manner in environmental reports and documents (YSAQMD 2007). In the absence of YSAQMD thresholds for GHG emissions, significance thresholds in DWR's GGERP will be used for the analysis of the proposed Project to determine impacts from GHG emissions. The thresholds established in the GGERP represent levels of GHG emissions that on their own have the potential to adversely affect DWR's ability to reach its reductions goals (DWR 2024). They are applicable to DWR projects that are considered to be "typical construction projects" and were developed based on the total GHG emissions from typical DWR projects in a calendar year (DWR 2024). The GGERP thresholds of significance are as follows (DWR 2024):

- If the proposed Project emits more than 25,000 metric tons (MT) CO_2e in total during the construction phase, or

- If the proposed Project emits more than 12,500 MT CO_2e in any single year of construction.

GHG emissions generated by the proposed Project would be in the form of CO_2e (based on the global warming potentials of methane and nitrous oxide compared to that of CO_2) from off-road construction equipment and construction vehicle trips.

The proposed Project's impacts fall into two categories: short-term impacts from construction and long-term impacts from project-constructed features and operations and maintenance activities.

Construction Activity

Two schedule scenarios were modeled for construction (see Appendix E to this Draft SEIR, "Tide's End Multibenefit Restoration Project Air Quality Modeling"). Scenario 1 would take place over two successive seasons, from April to November in both years, while Scenario 2 would take place from April to November over one season. Scenario 2 would cover all the same construction activity as Scenario 1, just condensed into one season rather than two. As shown in Table 2-6 in Chapter 2, "Project Description," there are six proposed Project elements that would each require various types of construction activities and equipment. Construction emissions for both air quality and GHG emissions were modeled for each element, categorized as follows:

- Site Access and Preparation.
- Tidal Wetland/Transition Zone.
- Floodplain Habitat.
- Managed Floodplain.
- Facilities Improvements.
- Habitat Finalization/Stabilization.

Construction activities for each proposed Project element would generate criteria air pollutants primarily from fuel combustion by construction equipment and vehicle trips for worker commutes, material delivery, and on-site hauling, and particulate matter from soil disturbance and site preparation (also known as "fugitive dust"). For worker commutes, California Emissions Estimator Model (CalEEMod) modeling assumes a default one-way trip length of 14 miles. CalEEMod bases this default value on trip length data for the local traffic analysis zone from the 2015 California Statewide Travel Demand Model (CalEEMod 2022).

Construction emissions were estimated using methodology consistent with CalEEMod Version 2022.1.1.29 and the on-road Emissions Factor (EMFAC) 2021 model. The results are summarized in **Table 3.5-6** and **Table 3.5-7**. Project-specific inputs for each proposed Project element included start and end dates and construction activities (e.g., demolition, vegetation clearing, dewatering). Construction activities are anticipated to occur between 7 a.m. and 6 p.m. 5 days a week. In addition, equipment types, quantities, engine tiers, and number of days to be used were provided for each element, along with the number of worker trips for Scenario 1. For Scenario 2, the number of equipment quantities and worker trips were doubled for the Tidal Wetland/Transition Zone, Floodplain Habitat, and Managed Floodplain elements, as those are the three elements that would have planned activity condensed into one season rather than occurring over two seasons. On-site construction equipment was modeled using Tier 4

engines, and a conservative value of 10 hours of use per day for equipment was applied based on the proposed Project's anticipated construction schedule for both scenarios. All cut and fill material would be moved and redistributed on-site using heavy-duty trucks. A conservative length of 3 miles per truck trip was assumed for proposed Project haul activity, based on the maximum length that a truck would have to travel across the proposed Project area.

Health Risk Assessment

The extent of exposure and any resulting health risks (e.g., cancer probability and chronic, non-cancer hazard index) is based on the amount of emissions, exposure duration, and characteristics of the receptors exposed. A health risk assessment conservatively assumes exposure of the most vulnerable receptors, ranging in age from a third-trimester fetus to early childhood.

The dose and proximity to which receptors are exposed are the primary factors affecting health risk from TACs. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance(s). According to the California Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on 9-year, 30-year, and/or 70-year exposure periods when assessing TACs (such as DPM) that have only cancer or chronic non-cancer health effects. However, such health risk assessments should be limited to the duration of the emissions-producing activities associated with the project. The effects of pollutant emissions diminish substantially with distance from the emissions point to the location of sensitive receptors. In general, if receptors are greater than 1,000 feet from the emissions source, a significant health risk impact would not be expected to occur (unless the emissions source is a large refinery, chemical plant, train depot, or other large facility).

The proposed Project would result in a short-term increase in TAC emissions during either construction scenario and minimal TAC emissions from the operation of diesel-powered vehicles. The main TAC of concern for the proposed Project is diesel exhaust particulate matter (i.e., DPM), a complex mixture of chemicals and particulate matter identified by CARB as a TAC with potential cancer and chronic non-cancer effects. In accordance with the California Office of Environmental Health Hazard Assessment's health risk guidance, the DPM analysis used PM_{10} emissions as a surrogate for DPM emissions. This is a conservative approach because DPM is a subset of PM_{10}, and therefore DPM emissions are expected to be lower (OEHHA 1998). Off-road construction equipment (e.g., excavators, loaders, graders), on-road diesel-fueled heavy-duty vehicles, and electrical generators used temporarily during construction would emit DPM. DPM emissions would occur to a lesser extent during operation than during construction activities, as more diesel-powered equipment would be used during construction.

Because of the low levels of emissions from construction equipment and operational activities, the short duration of equipment use during construction, and the distance from proposed Project elements to sensitive receptors, the potential health risk increases are discussed qualitatively below (see Impact 3.5-3). The impact discussion presents the impacts of DPM emissions generated by construction equipment and vehicles associated with the proposed Project on existing sensitive receptors near the various construction areas.

Pollutants Not Analyzed

Other Criteria Air Pollutants

As discussed previously, CO hot spots would not occur because vehicle trips associated with the proposed Project would not exceed 44,000 trips at any peak hour. Based on project-specific information, the maximum trip number would be approximately 80 trips per day, which would not trigger a CO hot spot in the area. Therefore, impacts related to CO would be less than significant and are not analyzed further.

Impacts and Mitigation Measures

Table 3.5-5 summarizes the impact conclusions presented in this section for reference.

TABLE 3.5-5
SUMMARY OF IMPACT CONCLUSIONS—AIR QUALITY

Impact Statement	Construction Activities	Constructed Restoration Elements	Operations, Monitoring, and Maintenance Activities
3.5-1: Implementation of the proposed Project could conflict with or obstruct implementation of an applicable air quality plan.	LTSG	LTSG	LTSG
3.5-2: Implementation of the proposed Project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard.	LTSG	LTSG	LTSG
3.5-3: Implementation of the proposed Project could expose sensitive receptors to substantial pollutant concentrations.	LTSG	LTSG	LTSG
3.5-4: Implementation of the proposed Project could result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	LTSG	LTSG	LTSG
3.5-5: Implementation of the proposed Project could result in an increase in GHG emissions that may have a significant impact on the environment.	LTS	LTS	LTS
3.5-6: Implementation of the proposed Project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.	LTS	LTS	LTS

NOTES: LTS = less than significant; LTSG = less than significant with implementation of general protection measures
SOURCE: Data compiled by Environmental Science Associates in 2025

Impact 3.5-1: Implementation of the proposed Project could conflict with or obstruct implementation of an applicable air quality plan.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities for restoration projects that could conflict with or obstruct implementation of an applicable air quality plan (see Final SRGO Program EIR: Section 3.4, pp. 3.4-1 through 3.4-34). Related to the proposed Project, the Final SRGO Program EIR evaluated the following construction activities: installation of infrastructure such as culverts, fish screens, and other water control structures to improve water management capabilities; removal of legacy structures; creation of depressions, berms, and

drainage features; and the installation of cofferdams during construction (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-19 and 3.4-20).

Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-20; see also Section 2.7.1, pp. 2-24 through 2-26). The Final SRGO Program EIR found that these activities could conflict with or obstruct an applicable air quality plan and could result in potentially significant and unavoidable impacts, as the specific project characteristics such as location and size of the project, construction characteristics, attainment status of the local air basin, and any applicable air quality plan were not known at the time (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-20).

To address the air pollutant emissions from construction activities, the Final SRGO Program EIR included the following general protection measures when applicable to a given project: GPM-6: Work Area and Speed Limits and GPM-12: Fugitive Dust Reduction (see Final SRGO Program EIR Section 3.4.4, p. 3.4-20).

As part of the State Water Board or a regional water board's issuance of a notice of applicability for a restoration project under the Order, compliance with *Mitigation Measure AIR-1: Minimize Conflicts with Applicable Air Quality Plans* would be required when applicable to a given project. Implementation of this mitigation measure would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

The Final SRGO Program EIR found this impact to be significant and unavoidable, even with implementation of the general protection and mitigation measures, because the extent and location of actions under the Order were not known, which made it impossible to conclude that the mitigation measure would reduce significant impacts to a less-than-significant level in all cases (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-23).

YSAQMD has adopted the *Sacramento Regional 2015 NAAQS 8-Hour Ozone Attainment & Reasonable Further Progress Plan* (YSAQMD 2023) for ozone attainment planning and the *$PM_{2.5}$ Implementation/ Maintenance Plan and Redesignation Request* (YSAQMD 2013) for $PM_{2.5}$ planning. As discussed below in Impact 3.5-2, construction-related emissions would be well below thresholds of significance for criteria pollutants. The construction contractor for the proposed Project would implement general protection measures GPM-6 and GPM-12 to minimize emissions from construction activities. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection measure. Construction of the proposed Project is not anticipated to violate any air quality standards, contribute substantially to an air quality violation, or result in a short-term cumulatively considerable net increase of nonattainment pollutants; therefore, the proposed Project would not conflict with or obstruct implementation of the applicable air quality plan. Impacts related to conflicts of Project construction with an applicable air quality plan would be ***less than significant with implementation of general protection measures***. Because this impact would be less than significant, Mitigation Measure AIR-1 is not applicable.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-19 through 3.4-20), and the Final SRGO Program EIR adequately addresses construction impacts of the proposed Project related to consistency with applicable air quality plans.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of constructed features and operations, monitoring, and maintenance of those facilities that could conflict with or obstruct implementation of an applicable air quality plan. Related to the proposed Project, the Final SRGO Program EIR evaluated operations, monitoring, and maintenance activities necessary to support successful establishment of natural conditions, including the following: conducting mechanical and chemical weed control; installing fencing and signage; adjusting grading or soils composition; and installing and operating monitoring equipment such as groundwater wells, flow gages, depth gages, cameras, and stakes (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-23; see also Section 2.7.1, p. 2-27).

The Final SRGO Program EIR found that emissions from these activities would not violate an air quality standard, contribute substantially to an air quality violation, or result in a short-term cumulatively considerable net increase of nonattainment pollutants, and therefore would not conflict with or obstruct implementation of the applicable air quality plan. Therefore, impacts would be less than significant (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-23).

The Final SRGO Program EIR stated that implementation of general protection measures GPM-6 and GPM-12 for construction activities would further reduce impacts from operations, monitoring, and maintenance of those facilities, when applicable to a given project. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protect Measures Applicable to the Proposed Project," for a complete description of each general protection measure.

For the proposed Project, conservation management could require operations and maintenance activities to inspect project features, monitor program effectiveness, or implement ongoing water management practices similar to existing conditions. This would not generate a substantial increase in management activities, and such activities would be required only intermittently and would result in a minor increase in motor vehicle trips compared to existing conditions. These trips would occur infrequently and would have negligible emissions, and they would not conflict or obstruct the implementation of an applicable air quality plan. No mitigation measures are required to maintain constructed restoration elements or to perform long-term operations, monitoring, and maintenance activities.

Consistent with projects analyzed under the Final SRGO Program EIR, the constructed restoration elements and facilities and the routine operations and maintenance of constructed facilities (whether natural or artificial) are not anticipated to violate an air quality standard, contribute substantially to an air quality violation, or result in a short-term cumulatively considerable net increase of nonattainment pollutants. In addition, general protection measures GPM-6 and GPM-12 would be followed to further reduce the impacts of any ground-disturbing activities associated with operations, monitoring, and

maintenance for the proposed Project related to work area and speed limits and dust suppression (see Final SRGO Program EIR: Section 4.6.3, pp. 4-13 through 4-14). Therefore, this impact would be ***less than significant with implementation of general protection measures***.

Operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-23), and the Final SRGO Program EIR adequately addresses construction impacts of the proposed Project associated with consistency with applicable air quality plans.

Impact 3.5-2: Implementation of the proposed Project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State ambient air quality standard.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities for restoration projects related to compliance with applicable air quality standards. Related to the proposed Project, the Final SRGO Program EIR evaluated the following construction activities: installation of infrastructure such as culverts, fish screens, and other water control structures to improve water management capabilities; removal of legacy structures; creation of depressions, berms, and drainage features; and the installation of cofferdams during construction. Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-24).

Implementation of general protection measures GPM-6 and GPM-12 would be followed, when applicable to a given project (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-24). In addition, as part of the State Water Board or a regional water board's issuance of a notice of applicability for a restoration project under the Order, compliance with *Mitigation Measure AIR-1: Minimize Conflicts with Applicable Air Quality Plans* would be required, when applicable to a given project. Implementation of this mitigation measure would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

The Final SRGO Program EIR found that construction activities could result in significant and unavoidable impacts related to a cumulatively considerable net increase of criteria pollutants, because specific characteristics such as location and size of restoration projects covered under the Order, construction characteristics, and local thresholds of significance were not known at the time (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-24 and 3.4-25).

Emissions from construction of the proposed Project were estimated as described above, for both Scenario 1 and Scenario 2. The Scenario 2 emissions are higher because this scenario was intended to provide a worst-case result should all construction activities be condensed into one construction season (not two construction seasons, separated by 6 months of no activity). The results of the construction emissions modeling are summarized in **Table 3.5-6** and **Table 3.5-7** and compared to YSAQMD

thresholds of significance for criteria pollutants. In addition, general protection measures GPM-6 and GPM-12 would be implemented to further reduce the impacts of ground-disturbing activities for the proposed Project related to work area and speed limits and dust suppression. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection measure. As shown in Tables 3.5-6 and 3.5-7, emissions from construction activities would be well below their respective thresholds of significance for criteria pollutants for each scenario, and the impact would be ***less than significant with implementation of general protection measures***. Because this impact would be less than significant, Mitigation Measure AIR-1 is not applicable.

TABLE 3.5-6
CONSTRUCTION EMISSIONS SUMMARY—SCENARIO 1

Construction Year	ROG (tpy)	NO_X (tpy)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Year 1	0.18	1.12	0.38	0.29
Year 2	0.15	1.06	0.32	0.24
YSAQMD Thresholds	10	10	80	NA
Exceeds threshold?	No	No	No	NA

NOTES: NA = not applicable; NO_X = oxides of nitrogen; $PM_{2.5}$ = particulate matter that is 2.5 microns or less in diameter; PM_{10} = particulate matter that is 10 microns or less in diameter; ROG = reactive organic gases; tpy = tons per year; YSAQMD = Yolo-Solano Air Quality Management District

SOURCE: Data compiled by Environmental Science Associates in 2025

TABLE 3.5-7
CONSTRUCTION EMISSIONS SUMMARY—SCENARIO 2

Construction Year	ROG (tpy)	NO_X (tpy)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Year 1	0.58	3.82	1.16	0.91
YSAQMD Thresholds	10	10	80	NA
Exceeds threshold?	No	No	No	NA

NOTES: lb/day = parts per day; NA = not applicable; NO_X = oxides of nitrogen; $PM_{2.5}$ = particulate matter that is 2.5 microns or less in diameter; PM_{10} = particulate matter that is 10 microns or less in diameter; ROG = reactive organic gases; tpy = tons per year; YSAQMD = Yolo-Solano Air Quality Management District

SOURCE: Data compiled by Environmental Science Associates in 2025

Construction activities for the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-23 through 3.4-25), and the Final SRGO Program EIR adequately addresses construction impacts of the proposed Project associated with the contribution to existing nonattainment conditions.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR found that activities related to constructed facilities and operations and maintenance of those facilities would not be expected to result in a cumulatively considerable net increase of any criteria pollutant for which a project region is nonattainment under an applicable federal or State

ambient air quality standard, and impacts would be less than significant. The SRGO Program EIR stated that general protection measures GPM-6 and GPM-12 would be followed to further reduce the impacts of ground-disturbing operations, monitoring, and maintenance activities (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-25).

As discussed above under Impact 3.5-1, trips associated with the restoration elements of operations, monitoring, and maintenance would occur infrequently, and these trips would have negligible emissions that would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard.

In addition, general protection measures GPM-6 and GPM-12 would be followed to further reduce the impacts of any ground-disturbing activities associated with operations, monitoring, and maintenance for the proposed Project related to work area and speed limits and dust suppression. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection measure. Any activities associated with operations, monitoring, and maintenance would be minimal when compared to activities required during the construction phase of the proposed Project; therefore, it is anticipated that operational emissions would be less than construction emissions, which are projected to be well below the YSAQMD threshold. Implementation of general protection measures would reduce the contribution of the proposed Project's operations, monitoring, and maintenance activities to significant cumulative impacts on air quality to less than cumulatively considerable because they would reduce the effects by limiting speed limits in work areas and reduce fugitive dust. Because of the implementation of the general protection measures and a limited increase in activities associated with operations, monitoring, and maintenance, such activities would not be anticipated to result in a considerable increase of criteria pollutants that would exceed YSAQMD's thresholds for operational emissions. This impact would be ***less than significant with implementation of general protection measures***. Because this impact would be less than significant, Mitigation Measure AIR-1 is not applicable.

Operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-25), and the Final SRGO Program EIR adequately addresses operations, monitoring, and maintenance impacts of the proposed Project associated with the contribution to existing nonattainment conditions.

Impact 3.5-3: Implementation of the proposed Project could expose sensitive receptors to substantial pollutant concentrations.

Effects of Construction Activities

The Final SRGO Program EIR evaluated construction activities for covered restoration projects (as described under Impact 3.5-2) that could expose sensitive receptors to substantial pollutant concentrations from construction emissions. The analysis found that these activities could result in potentially significant and unavoidable impacts, as the specific project characteristics such as the location and size of the project, construction characteristics, locations of surrounding sensitive receptors, and levels of air pollutant emissions were not known at the time (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-27 and 3.4-28).

The Final SRGO Program EIR stated that general protection measures GPM-6 and GPM-12 would be required, when applicable to a given project (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-20). In addition, as part of the State Water Board or a regional water board's issuance of a notice of applicability for a restoration project under the Order, compliance with *Mitigation Measure AIR-1: Minimize Conflicts with Applicable Air Quality Plans* and *Mitigation Measure AIR-2: Minimize Construction Air Pollutant Emissions* would be required when applicable to a given project. Implementation of these mitigation measures would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

The Final SRGO Program EIR found that construction activities could result in significant and unavoidable impacts because the extent and location of projects covered under the Order were not known at the time (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-29).

The nearest and only sensitive receptor to the proposed Project area is a residence located approximately 0.7 mile (3,700 feet) east of the property boundary, along Z Line Road. During construction activities, the use of heavy-duty, diesel-fueled construction equipment would generate TAC emissions in the form of DPM. However, construction activity would be temporary, and emissions under both Scenario 1 and Scenario 2 would be minimal as shown in Tables 3.5-6 and 3.5-7. Construction activity would be staggered by each proposed Project element so that not all construction activity would be happening at the same time. Therefore, no one receptor would be exposed to DPM emissions for the full duration of construction. In addition, general protection measures GPM-6 and GPM-12 would be followed to further reduce the impacts of any ground-disturbing activities associated with the proposed Project's construction activities related to work area and speed limits and dust suppression. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection measure. Because of the intermittent duration of construction activity, the low levels of emissions, and the distance to the closest sensitive receptor, health risks that would result from construction-related DPM emissions would be minimal and the impact would be ***less than significant with implementation of general protection measures***. Because this impact would be less than significant, Mitigation Measures AIR-1 and AIR-2 are not applicable to the proposed Project.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-27 through 3.4-29), and the Final SRGO Program EIR adequately addresses construction impacts of the proposed Project associated with exposure of sensitive receptors to substantial pollutant concentrations.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of constructed features and operations and maintenance of those facilities that could expose sensitive receptors to substantial pollutant concentrations from construction emissions. Related to the proposed Project, the Final SRGO Program EIR evaluated operations, monitoring, and maintenance activities necessary to support successful establishment of natural conditions and support the functionality of artificial/constructed infrastructure, including conducting mechanical and chemical weed control;

installing fencing and signage; adjusting grading or soils composition; and installing and operating monitoring equipment such as groundwater wells, flow gages, depth gages, cameras, and stakes. The Final SRGO Program EIR found that, given the temporary and intermittent nature of the impacts and the dissipation of pollutant concentrations, such emissions would be unlikely to affect a substantial number of people and thus would result in a less-than-significant impact (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-29).

The SRGO Program EIR stated that general protection measures GPM-6 and GPM-12 would be followed to reduce the impacts of ground-disturbing operations, monitoring, and maintenance activities for restoration projects permitted under the Order related to work area and speed limits and dust suppression.

For the proposed Project, conservation management actions could require operations and maintenance activities to inspect project restoration elements, monitor program effectiveness, or implement ongoing water management practices similar to existing conditions to support waterfowl in the managed wetland areas and to support rice production in the managed floodplain agriculture areas. However, these activities would be required only intermittently and would result in a minor increase in TACs from heavy-duty vehicle trips. These trips would occur infrequently and would have negligible emissions.

Consistent with projects analyzed under the Final SRGO Program EIR, constructed features and facilities and the routine operations, monitoring, and maintenance of constructed facilities (whether natural or artificial) are not anticipated to expose sensitive receptors to substantial pollutant concentrations. General protection measures GPM-6 and GPM-12 would be followed to further reduce the less-than-significant impacts of ground-disturbing operations and maintenance activities related to work area and speed limits and dust suppression. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection measure. Therefore, the proposed Project would be consistent with the impacts discussed in the Final SRGO Program EIR and this impact would be ***less than significant with implementation of general protection measures***.

Operations and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-29 and 3.4-30), and the Final SRGO Program EIR adequately addresses operations, monitoring, and maintenance impacts of the proposed Project associated with exposure of sensitive receptors to substantial pollutant concentrations.

Impact 3.5-4: Implementation of the proposed Project could result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Effects of Construction Activities, Constructed Restoration Elements, and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR found impacts to be less than significant given the temporary and intermittent nature of the impacts, and because with the dissipation of odors, objectionable odors are unlikely to affect a substantial number of people (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-25 through 3.4-27). To further reduce odor emissions from construction activities, the Final SRGO Program EIR included the following general protection measure, when applicable to a given project: IWW-13: Dredging Operations and Dredging Materials Reuse Plan (see Final SRGO Program EIR: Section 3.4.4,

p. 3.4-26). Consistent with projects analyzed under the Final SRGO Program EIR, proposed Project construction activities, constructed restoration elements, and the routine operations, monitoring, and maintenance of constructed facilities (whether natural or artificial) are not anticipated to result in other emissions such as those leading to odors that could adversely affect a substantial number of people. The proposed Project's construction activities may create temporary odors from the combustion of diesel fuel from the required equipment. However, construction would not occur in one location for an extended period of time and odorous emissions would cease at the conclusion of construction. For the proposed Project, conservation management actions could require operations and maintenance activities to inspect project features; monitor program effectiveness; or implement ongoing water management practices similar to existing conditions to support waterfowl in the managed wetland areas and rice production in the managed floodplain agriculture areas. However, these activities would be required only intermittently and would result in a minor increase in motor vehicle trips.

Any odorous emissions would be intermittent and would dissipate from the source rapidly over a short distance, the nearest receptor is located 0.7 mile away, and the land use does not fall under any category that is identified as an odor source. In addition, general protection measure IWW-13 would be implemented to further reduce odorous emissions from construction activities. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection measure. Therefore, the proposed Project would be consistent with the impacts discussed in the Final SRGO Program EIR and this impact would be ***less than significant with implementation of general protection measures***.

Construction and operations and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-25 through 3.4-27), and the Final SRGO Program EIR adequately addresses construction and operations, monitoring, and maintenance impacts associated with odorous emissions.

Impact 3.5-5: Implementation of the proposed Project could result in an increase in GHG emissions that may have a significant impact on the environment.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities for restoration projects that could result in an increase in GHG emissions that may have a significant impact on the environment (see Final SRGO Program EIR: Section 3.4, pp. 3.4-1 through 3.4-34). Relevant to the proposed Project, the Final SRGO Program EIR evaluated construction activity from construction equipment, trucks, worker vehicles, and dredging equipment (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-29 and 3.4-31).

Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials (see Final SRGO Program EIR: Section 2.7.1, pp. 2-24 through 2-26). The Final SRGO Program EIR found that these activities could result in an increase in GHG emissions that may have a significant impact on the environment and could result in potentially significant and unavoidable

impacts, due to the fact that specific project characteristics such as location and size of the project, and construction characteristics were not known (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-30).

The Final SRGO Program EIR found this impact to be significant and unavoidable, even with implementation of applicable mitigation measures, such as *Mitigation Measure AIR-3: Minimize GHG Emissions*, because the extent and location of actions under the Order were not known, which made it impossible to conclude that the mitigation measure would reduce significant impacts to a less-than-significant level in all cases (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-32).

As stated above, YSAQMD does not recommend quantitative significance thresholds for the analysis of the impact of a project's GHG emissions on the environment. In the absence of thresholds of significance for GHG emissions established by YSAQMD, the analysis uses DWR's GGERP and applicable thresholds of significance outlined in the plan to determine the proposed Project's impact from GHG emissions.

DWR prepared the GGERP as a "Plan for the Reduction of Greenhouse Gas Emissions," which serves the purposes of CEQA Guidelines Section 15183.5. That section provides that such a document, which must meet certain specified requirements, "may be used in the cumulative impacts analysis of later projects." The GGERP specifies emission reduction goals and identifies emission reductions measures that can be implemented to meet the reductions goals. CO_2, the reference gas for climate change, is a dominant contributor to global warming and is largely a byproduct of fossil fuel combustion. GHG emissions from the proposed Project would be generated primarily by diesel construction equipment. Because global climate change, by its very nature, is a global cumulative impact, an individual project's compliance with a qualifying GHG reduction plan may suffice to mitigate the project's incremental contribution to that cumulative impact to a level that is not "cumulatively considerable" (see CEQA Guidelines Section 15064[h][3]).

More specifically, "[l]ater project-specific environmental documents may tier from and/or incorporate by reference" the "programmatic review" conducted for the GHG emissions reduction plan (CEQA Guidelines Section 15183.5[A]). "An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project" (CEQA Guidelines Section 15183.5[b][2]).

Section 10 of the GGERP outlines the steps that each DWR project will take to demonstrate consistency with the GGERP. These steps include (1) analysis of GHG emissions from construction of the proposed project, (2) determination that the construction emissions from the project do not exceed the levels of construction emissions analyzed in the GGERP, (3) incorporation of DWR's project-level GHG emissions reduction strategies into the design of the project, (4) determination that the project does not conflict with DWR's ability to implement any of the "Specific Action" GHG emissions reduction measures identified in GGERP Section 11, and (5) determination that the project would not add electricity demands to the State Water Project system that could alter DWR's emissions reduction trajectory in such a way as to impede its ability to meet its emissions reduction goals.

GHG emissions from construction of the proposed Project were estimated for both Scenario 1 and Scenario 2. Scenario 1 would take place over two successive seasons, from April to November in both years, while Scenario 2 would take place from April to November in one season. The Scenario 2

emissions are higher because this scenario was intended to provide a worst-case result should all construction activities be condensed into one construction season (not two construction seasons, separated by 6 months of no activity). The results of the construction emissions modeling are summarized in **Table 3.5-8** and **Table 3.5-9** and compared to GGERP thresholds of significance for GHG emissions. As shown in Tables 3.5-8 and 3.5-9, GHG emissions from construction activities would be well below their respective thresholds of significance for each scenario.

The only project-level (PL) GHG emission reduction strategy in the GGERP is *CO-1 Construction BMPs and Regulations (PL).* The strategy focuses on incorporating construction best management practices (BMPs) as applicable and complying with the CARB Scoping Plan and the Off-Road Diesel Vehicle Regulation (DWR 2024). The proposed Project would support the 2022 Scoping Plan by using Tier 4 Final equipment for applicable construction equipment to help reduce construction emissions. The 2022 Scoping Plan also includes actions intended to help reduce GHG emissions that include improving water quantity and quality and support water infrastructure (CARB 2022); the proposed Project would align with these actions by restoring and enhancing tidal wetlands and floodplain habitat. The proposed Project would also be required to comply with the Off-Road Diesel Vehicle Regulation, as it is a State regulation. The proposed Project would not conflict with the implementation of GHG emission reduction measures and would not have any electricity demands in addition to existing conditions; thus, the proposed Project would not impede DWR's ability to meet its emission reduction target goals. Therefore, the impact would be ***less than significant***. Because this impact would be less than significant, SRGO Mitigation Measure AIR-3 is not applicable.

TABLE 3.5-8
CONSTRUCTION GREENHOUSE GAS EMISSIONS SUMMARY—SCENARIO 1

Construction Year	MT of CO_2e per year
Year 1	1,405
Year 2	1,180
GGERP Annual Thresholds	12,500
Exceeds threshold?	No

NOTES: CO_2e = carbon dioxide equivalent; GGERP = Greenhouse Gas Emissions Reductions Plan; MT = metric tons
SOURCE: Data compiled by Environmental Science Associates in 2025

TABLE 3.5-9
CONSTRUCTION GREENHOUSE GAS EMISSIONS SUMMARY—SCENARIO 2

Construction Year	MT of CO2e per year
Year 1	4,668
GGERP Annual Thresholds	12,500
Exceeds threshold?	No

NOTES: CO_2e = carbon dioxide equivalent; GGERP = Greenhouse Gas Emissions Reductions Plan; MT = metric tons
SOURCE: Data compiled by Environmental Science Associates in 2025

Construction activities for the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-30 through 3.4-32), and the Final SRGO Program EIR adequately addresses construction impacts of the proposed Project associated with the contribution to cumulative GHG emissions.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of constructed features and operations, monitoring, and maintenance of facilities that could conflict with or obstruct implementation of an applicable air quality plan. Relevant to the proposed Project, the Final SRGO Program EIR evaluated operations, monitoring, and maintenance activities necessary to support successful establishment of natural conditions, including the following: conducting mechanical and chemical weed control; installing fencing and signage; adjusting grading or soils composition; and installing and operating monitoring equipment such as groundwater wells, flow gages, depth gages, cameras, and stakes (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-32; see also Section 2.7.2, p. 2-27).

The Final SRGO Program EIR found that these activities would not result in substantial GHG emissions and would not conflict with State or local planning efforts to reduce GHG emissions. Therefore, impacts would be less than significant (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-32 through 3.4-33).

For the proposed Project, conservation management could require operations and maintenance activities to inspect project features, monitor program effectiveness, or implement ongoing water management practices similar to existing conditions. Such activities would be required only intermittently and would result in a minor increase in motor vehicle trips compared to existing conditions (see Final SRGO Program EIR: Section 3.17-4, p. 3.17-13). These trips would occur infrequently and would have negligible emissions and would not conflict with State or local planning efforts to reduce GHG emissions.
In addition, emissions associated with activities to support waterfowl in the managed wetland areas and rice production in the managed floodplain agriculture areas would be similar to existing conditions. (See Chapter 2, “Project Description,” Section 2.4.)

Consistent with projects analyzed under the Final SRGO Program EIR, the constructed restoration elements and facilities and the routine operations and maintenance of constructed facilities (whether natural or artificial) are not anticipated to result in an increase in GHG emissions that may have a significant impact on the environment. Therefore, this impact would be ***less than significant.***

Operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-32 through 3.4-33), and the Final SRGO Program EIR adequately addresses construction impacts of the proposed Project from an increase in GHG emissions.

Impact 3.5-6: Implementation of the proposed Project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities for restoration projects that could conflict with or obstruct implementation of an applicable air quality plan (see Final SRGO Program EIR: Section 3.4, pp. 3.4-1 through 3.4-34). Related to the proposed Project, the Final SRGO Program EIR evaluated the following construction activities: installation of infrastructure such as culverts, fish screens, and other water control structures to improve water management capabilities; removal of legacy structures; creation of depressions, berms, and drainage features; and the installation of cofferdams during construction (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-19 and 3.4-20).

Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials (see Final SRGO Program EIR: Section 2.7.1, pp. 2-24 through 2-27). The Final SRGO Program EIR found that these activities could conflict with applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions and could result in potentially significant and unavoidable impacts, as the specific project characteristics such as location and size of the project, construction characteristics, and any applicable GHG plans were not known at the time (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-33 through 3.4-34).

The Final SRGO Program EIR found this impact to be significant and unavoidable because the extent and location of actions under the Order were not known, which made it impossible to conclude that any mitigation measure would reduce significant impacts to a less-than-significant level in all cases (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-34).

DWR has adopted the GGERP for GHG emissions planning and for use in the CEQA analysis of DWR projects' contribution to the cumulative impact of increased GHG concentrations in the atmosphere (DWR 2024). Because the proposed Project would be implemented by DWR, the GGERP stands as the applicable plan for the proposed Project. As discussed under Impact 3.4-5, construction of the proposed Project would not exceed thresholds of significance for GHG emissions, would not conflict with DWR's ability to implement specific GHG emissions reduction measures, and would not add substation electricity demands that would impede DWR's emission reduction goals; therefore, the proposed Project would not conflict with the GGERP. Impacts related to conflicts of proposed Project construction with an applicable plan adopted for the purpose of reducing GHG emissions would be less than significant.

Construction of the proposed Project would be consistent with all applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions and would therefore have a **less-than-significant impact**.

Construction activities for the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.4.4, pp. 3.4-33 through 3.4-34), and the Final SRGO Program EIR

adequately addresses construction impacts of the proposed Project associated with the contribution to cumulative GHG emissions.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of constructed features and operations, monitoring, and maintenance of facilities that could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Relevant to the proposed Project, the Final SRGO Program EIR evaluated operations, monitoring, and maintenance activities necessary to support the successful establishment of natural conditions, including the following: conducting mechanical and chemical weed control; installing fencing and signage; adjusting grading or soils composition; and installing and operating monitoring equipment such as groundwater wells, flow gages, depth gages, cameras, and stakes (see Final SRGO Program EIR: Section 2.7.2, p. 2-27).

The Final SRGO Program EIR found that emissions from these activities would not violate an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Therefore, impacts would be less than significant (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-34).

For the proposed Project, conservation management could require operations and maintenance activities to inspect project features, monitor program effectiveness, or implement ongoing water management practices similar to existing conditions. This would not generate a substantial increase in management activities, and such activities would be required only intermittently and would result in a minor increase in motor vehicle trips compared to existing conditions. These trips would occur infrequently and would have negligible emissions, and they would not conflict or obstruct the implementation of an applicable plan to reduce GHG emissions. In addition, emissions associated with activities to support waterfowl in the managed wetland areas and rice production in the managed floodplain agriculture areas would be similar to existing conditions. As discussed under Impact 3.4-5, the proposed Project is consistent with the GGERP, which is the applicable plan for reduction of GHG emissions.

Consistent with projects analyzed under the Final SRGO Program EIR, the constructed restoration elements and facilities and the routine operations and maintenance of constructed facilities (whether natural or artificial) are not anticipated to conflict with an applicable GHG plan or policy. Therefore, this impact would be ***less than significant.***

Operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.4.4, p. 3.4-34), and the Final SRGO Program EIR adequately addresses construction impacts of the proposed Project associated with consistency with applicable GHG emissions reduction plans, policies, or regulations.

3.6 Biological Resources—Terrestrial

3.6.1 Introduction

This Draft SEIR supplements the previously certified Final SRGO Program EIR and addresses proposed modifications, changed circumstances, and new project-specific information not described in that prior environmental document. This section of the Draft SEIR discusses the potential for the proposed Project to result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR related to terrestrial biological resources (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-27 through 3.5-58). The environmental setting and evaluation of impacts on terrestrial biological resources are based on a review of existing, publicly available literature and data, as well as information contained in Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report."

Comments were received in response to the NOP addressing terrestrial biological resources. See Appendix B to this Draft SEIR for NOP comment letters. These comments were considered during preparation of this Draft SEIR.

The impact analysis in this section evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities on terrestrial biological resources in the proposed Project area. This impact analysis concludes that implementation of the proposed Project would result in less-than-significant impacts on terrestrial biological resources with the implementation of general protection measures.

3.6.2 Environmental Setting

The following sections of the environmental setting describe the habitat types, primary functions of terrestrial and aquatic habitats, and sensitive biological resources (including special-status species, designated critical habitat, wetlands, and non-wetland waters) known to occur or that have potential to occur in the proposed Project area. Information regarding fisheries is covered in Section 3.7, "Biological Resources – Aquatic." Background information was gathered from the variety of sources identified in the "Data Sources" section below. Information was collected regarding the distribution of natural communities/land cover types, and observations of flora and fauna were made by Environmental Science Associates (ESA) biologists.

Data Sources

ESA reviewed publicly available data, subscription-based biological resource data, and proposed Project area–specific information. The following data sources assisted in this literature review:

- United States Geological Survey (USGS) topographic quadrangle maps: Saxon, Clarksburg, and Liberty Island (USGS 2023).
- Historic and current aerial imagery.

- U.S. Fish and Wildlife Service (USFWS) list of species that may be affected by projects in the area (USFWS 2024). Included in Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report."
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) query of the Saxon and surrounding eight USGS topographic quadrangles (CDFW 2025c). Included in Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report."
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2024). Included in Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report."
- United States Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2023).
- Precipitation data from the Applied Climate Information System (NOAA 2023).
- The National Wetlands Inventory (NWI) (USFWS 2023).
- National Hydrography Dataset (NHD) (USGS 2023).
- Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report (Appendix C to this Draft SEIR) summarizing various biological surveys conducted within the proposed Project area by ESA biologists (as described further below).

Regional Existing Conditions for Terrestrial Biological Resources –Delta

For the purpose of this terrestrial biological resources section, the regional setting is characterized as the Sacramento–San Joaquin Delta (Delta). Environmental conditions in the Delta have been influenced by years of human activity that have fundamentally changed this region's ecosystem (Delta Stewardship Council 2022). Much of the terrestrial habitat in the Delta is characterized by agricultural activities, with limited areas managed as seasonal wetlands for the purpose of waterfowl hunting. These historical modifications and land uses of the Delta have substantially influenced the current conditions of biological communities and other sensitive biological resources. The conversion of land in the Delta, primarily for the purpose of agricultural development, resulted in the removal of wetlands, floodplains, riparian vegetation, and grasslands that provide habitat for native Delta species. Of the 320,000 acres of tidal wetlands present in the Delta at the time of California statehood, roughly 90% to 95% have been drained or reclaimed (The Bay Institute 1998).

Existing Conditions for Terrestrial Biological Resources in the Yolo Bypass

The Yolo Bypass is located on the western floodplain of the Sacramento River, historically referred to as the Yolo Basin. This low-lying area was subject to the seasonal inundation of floodwaters from the nearby Sacramento River and its numerous tributaries (CDFG 2008). The Yolo Bypass was established as the primary flood control mechanism in the Sacramento River Basin and acts as a relief valve for floodwaters in the Sacramento River. Hydrology and operations of the Yolo Bypass are described in further detail in Section 3.10, "Hydrology and Water Quality." Additional land uses within the Yolo Bypass provide multiple benefits including flood protection, agricultural production, and fish and wildlife habitat.

The northern portion of the Yolo Bypass is largely owned by a few private landowners and also includes two State wildlife areas containing unmanaged grassland and riparian forest; these areas provide wetland values when the Yolo Bypass is inundated (CDFW 2018a). The southern Yolo Bypass (south of Interstate 80) includes the 16,800-acre Yolo Bypass Wildlife Area; it also includes thousands of acres of privately owned wetlands that are managed as duck clubs (CDFW 2018a). Other areas of the Yolo Bypass are managed in agricultural production, in crop types (mainly rice) that are compatible with floodplain inundation regimes and periods of extended inundation.

Over the past few decades, the Yolo Bypass has been the focus of public agency planning efforts around sensitive species and habitat restoration. These efforts recognize the conservation values provided by the Yolo Bypass for wildlife species associated with floodplains, managed wetlands, seasonal and semi-permanent wetlands, tidal wetlands, grasslands, pasture, and riparian zones (CDFW 2018a). The Yolo Bypass also provides opportunities for food web benefits for native Delta fish species, as described in further detail in Section 3.7, "Biological Resources – Aquatic."

Existing Conditions for Terrestrial Biological Resources in the Proposed Project Area

Assessment of Potential Biological Communities, Sensitive Plants, Wildlife, and Aquatic Resources to Occur in the Proposed Project Area

A description of biological communities, special-status plant and wildlife species, and aquatic resources considered to potentially occur within the proposed Project area was developed using information queried from "Data Sources" above and the various wildlife and botanical surveys of the proposed Project area that are presented below, including the dates of when the surveys were conducted. The full results of these surveys, including the survey methodology and species observed, are documented in Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report."

- **September 3 and 24, 2020—ESA.** A general biological reconnaissance survey was conducted on these dates. The survey was conducted to observe and characterize biological communities in the proposed Project area and to assess habitat quality and the potential for common and special-status plant and wildlife species to occur in the proposed Project area or vicinity. The survey involved recording plants observed and conducting an initial evaluation of the proposed Project area for special-status plants. There was an initial detection of Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*).
- **June 9, 2021—ESA.** A giant garter snake (*Thamnophis gigas*, GGS) habitat assessment was conducted on this date. The proposed Project area was surveyed for potential aquatic and upland habitat for GGS.
- **June 9 and 29, 2021—ESA**—This survey focused on the margin of the Toe Drain at low tide for Mason's lilaeopsis (*Lilaeopsis masonii*) and delta mudwort (*Limosella australis*), as well as elderberry shrubs (*Sambucus* spp.) along most of the west shore of the Toe Drain and in the riparian forest.
- **September 1, 7, and 22, 2023**—A botanical survey was conducted according to USFWS and CDFW guidelines (USFWS 2000; CDFW 2018b), by ESA on September 1, 7, and 22, 2023.
  - *September 1, 2023*— This survey focused on mapping the extent of Parry's rough tarplant and searching agricultural ditches for Sanford's arrowhead (*Sagittaria sanfordii)*.

  - *September 7, 2023*— This was a general botanical survey and included part of the margin of the Toe Drain at low tide that was not included in the 2021 survey.
  - *September 22, 2023*— This was a general botanical survey.

A delineation of aquatic resources within the proposed Project area was conducted on the dates listed below.

- **June 13, 14, and 20, 2023**—**ESA**. Survey data were collected using an EOS Arrow 100 Global Navigation Satellite System receiver, which provides Satellite-based Augmentation System corrections processing during the survey and can provide sub-meter real-time horizontal accuracy. The delineation was conducted by walking throughout the proposed Project area to selected areas where potential aquatic features were identified during the literature review.

The list of special-status species includes those species that can be found or are known to have occurred historically in the proposed Project area. Using the results of the biological resources surveys conducted by ESA, these species were ranked by their likelihood of occurrence within the proposed Project area. These rankings were assigned based on the following criteria:

- **None:** The proposed Project area does not provide suitable habitat for a particular species, does not provide soils required for the species to inhabit, or is outside of the species' known elevation or geographic range.
- **Low:** The proposed Project area only provides very low-quality habitat for a particular species.
- **Moderate:** The species has not been documented in the proposed Project area or vicinity, but the proposed Project area is within the known current range of the species and it provides suitable habitat for a particular species.
- **High:** The species has not been documented in the proposed Project area, but the proposed Project area provides ideal habitat conditions for a particular species and/or known populations occur in the immediate area of the proposed Project area.
- **Present:** The species was observed during the biological resources surveys or by a reliable source within the proposed Project area.

Only those special-status species with a moderate or higher potential to occur in the proposed Project area and vicinity are discussed in the impact analysis below. See sections for "Special-Status Plant Species in the Proposed Project Area" and "Special-Status Wildlife Species in the Proposed Project Area" under "Existing Conditions for Sensitive Plants, Wildlife, and Aquatic Resources within the Proposed Project Area," which present tables of species observed during the biological surveys.

See **Table 3.7-4** in Section 3.7, "Biological Resources – Aquatic," for a summary of aquatic resources in the proposed Project area.

Existing Conditions for Biological Communities in the Proposed Project Area

The proposed Project area slopes generally from northwest to southeast, toward the Toe Drain. The highest elevation in the northwestern part of the proposed Project area is about 14 feet above mean sea level and the lowest elevations in the southeast are about 6 feet, North American Vertical Datum of 1988

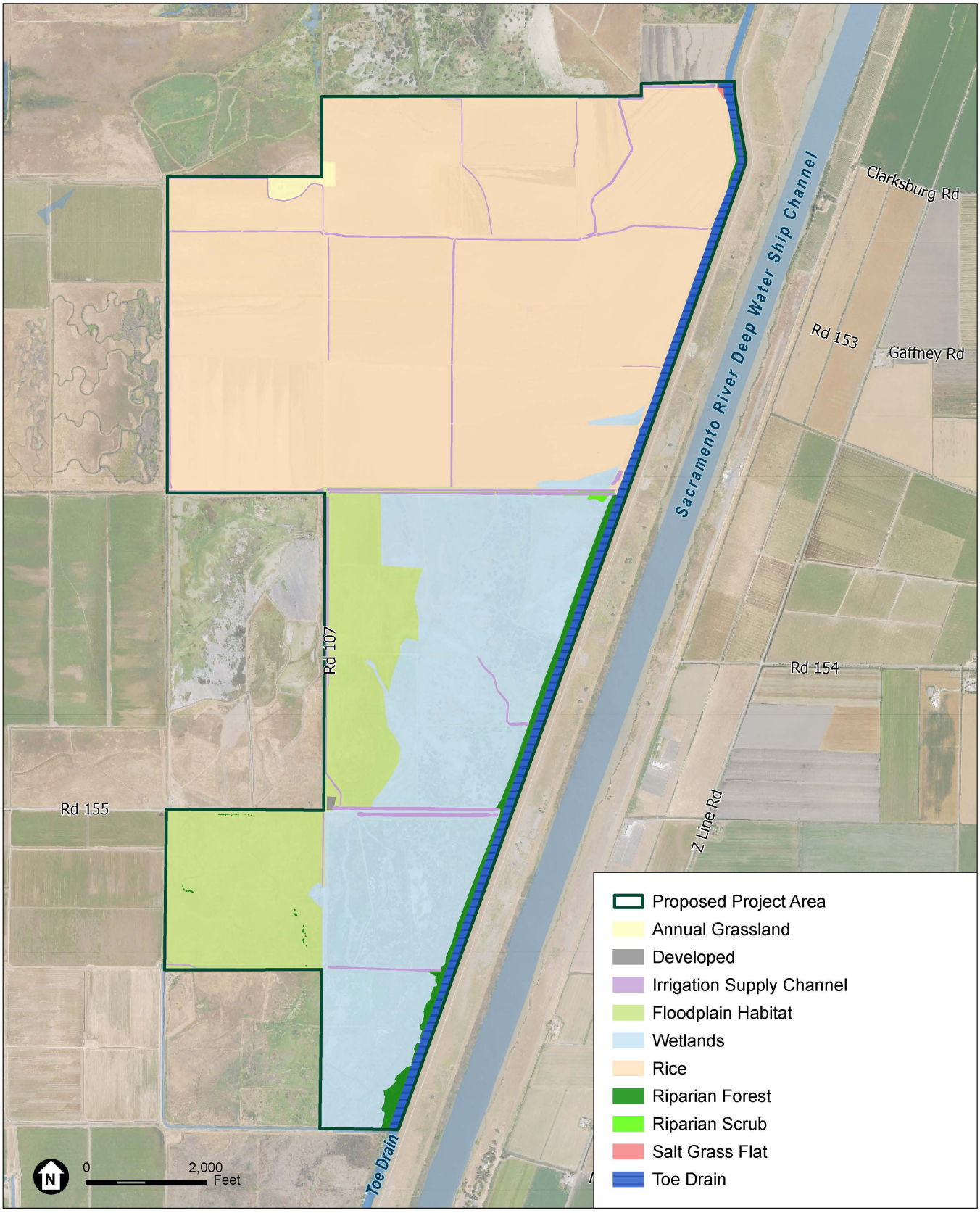
(NAVD88). The term "biological communities" means recurring functional units that are determined based on physical, hydrologic, and biologic conditions as well as current management activities. Nearly all vegetation in the proposed Project area is dominated by either annual grasses and forbs, or perennial aquatic emergent plants including tule (*Schoenoplectus acutus* var. *occidentalis*) and bulrushes (*Bolboschoenus* spp.). Very few trees or shrubs grow in the proposed Project area, except along the eastern boundary near the Toe Drain. **Table 3.6-1** summarizes the acreages of the respective vegetation communities, which are described below. **Figure 3.6-1** shows the distribution of these vegetation communities within the proposed Project area. The descriptions of each of these biological communities presented below include an identification of those wildlife species that are associated with the respective biological community. Species observed during the biological surveys are summarized below, and the results are described in more detail under "Existing Conditions for Sensitive Plants, Wildlife, and Aquatic Resources within the Proposed Project Area." The listing status for special-status plants and special-status wildlife are provided in **Table 3.6-2** and **Table 3.6-3**, respectively.

Also, species that have been documented within the proposed Project area are indicated with **bold text**. A species that was observed within the proposed Project area and has potential to occur in multiple biological communities has been indicated with bold text in all biological community descriptions where it is mentioned, not only the specific community in which it was observed.

TABLE 3.6-1
EXISTING VEGETATION COMMUNITIES IN THE PROPOSED PROJECT AREA

Habitat Type	Vegetation Community	Acreage
Riparian Habitat	Riparian forest	26.1
	Riparian scrub	1.1
Tidal Wetland Habitat	Toe Drain	60.6
Grassland	Annual grassland	8.9
	Salt grass flat	0.4
Floodplain Habitat	Managed floodplain	300.5
Managed Wetlands (Managed Floodplain)	Managed wetlands	182.8
	Managed tule marsh	390.2
Managed Floodplain Agriculture (Managed Floodplain)	Rice	1,205.3
Nontidal Open Water	Irrigation Supply Channel	36.5

NOTE: Total acreage is approximate (<0.2 acre) due to rounding.
SOURCE: Data compiled by Environmental Science Associates in 2024



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Tide's End Multibenefit Restoration Project

Figure 3.6-1
Existing Vegetation Communities in the Proposed Project Area

Prepared by: ESA

SOURCE: NAIP 2022, ESA 2025

Managed Floodplain Agriculture (Managed Floodplain)

Managed floodplain agriculture is located in the central portion of the proposed Project area. Managed floodplain in the proposed Project area floods when the Yolo Bypass floods and also receives some irrigation input, primarily for agricultural purposes. Fields within the managed floodplain are irrigated periodically during the late summer or fall and are managed primarily as duck clubs, although informal livestock grazing (i.e., only a few cattle graze within the managed floodplains, which are not managed to function as a pasture) also occurs in some years. This biological community is dominated by herbaceous grasses and forbs including beard grass (*Polypogon* spp.), white sweetclover (*Melilotus albus*), prickly lettuce (*Lactuca serriola*), dock (*Rumex* spp.), annual hair grass (*Deschampsia danthonioides*), and spikeweed (*Centromadia* spp.).

Under non-flooded conditions, managed floodplain agriculture provides potential habitat for many terrestrial wildlife species. **Western deer mouse** (*Peromyscus sonoriensis*), **black-tailed deer** (*Odocoileus hemionus*), **California vole** (*Microtus californicus*), and **black-tailed jackrabbit** (*Lepus californicus*) are known to inhabit managed floodplain communities due to dry periods during the warm season from late spring to early fall. **Western meadowlark** (*Sturnella neglecta*) and **mourning dove** (*Zenaida macroua*) may nest on the ground in the managed floodplains if the fields are dry during nesting season. Other birds that frequent this biological community include **savannah sparrow** (*Passerculus sandwichnesis*), horned lark (*Eremophila alpestris*), and ring-necked pheasant (*Phasianus colchicus*). Reptiles are found in the grassy fields of managed floodplain. Among these species are **western fence lizard** (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinata*), California kingsnake (*Lampropeltis californiae*), and Pacific gopher snake (*Pituophis catenifer catenifer*). In wetter areas of the managed floodplain, amphibians such as **Sierran treefrogs** (*Pseudacris sierra*) and **bullfrogs** (*Lithobates catesbeianus*) may be observed.

Managed Wetland

Managed wetland occurs mainly in the central portion of the proposed Project area and is influenced by seasonal flooding in the Yolo Bypass and by irrigation inputs. The plant community present in managed wetland is adapted to seasonal flooding and irrigation of shorter duration than managed tule wetland. Managed wetland is drier than the managed tule wetland but wetter than managed floodplain. This biological community is dominated by herbaceous grasses and forbs including cocklebur (*Xanthium strumarium*), sunflower (*Helianthus* spp.), Bermuda grass (*Cynodon dactylon*), and gumplant (*Grindelia camporum*). White sweetclover and beard grass are common in both managed wetland and managed floodplain. Tule and river bulrush (*Bolboschoenus fluviatilis*) patches occur sporadically, but their cover is much less in the managed wetland than in the managed tule wetland.

Virtually the same mammals known to inhabit managed floodplain communities can also be observed in the managed wetland community when it is not flooded. Some additional mammals that can occur in both managed floodplains and managed wetlands include **coyote** (*Canis latrans*), desert cottontail (*Sylvillagus audubonii*), and non-native mammals such as raccoons (*Procyon lotor*) and striped skunks (*Mephitis mephitis*). Similarly, **western meadowlark** and **mourning dove** may nest on the ground in the managed wetlands if the wetlands are dry during nesting season. Other birds that frequent the wetlands in the proposed Project area include **white-crowned sparrow** (*Zonotrichia leucophrys*), **house finch** (*Haemorhous mexicanus*), and lesser goldfinch (*Spinus psaltria*). In general, the bird species observed in managed wetland are similar to those observed in managed floodplain. Reptiles and amphibians that

inhabit managed floodplains, such as **Sierran treefrogs** (which were observed during biological surveys), also inhabit managed wetlands.

Managed Tule Wetland

Managed tule wetland requires perennial water and is thus restricted to regions of the proposed Project area with perennial water from natural and/or managed sources. Tule wetland creates habitat that persists year-round, although in the Yolo Bypass, this habitat may be disturbed by seasonal flooding that occurs during the winter months.

Managed tule wetland occurs in the central and southern portions of the proposed Project area. Managed tule wetland floods when the Yolo Bypass floods and, because of its low landscape elevation, it may become partially inundated in some areas without Yolo Bypass flooding. Irrigation also regularly inundates these areas. Managed tule wetland is dominated by the taller perennial herbs, tule, and river bulrush. Areas between thick patches of these two species have vegetation similar to managed wetland, or in some areas, very low vegetation dominated by swamp prickle grass (*Crypsis schoenoides*). In a few areas in the southern end of the proposed Project area, widely scattered trees are present in this community. All of the managed tule wetland is considered a sensitive natural community by CDFW.

The same mammals known to inhabit the managed wetland community have also been observed in the managed tule wetland community in areas where it is dry. Typical bird species observed in managed tule wetland communities include **red-winged blackbird** (*Agelaius phoeniceus*), tricolored blackbird (*A. tricolor*), and **marsh wren** (*Cistothorus palustris*). All three of these species can nest in managed tule wetland communities as well. Reptiles that may occur in managed tule wetland communities include giant garter snake, western pond turtle (WPT; *Actinemys marmorata*), and common garter snake (*Thamnophis sirtalis fitchi*) (Zeiner et al. 1990). However, because this particular tule wetland community is managed, some sections may remain dry for extended periods. The reptiles observed in managed floodplains and wetlands may also be observed in drier areas of managed tule wetlands.

Riparian Forest

Riparian forest is a tree-dominated community that occurs along the Toe Drain in the south end of the proposed Project area. Riparian forest floods when the Yolo Bypass floods, where periodic, seasonal flooding occurs most commonly during the months of December through May. Most of the trees were within the range of 15 to 30 feet tall, although some trees reached around 40 feet; the forest occurs mostly in a narrow strip between the Toe Drain and wetlands in the interior of the proposed Project area. The riparian forest is dominated by box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), willows (*Salix* spp.), and Fremont cottonwood (*Populus fremontii* ssp. *fremontii*).

Wild turkey (*Meleagris gallopavo*), **California quail** (*Callipepla californica*), and **black-tailed deer** are known to inhabit riparian forest, with the latter two species observed during surveys. **Oak titmouse** (*Baeolophus inornatus*), dark-eyed junco (*Junco hyemalis*), ash-throated flycatcher (*Myiarchus tuberculifer*), **northern flicker** (*Colaptes auratus*), and **lesser goldfinch** may nest in riparian habitat. Cavity nesters that may utilize this habitat include great horned owl (*Bubo virginianus*), western bluebird (*Sialia mexicana*), and ash-throated flycatcher; **great horned owl** was observed during surveys. Raptors such as Swainson's hawk (*Buteo swainsoni*), Cooper's hawk (*Accipiter cooperii*), and sharp-shinned hawk (*A. striatus*) are known to nest in this biological community. **Red-shouldered hawk** (*Buteo*

lineatus) and **red-tailed hawk** (*B. jamaicensis*) were also observed in the proposed Project area. Osprey (*Pandion haliaetus*) may also occur within the proposed Project area, as they are known to nest near riparian habitats and utilize riverine ecosystems for fishing. Heron rookeries can also occur in riparian forest trees, although none were observed in the riparian forest in the proposed Project area. Amphibians and reptiles are found on the forest floor where moisture is retained under fallen wood and in tree crevices. Among these species are **Sierran treefrog**, **western fence lizard**, southern alligator lizard, Pacific gopher snake, western rattlesnake (*Crotalus oreganus oreganus*), and California kingsnake. Sierran treefrog and western fence lizard were observed during biological surveys.

Riparian Scrub

A few small areas of riparian scrub occur along drainage ditches in the central portion of the proposed Project area. Riparian scrub floods when the Yolo Bypass floods, and the distribution of this community also partly depends on water management activities. Riparian scrub is dominated by dense sandbar willow (*Salix exigua*). Sandbar willow may grow as a shrub to small tree, but within the proposed Project area is all relatively short (mostly estimated to be 10 to 15 feet in height) and very dense willow.

Red-winged blackbird, **northern mockingbird** (*Mimus polyglottos*), **California scrub-jay** (*Aphelocoma californica*), and **spotted towhee** (*Pipilo maculatus*) inhabit riparian scrub communities and were observed during biological surveys. **Sierran treefrogs and bullfrogs** were observed during biological surveys and inhabit the edges of the riparian scrub community because the riparian scrub is often immediately adjacent to a ditch feature. Sandbar willows host a variety of butterflies and moths including **western tiger swallowtail** (*Papilio rutulus*), mourning cloak (*Nymphalis antiopa*), and Lourquin's admiral (*Limenitis lorquini*), as well as some gall-forming wasps (*Cynips* spp.).

Annual Grassland

The annual grassland is located in the northwest portion in the highest elevation of the proposed Project area and is less frequently inundated. The area is grazed, which primarily affects the vegetation structure by discouraging the establishment of woody vegetation and reducing the overall height of herbaceous cover. Annual grassland is dominated by soft chess (*Bromus hordeaceus*), Italian rye grass (*Festuca perennis*), and Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*).

Common small mammals expected in the grasslands within the proposed Project area include western harvest mouse (*Reithrodontomys megalotis*), **deer mouse**, **black-tailed jackrabbit**, and **Botta's pocket gopher** (*Thomomys bottae*). Grasslands are important foraging grounds for aerial and ground-foraging insect eaters such as *Myotis* bat species and pallid bat (*Antrozous pallidus*). Larger mammal species such as **black-tailed deer** and **coyote** may use grasslands in the proposed Project area. Reptiles such as gopher snakes, **western fence lizards**, southern alligator lizards, and western yellow-bellied racers (*Coluber constrictor*) may inhabit annual grasslands as well. **Deer mouse**, **black-tailed jackrabbit**, **Botta's pocket gopher**, **black-tailed deer**, **coyote**, and **western fence lizards** were observed during biological surveys of the proposed Project area.

Salt Grass Flat

An area of salt grass flat occurs along the Toe Drain in the northeast corner of the proposed Project area, which is dominated by salt grass (*Distichlis spicata*) and Italian rye grass, a non-native annual grass. Salt grass flat within the proposed Project area floods when the Yolo Bypass floods and is not primarily

controlled by irrigation inputs. The community is associated with areas subject to tidal influence or mesic alkali soil types; while there is little alkaline influence within the proposed Project area, the Toe Drain is subject to tidal influence. Wildlife expected in the salt grass flat community closely resembles that of the annual grassland community. Salt grass flats codominant with non-native annual grasses are not considered a sensitive natural community by CDFW (CDFW 2025d).

Rice

This community includes areas in rice production, which occurs in the northern portion of the proposed Project area. Currently, fields are inundated when the Yolo Bypass floods or when irrigation is applied for the cultivation of rice. The rice irrigation season is generally May through September but is dependent on the type of rice being grown. The rice fields have soil berms that contain water control structures and create rice checks that were flooded during a survey conducted in June 2021. The rice is present in areas at similar elevations to managed floodplain or managed wetland and likely has similar hydrology to those communities in the absence of cultivation and irrigation for agriculture.

Fields used for rice production provide foraging habitat for several species of ducks and geese as they migrate along the Pacific Flyway each year, specifically during the winter and fall/spring shoulder months. This community is also crucial to shorebirds that nest in the fields year-round. Bird species expected to occur within this community type include great egret (*Ardea alba*), great blue heron (*A. herodias*), snowy egret (*Egretta thula*), Canada goose (*Branta canadensis*), wood duck (*Aix sponsa*), and mallard (*Anas platyrhynchos*). Mammals found in annual grasslands are also expected to utilize the rice biological community. Amphibians and reptiles that may be present in rice fields include western toad (*Anaxyrus boreas*), **bullfrog**, WPT, **western fence lizard**, gopher snake, and common garter snake. In addition, GGS often use rice fields because the fields are inundated during the summer and provide suitable aquatic habitat (USFWS 2017). GGS was not observed during biological surveys of the proposed Project area.

Developed

A small, developed area on the southwest corner of the Laurel G property includes the “clubhouse” building and the adjacent gravel parking lot. The developed area generally lacks vegetation and has compacted soil. Although this area is developed, it can still support wildlife. Bird species that may use these habitat types include **California scrub-jay**, **northern mockingbird**, **house finch**, **California quail**, and western bluebird. Common mammals include **black-tailed deer**, raccoon (*Procyon lotor*), and opossum (*Didelphis virginiana*). Gopher snake and **western fence lizard** also occur in the developed area.

Irrigation Supply Channels

There are nontidal irrigation supply channels throughout the proposed Project area. These channels have water during much or all of the year and aquatic or emergent vegetation along their margins. Some of the irrigation delivery channels may contain water less frequently and have exposed, mostly bare soil much of the time. Many of the channels drain to the Toe Drain through culverts with gates under a dirt road; these channels are currently isolated from tidal influence.

Wildlife use of the channels varies according to each ditch’s pattern of water conveyance. Channels in the proposed Project area that remain inundated throughout the summer months and are connected to adjacent habitats have the potential to provide important habitat for GGS. This aquatic species commonly travels through irrigation channels; forages for amphibians and small fish, which may be present; and uses the dry

associated banks for basking and thermoregulation. Channels with suitable hydrology also support the foraging of other aquatic wildlife such as **Sierran tree frogs**, **bullfrogs**, and dabbling ducks such as mallard.

Channels that remain dry through most of the year and contain abundant vegetation that may support foraging upland wildlife such as song sparrow (*Melospiza melodia*), **white-crowned sparrow**, and American goldfinch (*Carduelis tristis*). See Section 3.7, "Biological Resources – Aquatic," for information regarding fish use of ditches within the proposed Project area.

Toe Drain

The entire proposed Project area drains to the Toe Drain, a tidal perennial waterway along the eastern edge of the proposed Project area that becomes increasingly tidal as it connects with Cache Slough to the south. The Toe Drain receives water from the Tule Canal (to the north), western tributaries (the Willow Slough Bypass and Putah Creek), groundwater contributions, and agricultural diversions almost year-round. Tidal action affects the Toe Drain's water elevation as far north as Interstate 80, and the water surface elevation just north of the proposed Project area (a few hundred feet south of Lisbon Weir) has been documented to fluctuate from 0 to 4 feet (CDFG 2008).

Raptors such as osprey hunt along the Toe Drain to catch fish. Wading birds (i.e., great egret and great blue heron) hunt along the Toe Drain edge as well. Many of the same reptiles that use rice fields and ditches may inhabit the Toe Drain, including WPT, GGS, common garter snake, **bullfrog**, and **Sierran tree frog**.

Existing Conditions for Sensitive Plants, Wildlife, and Aquatic Resources within the Proposed Project Area

Special-Status Plant Species in the Proposed Project Area

The proposed Project area was determined to have no or low potential to support most of the special-status plants that were analyzed based on the database queries (see Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report"). Many of these plant species require vernal pools or high levels of soil alkalinity that are absent from the proposed Project area.

During early planning, as part of the initial desktop analysis, nine special-status plant species were determined to have moderate potential to occur because they have less-specific habitat requirements and either tolerate some soil disturbance and altered hydrology or may spread relatively easily into managed lands. These nine species are pappose tarplant (*Centromadia parryi* ssp. *parryi*), Jepson's coyote thistle (*Eryngium jepsonii*), San Joaquin spearscale (*Extriplex joaquinana*), woolly rose-mallow (*Hibiscus lasiocarpus* var. *occidentalis*), Mason's lilaeopsis, delta mudwort, Sanford's arrowhead, side-flowering skullcap (*Scutellaria lateriflora*), and Suisun marsh aster (*Symphyotrichum lentum*) (see Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report"). **Table 3.6-2** summarizes the special-status plants with potential to occur in the proposed Project area.

Based on botanical surveys conducted by ESA in 2020, 2021, and 2023, none of these nine species were observed. The Toe Drain provides potential habitat for Mason's lilaeopsis, which is listed as Rare under the California Native Plant Protection Act. There is a CNDDB record of Mason's lilaeopsis in the Toe

Drain adjacent to the proposed Project area (observation centered around the east shore of Toe Drain), but focused surveys along the west shore of the Toe Drain that overlap with the proposed Project area did not find the species and found that the west shore of the Toe Drain provided poor habitat structure for the species. Based on the findings of these botanical surveys, which were conducted during the evident and identifiable period for special-status plants with at least a moderate potential to occur at the proposed Project area, there are no known populations of special-status plants within the proposed Project area.

TABLE 3.6-2
SPECIAL-STATUS PLANTS

Scientific Name Common Name	Listing Status USFWS/ CDFW/CRPR	Habitat
Centromadia parryi ssp. *parryi* Pappose tarplant	—/—/1B.2	Annual herb generally found in vernally mesic alkaline grassland and coastal prairie, alkaline springs and seeps, and coastal salt marshes and swamps. Blooms May–November.
Eryngium jepsonii Jepson's coyote thistle	—/—/1B.2	Perennial herb found on moist clay soil in valley and foothill grasslands and vernal pools. Known from the southern inner north Coast Ranges, deltaic Great Valley, and San Francisco Bay. Blooms April–August.
Extriplex joaquinana San Joaquin spearscale	—/—/1B.2	Annual herb found in alkaline chenopod scrub, meadows and seeps, playas, and valley and foothill grassland. Blooms April–October.
Hibiscus lasiocarpus var. *occidentalis* Woolly rose-mallow	—/—/1B.2	Perennial herb found in freshwater wetlands, marshes, and wet banks. May grow on riprap on levee slopes. Blooms June–September.
Lilaeopsis masonii Mason's lilaeopsis	—/CR/1B.1	Perennial rhizomatous herb occurring in freshwater marsh, marsh and swamp, riparian scrub, and wetland. Blooms April–November.
Limosella australis Delta mudwort	—/—/2B.1	Perennial stoloniferous herb occurring in brackish marsh, freshwater marsh, marsh and swamp, riparian scrub, and wetland. Blooms May–August.
Sagittaria sanfordii Sanford's arrowhead	—/—/1B.2	Found in assorted freshwater habitats including marshes, swamps, and seasonal drainages. Blooms May–October.
Scutellaria lateriflora Side-flowering skullcap	—/—/2B.2	Perennial rhizomatous herb occurring in marsh and swamp, meadow and seep, and wetlands. Blooms July–September.
Symphyotrichum lentum Suisun marsh aster	—/—/1B.2	Perennial rhizomatous herb occurring in brackish marsh, and freshwater. Blooms April–November.

NOTES: CDFW = California Department of Fish and Wildlife; CRPR = California Rare Plant Rank; USFWS = U.S. Fish and Wildlife Service

Status

Federal:

— = No federal status

State:

CR = Listed as rare under California Native Plant Protection Act

– = No State status

California Rare Plant Rank:

1B.1 = Rare, threatened, or endangered in California and elsewhere; seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
1B.2 = Rare, threatened, or endangered in California and elsewhere; moderately threatened in California (20-80% occurrences threatened/ moderate degree and immediacy of threat)
2B.1 = Rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
2B.2 = Rare, threatened, or endangered in California, but more common elsewhere; moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)

Special-Status Wildlife Species in the Proposed Project Area

Special-status terrestrial wildlife species that are present or have potential to occur in the proposed Project area are summarized in **Table 3.6-3**. The following sections briefly describe each of these species.

TABLE 3.6-3
SPECIAL-STATUS WILDLIFE

Scientific Name **Common Name**	**Listing Status USFWS/CDFW**	**Habitat**	**Potential to Occur in Proposed Project Area[1]**
Reptiles			
Actinemys marmorata Western pond turtle	FC/CSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 feet elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	**Moderate**. Suitable aquatic habitat is present within the Toe Drain and seasonally within drainage features within the proposed Project area during the dry season when the Yolo Bypass is largely drained.
Thamnophis gigas Giant garter snake	FT/ST	Prefers freshwater marsh and low-gradient streams. Has adapted to drainage canals and irrigation ditches.	**Present.** Suitable aquatic habitat is present within the Toe Drain and seasonally within drainage features within the proposed Project area during the dry season when the Yolo Bypass is largely drained. Because the Yolo Bypass regularly floods during the snake's inactive season, it would not represent suitable overwintering upland habitat for the species. There are CNDDB occurrences within the proposed Project area (see Figure 3-1 in Appendix C to this Draft SEIR).
Birds			
Athene cunicularia Western burrowing owl	--/SC	Found in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. It is a subterranean nester, dependent on burrowing mammals, most notably, the California ground squirrel.	**Moderate**. The proposed Project area lacks suitable natural breeding habitat for the species. No ground squirrel burrows were observed during prior biological surveys; regular flooding within the Yolo Bypass likely precludes the ability for fossorial mammals to establish. The species may occupy certain artificial structures (e.g., dry culverts) that are presented in the proposed Project area as alternative nesting sites when natural burrows are scarce. Burrowing owls may occupy the area to forage.
Agelaius tricolor Tricolored blackbird	--/ST	Mostly colonial and most numerous in Central Valley and vicinity. Species is largely endemic to California. It requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	**Moderate**. The managed tule wetland and sandbar willow scrub provide suitable nesting habitat for the species; much of the proposed Project area provides suitable foraging habitat.
Buteo swainsoni Swainson's hawk	--/ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees.	**Moderate**. While Swainson's hawk was incidentally observed flying over the proposed Project area during biological surveys, no nesting behavior was documented within the proposed Project area. Larger trees were identified during the survey of the proposed Project area, which may provide suitable nesting habitat for raptors, including Swainson's hawk. The riparian forest is the potential nesting habitat in the proposed Project area. The proposed Project area also provides foraging habitat for the species.

Scientific Name **Common Name**	**Listing Status USFWS/CDFW**	**Habitat**	**Potential to Occur in Proposed Project Area[1]**
Vireo bellii pusillus Least Bell's vireo	FE/SE	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2,000 feet. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, cottonwood, brooms, blackberry, and mesquite.	**Moderate.** While there are documented observations of this species within the Yolo Bypass, they were from locations from within the Yolo Bypass Wildlife Area approximately 6.5 miles to the north. Suitable nesting habitat is present within the proposed Project area within riparian forested areas; however, no vireos were observed during past biological surveys of the proposed Project area. The species may potentially transit through riparian habitat patches.
Charadrius montanus Mountain plover (wintering habitat)	--/CSC	Found in short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms. Prefers grazed areas and areas with burrowing rodents.	**Moderate**. The grassland habitat provides suitable wintering habitat for this species.
Circus hudsonius Northern harrier	--/CSC	Found in coastal salt and freshwater marsh. Species nests and forages in grasslands, from salt grass in desert sink to mountain cienegas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**Moderate**. The managed wetlands provide suitable nesting habitat for this species, but no nests within the proposed Project area were observed during surveys.
Melospiza melodia Song sparrow	--/CSC	Central lower basin of Great Valley, from Colusa County south to Stanislaus County and east of Suisun Marshes. Breeds chiefly below 200 feet elevation. Cover consists of willow and nettle thickets, growths of tules and cattails, and riparian oak forests with sufficient understory of blackberry.	**Moderate.** The managed wetlands and riparian forest provide potential habitat for this species, but no nests within the proposed Project area were observed during surveys.
Elanus leucurus White-tailed kite	—/CFP	Forages in open plains, grasslands, and prairies; typically nests in trees.	**Moderate:** This species was incidentally observed in the proposed Project area during a survey in June 2023. The proposed Project area has a few moderate-sized trees along its eastern edge that could potentially support a nest.

NOTES: CDFW = California Department of Fish and Wildlife; USFWS = U.S. Fish and Wildlife Service

Status

Federal:

FE = Endangered
FT = Threatened
FC = Federal Candidate
— = No federal status

State:

CE = State listed as Endangered
ST = State listed as Threatened
CSC = California species of special concern
CFP = California fully protected
– = No State status

SOURCE: Appendix C, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report"

Western Pond Turtle

The WPT is a CDFW species of special concern that is also proposed for federal listing as threatened. This species has widespread distribution in California. WPT are found in ponds, lakes, rivers, streams, creeks, marshes, irrigation ditches, and estuarine habitat with suitable basking sites. Suitable aquatic habitat typically has a muddy or rocky bottom and has emergent aquatic vegetation for cover (Stebbins 2003). The species is omnivorous; they consume tadpoles, frog eggs, snails, leeches, fish, various invertebrates, algae, cattail (*Typha latifolia*) roots, and lily pods (USFWS 2025). As stated in Table 3.6-3, this species was determined to have a moderate potential to occur within the proposed Project area. The WPT lays eggs in the ground generally from late March to August, depending on local conditions (Zeiner et al. 1990); incubation ranges from 80 days to more than 100 days. In Northern California, hatchlings overwinter in the nest chamber after hatching until the next spring (Yolo Habitat Conservancy 2018).

The WPT may occur in the Toe Drain, and possibly in larger ditches in the proposed Project area during the dry season when the ditches are used for irrigation. The proposed Project area likely provides poor nesting habitat, given the flooding in the Yolo Bypass that overlaps with the beginning of the nesting season for the species (Zeiner et al. 1990), and the fact the species needs well-drained soil conditions for successful egg incubation (e.g., excessive soil moisture can cause the egg to rupture) (Ashton et al. 1997). Furthermore, because WPT hatchlings overwinter in the nest chamber after hatching (Yolo Habitat Conservancy 2018), inundation of the Yolo Bypass during this period could threaten to flood out WPT hatchlings. The levee for the Sacramento River Deep Water Ship Channel, on the other side of the Toe Drain east of the proposed Project area, may provide better nesting opportunities for WPT because it is close to permanent water and includes upland areas above the elevation of flooding in the Yolo Bypass.

Giant Garter Snake

The proposed Project area is in the Yolo Basin population of GGS, which is federally listed and State listed as threatened. Historically, this snake species was found in freshwater habitats throughout the Sacramento and San Joaquin valleys; currently, only 13 scattered populations remain (including one in the Yolo Basin) with 95% of the historic habitat for the species lost (USFWS 2017). As stated in Table 3.6-3, this species is present in the proposed Project area. There are four CNDDB records (#250, #308, #309, and #310) either in or adjacent to the proposed Project area (see Figure 3-1 in Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report"), representing six observations of GGS individuals between 2008 and 2012. Given that proposed Project area conditions are similar as those back in 2012 there is the likelihood that GGS continue to use the site.

The preferred aquatic habitat for this species includes the following: presence of water from March through November; slow-moving or static water with mud substrate, presence of emergent or bankside vegetation that provides cover from predators; available prey in the form of small amphibians and small fish; basking sites with vegetation immediately adjacent to escape cover; absence of large predatory fish; and absence of flooding that would inundate upland refugia (USFWS 2017). Although GGS are predominantly an aquatic species, they utilize upland areas near aquatic habitat during their active spring and summer seasons. Upland habitat is used for basking to regulate body temperature, and for cover. They can utilize small mammal burrows and crevices in the soil to avoid predation.

A GGS habitat assessment was conducted in the proposed Project area on June 9, 2021; no GGS individuals were observed during this assessment. That habitat assessment determined that GGS likely use the Toe Drain and larger ditches in the proposed Project area during the summer because those were determined to provide suitable aquatic habitat. However, overwintering snakes may make little or no use of the proposed Project area, given the general lack of burrows and the likelihood of flooding. The nearby levee for the Sacramento River Deep Water Ship Channel may provide overwintering habitat for GGS.

An area was considered potential GGS aquatic habitat if it was inundated during the reconnaissance surveys or known to convey water during the summer months when GGS are active. Areas currently managed for waterfowl hunting were dry during surveys in June. These areas rely on supplemental water inputs for summer inundation, and based on present operations and water management, they are not expected to provide summer aquatic habitat for GGS.

Burrowing Owl

The western burrowing owl (*Athene cunicularia*), a CDFW species of special concern, has widespread distribution in California and is dependent on fossorial mammal activity for its burrow habitat. The species occurs within western North America from Canada to Mexico and east to Texas and Louisiana. Although western burrowing owls are migratory in certain areas of their range, these owls are predominantly non-migratory in California. Burrowing owls generally inhabit gently sloping areas, characterized by low, sparse vegetation (Poulin et al. 2011). The breeding season for burrowing owls extends from March to August, peaking in April and May (Zeiner et al. 1990). Burrowing owls mainly nest in burrows in the ground, often in old ground squirrel burrows. They consume mostly small mammals (e.g., voles, mice, ground squirrels) and insects (e.g., grasshoppers, crickets, moths, and caterpillars). Given the annual (or occasionally biannual) flooding in the Yolo Bypass, and on the proposed Project area, this flooding decreases opportunities for fossorial mammals to create extensive burrow complexes the species would use. As stated in Table 3.6-3, this species was determined to have a moderate potential to occur within the proposed Project area.

No California ground squirrels (*Otospermophilus beecheyi*) and no ground squirrel burrows were observed during the non-protocol-level surveys. The CNDDB has 29 occurrence records dating from 1982 to 2020 of the species within a 5-mile radius. Given the lack of any natural burrows by ESA biologists during surveys in 2020 and 2021 for the species to occupy there is a reduced likelihood that the species would occur in the proposed Project area on a long-term basis. Burrowing owl could still occupy the proposed Project area as the presence of suitable artificial structures (e.g., dry culverts) can support breeding by the species. See Appendix C to this Draft SEIR, “Tide’s End Multibenefit Restoration Project Preliminary Biological Resources Report” for more information.

Tricolored Blackbird

Tricolored blackbird is State listed as threatened. The tricolored blackbird is a year-round resident throughout the Central Valley. Historical colonies of this species were associated with freshwater wetlands dominated by cattails or tules. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds (Zeiner et al. 1990). Tricolored blackbirds eat mostly insects, and selection of colony sites is primarily a function of proximity to concentrated insect food supplies (e.g., grasshoppers [*Orthoptera*], beetles and weevils [*Coleoptera*]) (Beedy and Hayworth 1991). Emergent wetland vegetation, cattails and tules, and adjacent trees and shrubs provide cover. During fall,

tricolored blackbirds may become nomadic, seeking food. In winter, flocks become more widespread in the Delta. Tricolored blackbirds often leave the immediate vicinity of their nesting colonies and concentrate in huge roosts in marsh habitat (Grinnell and Miller 1944). Managed tule wetland and sandbar willow scrub provide potential nesting habitat in the proposed Project area (ESA 2025a).

As stated in Table 3.6-3, this species was determined to have a moderate potential to occur within the proposed Project area. There is one CNDDB occurrence within 5 miles of the proposed Project area located approximately 3.9 miles to the north in the Yolo Bypass Wildlife Area recorded in 2005. No other CNDDB occurrence records for the species are within a 5-mile radius. See Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report" for more information.

Swainson's Hawk

Swainson's hawk is State listed as threatened. The Swainson's hawk population that nests in the Central Valley winters primarily in Mexico, while the population that nests in the interior portions of North America winters in South America. Swainson's hawks arrive in the Central Valley between March and early April to establish breeding territories. Breeding occurs from late March to late August, peaking in late May through July (Zeiner et al. 1990). In the Central Valley, Swainson's hawks nest in isolated trees, small groves, or large woodlands next to open grasslands or agricultural fields. This species typically nests near riparian areas. Nest locations are usually in close proximity to suitable foraging habitats, which include fallow fields, annual grasslands, irrigated pastures, alfalfa and other hay crops, and low-growing row crops. Swainson's hawks leave their breeding grounds to return to their wintering grounds in late August or early September (Bloom and De Water 1994). The species consumes mainly small mammals and insects. As stated in Table 3.6-3, this species was observed to be Present in the proposed Project area.

Trees that may provide suitable nesting habitat for raptors, including Swainson's hawk, due to their size (up to 40 feet in height) were identified during the reconnaissance biological surveys of the proposed Project area conducted by ESA biologists in September 2020 and during a Swainson's hawk habitat assessment by ESA biologists in June 2021 (see Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report"). Trees in the riparian forest on the Williams property at the south end of the proposed Project area are suitable nesting habitat for the Swainson's hawk (Figure 3.6-1). There are four documented CNDDB records of nesting Swainson's hawks within approximately two miles of the proposed Project area, and Swainson's hawks were observed over the proposed Project area during the Swainson's hawk assessment conducted by ESA in June 2021. The riparian forest near the Toe Drain along the eastern portion of the proposed Project area has potential nesting habitat. No other suitable nest trees for Swainson's hawk were observed during the surveys conducted in the proposed Project area. There are suitable nesting trees across on the east side of the Toe Drain, adjacent to the proposed Project area, that Swainson's hawks can use as well. The grass- and herb-dominated biological communities (managed floodplain, managed wetland, annual grassland, and salt grass flat) provide existing low quality to marginal quality foraging habitat for Swainson's hawk; while these areas are sometimes associated with higher quality foraging conditions for the species, relatively low levels of small mammal activity (i.e., prey items for Swainson's hawk) have been observed within the proposed Project area, which greatly reduces the relative foraging value of these areas for the species (see Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report").

Least Bell's Vireo

The least Bell's vireo (*Vireo bellii pusillus*) is State listed and federally listed as endangered. This species nests primarily in willow-dominated riparian forests but occasionally forages and nests in oak trees. This species is not commonly observed in the Sacramento Valley (Howell et al. 2010) and has not been observed in the proposed Project area nor in the immediate vicinity (CDFW 2025c). The species almost entirely feeds on insects and spiders. As stated in Table 3.6-3, this species was determined to have a moderate potential to occur within the proposed Project area.

The riparian forest and riparian scrub habitats in the proposed Project area provide potential foraging and nesting habitat for least Bell's vireo. A CNDDB occurrence record for the species was in a location 6.5 miles to the north in the Yolo Bypass Wildlife Area in 2011. No vireos were observed during the surveys of the proposed Project area, but no protocol-level surveys for the species were conducted.

Other Special-Status Birds

The federal Migratory Bird Treaty Act and the California Fish and Game Code regulate most species of birds that have the potential to occur or nest in the proposed Project area, including mountain plover (*Charadrius montanus*) (wintering habitat), northern harrier (*Circus hudsonius*), song sparrow ("Modesto" population), all CDFW species of special concern, as well as white-tailed kite (*Elanus leucurus*), a CDFW fully protected species. ESA biologists have observed northern harrier (June 2021), song sparrow (June 2023), and white-tailed kite (June 2023) in the proposed Project area.

Aquatic Resources in the Proposed Project Area

Aquatic resources, including both wetlands as well as other waters (e.g., ditches), are present within the proposed Project area. A formal delineation of aquatic resources in the proposed Project area was conducted on June 13, 14, and 20, 2023 by ESA biologists, according to federal and State guidelines (ESA 2025b). The delineation is documented in the "Tide's End Multibenefit Restoration Project Aquatic Resource Delineation Report." The 2022–2023 wet season had approximately normal precipitation. Nearly the entire proposed Project area is dominated by hydrophytic vegetation, although in the areas highest in elevation such as the annual grassland, the vegetation is a mix of upland and facultative wetland species. The annual grassland and some of the higher areas of managed floodplain in the western portion of the proposed Project area did not meet wetland criteria.

Soil pits were dug at 28 data points throughout the proposed Project area to determine whether hydric soils are present. All wetland data points contained strong redoximorphic concentrations, an indicator of hydric soil. Hydric soil indicators observed included redox dark surface, depleted matrix, and redox depression. Wetland hydrology criteria observed included surface water, saturation, a high water table, sediment deposits, non-riverine drift deposits, surface soil cracks, and biotic crusts.

Table 3.6-4 provides a summary of aquatic resources in the proposed Project area.

Based on the results of the Aquatic Resources Delineation and the jurisdictional analysis performed by ESA in 2023 in accordance to the U.S. Army Corps of Engineers' (USACE's) 2023 Revised Definition of Waters of the United States, it is presumed that 1,904.2 acres of waters of the United States and/or State and 84.4 acres of other waters of the United States and/or State are present within the proposed Project area.

TABLE 3.6-4
AQUATIC RESOURCES IN THE PROPOSED PROJECT AREA

Feature Type—Cowardin Classification[a]	Acres	Acreage of Presumed Waters of the State	Acreage of Presumed Waters of the United States	Linear Feet
Wetlands				
Farmed wetlands—Palustrine, farmed (Pf)	1,149.1	1,149.1	1,149.1	N/A
Managed tule wetland—Palustrine, emergent (PEM1A)	372.5	372.5	372.5	N/A
Managed floodplain—Palustrine, emergent (PEM1A)	175.4	175.4	175.4	N/A
Managed wetland—Palustrine, emergent (PEM1A)	182.8	182.8	182.8	N/A
Seasonal wetland—Palustrine, emergent (PEM1C)	2.0	2.0	2.0	N/A
Riparian forest—Palustrine, forested (PFO1)	21.1	21.1	21.1	N/A
Swale—Palustrine, emergent (PEM1Cx)	1.3	1.3	1.3	6,439.8
Subtotal	*1,904.2*	*1,904.2*	*1,904.2*	*6,439.8*
Other Waters				
Toe Drain Canal—Riverine tidal (R1UBVx)	60.7	60.7	60.7	18,603.5
Agricultural ditches—Riverine intermittent (R5UBFx)	23.7	23.7	23.7	73,708.9
Subtotal	*84.4*	*84.4*	*84.4*	*92,312.4*
Aquatic Resources Total:	**1,988.6**	**1,988.6**	**1,988.6**	**98,752.2**

NOTE: N/A = not applicable

a. Cowardin classifications for wetlands and other waters used in aquatic resource delineation reports may differ from more commonly used habitat type classifications, the latter of which was used for mapping biological communities within the proposed Project area as presented in Table 3.6-1.

SOURCES: Cowardin et al. 1979; data compiled by Environmental Science Associates in 2023.

Waters of the United States and State are subject to regulation by the USACE under Section 404 of the Clean Water Act and by the Central Valley Regional Water Quality Control Board under the Porter-Cologne Water Quality Control Act and Section 401 of the Clean Water Act.

Wildlife Movement Corridors

Biological communities in the proposed Project area can serve as movement corridors that link areas of suitable wildlife habitat to amplify their benefits for wildlife. Topography and other natural factors in combination with urbanization can fragment or separate large open-space areas. The fragmentation of natural habitat can create isolated "islands" of vegetation and habitat that may not provide sufficient area to accommodate sustainable populations and can adversely affect genetic and species diversity. Retaining wildlife movement corridors ameliorates the effects of such fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished. Such movement may also promote genetic exchange between separated populations.

Many terrestrial wildlife species use the proposed Project area as a corridor for movement, migration, and access to resources. The proposed Project area is located within the Pacific Flyway, and its lands and waters serve as a stopover point for migrating birds to rest and feed. Specifically, the managed wetlands within the proposed Project area provide important shelter and food resources for migratory waterfowl such as ducks and geese. In addition to the wetlands, agricultural fields are used as a corridor by a number

of waterfowl and shorebird species. The rice fields in the proposed Project area, and the agricultural ditches and other aquatic features, when inundated, serve as corridors for GGS as they move throughout the region. Mammals such as black-tailed deer and coyotes, both species observed within the proposed Project area, likely use upland areas as corridors to travel through the region and especially to escape floodwaters.

Under flooded conditions, the proposed Project area is inundated. During periods of receding floodwaters, typically during the months of March through April, the proposed Project area transitions from flooded to non-flooded. Most water in the proposed Project area drains to the Toe Drain; however, some existing drainage pathways within the proposed Project area do not connect, and as a result, those ponded waters dissipate through evapotranspiration and infiltration. When the proposed Project area is not inundated, it is not a movement corridor for aquatic species.

3.6.3 Regulatory Setting

Federal and State regulations discussed in Section 3.5.3, "Regulatory Setting," of Section 3.5, "Biological Resources—Terrestrial," of the Final SRGO Program EIR were reviewed for relevance to the proposed Project and identified below, along with any applicable new or updated policies since certification of the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.3, pp. 3.5-17 through 3.5-27). As a statewide, program-level document, the Final SRGO Program EIR did not discuss regional and local regulations; this Draft SEIR provides project-specific regional and local goals and policies to supplement the regulatory setting information provided in the Final SRGO Program EIR.

Federal

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) applies to projects that may result in the "take" of a fish or wildlife species that is federally listed as threatened or endangered. The term "endangered" is defined in the FESA as those species which are in danger of extinction throughout all or a significant portion of its range, while the term "threatened" is defined as any species which is likely to become an endangered species within the foreseeable future (16 USC 1532[6]; [20]). The law also applies to actions that are proposed to be authorized, funded, or undertaken that may jeopardize the continued existence of a federally listed wildlife or plant species or may adversely modify or destroy designated and occupied critical habitat for such species. "Candidate" species are those undergoing a status review to determine whether they warrant listing as endangered or threatened under the FESA; because these "candidates" are not formally listed, they do not have formal protections against take.

Section 9 of the FESA protects listed wildlife species from take, defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct" (United States Code Title 16, Section 1532[19] [16 USC 1532(19)]). Federal regulations define "harm" as "an act which actually kills or injures wildlife." This definition includes significant habitat modification or degradation that results—or is reasonably expected to result—in death or injury to wildlife by substantially impairing essential behavioral patterns, including breeding, feeding, sheltering, spawning, rearing, and migrating (Code of Federal Regulations [CFR] Title 50, Sections 17.3 and 222.102 [50 CFR 17.3, 222.102]). "Harass" is defined similarly broadly.

If a project could result in take of a federally listed species, either an HCP and incidental take permit under FESA Section 10(a) or a federal interagency consultation under FESA Section 7 is required. Under the FESA, the USFWS has jurisdiction over all terrestrial wildlife and plant species, as well as freshwater fish species and a few marine mammals (such as the California sea otter); the National Marine Fisheries Services has jurisdiction over anadromous fish species and more pelagic marine mammals (e.g., sea lions, whales, and dolphins).

Under FESA Section 10, an HCP and incidental take permit are the mechanism for authorizing take of listed species for projects authorized, funded, or carried out by a State or local government agency. The FESA Section 7 process, which includes a biological opinion and accompanying incidental take statement, is the mechanism for authorizing take of listed species for actions authorized, funded, or carried out by a federal agency. In addition, regardless of whether take may occur, a federal interagency consultation under FESA Section 7 is required if a federal agency action "may affect" a federally listed species or designated critical habitat.

Besides listing species within its jurisdiction as threatened or endangered, issuing incidental take permits, and conducting interagency consultations, the USFWS designates "critical habitat" for threatened and endangered species, which the FESA defines as follows (16 USC 1532[5][A]):

(1) Specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to a species' conservation, and those features may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation of the species.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 USC 651 et seq.), as amended in 1964, was enacted to protect fish and wildlife when federal actions control or modify a natural stream or body of water. The law requires federal agencies to consider the effect of water resource-related projects on fish and wildlife resources. The agencies must consult and coordinate with the USFWS and State fish and game agencies to identify ways to prevent the loss of and damage to fish and wildlife resources, and to further develop and improve these resources.

Executive Order 13112: Invasive Species

Executive Order 13112 (February 3, 1999) directs all federal agencies to prevent and control the introduction and spread of invasive non-native species in a cost-effective, environmentally sound manner to minimize their effects on economic, ecological, and human health. The executive order was intended to build on existing laws, such as the National Environmental Policy Act, the Nonindigenous Aquatic Nuisance Prevention and Control Act, the Lacey Act, the Plant Pest Act, the federal Noxious Weed Act, and the FESA.

Noxious Weed Act and Code of Federal Regulations (Title 7, Part 360)

The federal Noxious Weed Act (7 USC 2801–2813) and CFR Title 7, Part 360, primarily address the introduction of federally designated noxious weed plants or seeds across the borders of the United States. The Noxious Weed Act also regulates the interstate movement of designated noxious weeds under the U.S. Department of Agriculture's permit system.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements a series of international treaties to protect migratory birds. The MBTA authorizes the Secretary of the Interior to regulate the direct taking of migratory birds, providing that it shall be unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird" (16 USC 703). The current list of species protected by the MBTA was published in the *Federal Register* on November 1, 2013 (Volume 78, p. 65844). In addition to the MBTA, Fish and Game Code Section 3513 states: "It is unlawful to take or possess any migratory nongame bird as designated in the federal Migratory Bird Treaty Act (16 U.S.C. Sec. 703 et seq.) before January 1, 2017, any additional migratory nongame bird that may be designated in that federal act after that date, or any part of a migratory nongame bird described in this section, except as provided by rules and regulations adopted by the United States Secretary of the Interior under that federal act before January 1, 2017, or subsequent rules or regulations adopted pursuant to that federal act, unless those rules or regulations are inconsistent with this code."

Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds

Executive Order 13186 (January 10, 2001) directs federal agencies that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a memorandum of understanding with the USFWS to promote the conservation of migratory bird populations. The memorandum of understanding should include implementation actions and reporting procedures that would be followed through each agency's formal planning process, such as resource management plans and fisheries management plans.

Executive Order 13443: Facilitation of Hunting Heritage and Wildlife Conservation

The purpose of Executive Order 13443 (August 16, 2007) is to direct federal agencies maintaining programs and activities that measurably affect public land management, outdoor recreation, and wildlife management to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.

Clean Water Act, Section 404

The federal Clean Water Act (CWA) was enacted as an amendment to the federal Water Pollution Control Act of 1948, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. CWA Section 404 requires applicants obtain a permit from the USACE for discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity.

Waters of the United States are areas subject to federal jurisdiction pursuant to CWA Section 404. Waters of the United States are typically divided into two types: (1) wetlands, and (2) other waters of the United

States. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR Section 328.3[c][1]; 40 CFR Section 120.2[c][1]). To be subject to federal jurisdiction, a wetland must normally support hydrophytic vegetation (plants growing in water or wet soils), hydric soils, and wetland hydrology. Other waters of the United States are seasonal or perennial waterbodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for the three wetland parameters (33 CFR 328.4). Nevertheless, for a wetland to be subject to federal jurisdiction of the CWA and considered a water of the United States, it must be a water of the United States in its own right (i.e., used in interstate commerce), or have a permanent or continuous surface connection with a water of the United States. (33 CFR Section 328.3[a][4][i]-[ii]; 40 CFR Section 120.2[a][4][i]-[ii].)

Clean Water Act, Section 401

Under CWA Section 401, projects that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect State water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401 (see discussion on Porter-Cologne Water Quality Control Act below in this section for more details).

State

California Endangered Species Act

Sections 2050 through 2115.5 of the California Fish and Game Code— California Endangered Species Act (CESA)—address threats to native fish, wildlife, and plant species. The CESA states that these species are in danger of or threatened with extinction because their habitats are threatened with destruction, adverse modification, or severe curtailment, or because of overexploitation, disease, predation, or other factors. These species are of ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the state, and the conservation, protection, and enhancement of these species and their habitat is of statewide concern (Fish and Game Code Section 2051).

California Fish and Game Code (Sections 2062 and 2067, respectively) defines “endangered” and “threatened” species as follows:

- *Endangered species:* A native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.
- *Threatened species:* A native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts.

The California Fish and Game Commission is responsible for listing species under CESA; CDFW implements CESA, enforcing it and issuing permits.

Similar to the FESA, CESA in California Fish and Game Code Section 2080 strictly prohibits the "take" and "possession," among other things, of any California native species or subspecies designated (i.e., listed) as an endangered or threatened or endangered fish, wildlife, or plant species or species, except as authorized under the Fish and Game Code. "Take" for purposes of CESA is defined in Section 86 of the Fish and Game Code to mean hunt, pursue, catch, capture, or kill, or attempt to do so. In contrast to the FESA, the take prohibition under the CESA applies to candidate species pursuant to Fish and Game Code Section 2085. Under Section 2081 of the Fish and Game Code, an incidental take permit from CDFW is required for projects that could result in the "take" of a species that is State listed as threatened or endangered, or that is a candidate for listing.

The Fish and Game Code includes several exceptions to CESA take prohibition and permitting mechanisms for CDFW to authorize otherwise prohibited take and possession of species and subspecies protected by CESA. For example, pursuant to Fish and Game Code Section 2081, subdivision (a), CDFW may also authorize otherwise prohibited take and possession, by permit or memorandum of understanding, to certain entities for scientific, educational, or management purposes, and subdivision (b), may authorize by permit, take that is incidental to otherwise lawful activity, subject to certain criteria prescribed by the statute. Finally, for species protected under both the CESA and FESA, CDFW may determine that a federal incidental take permit or statement is consistent with the CESA; in such a case, a consistency determination is issued and no further authorization is necessary under the Fish and Game Code (Fish and Game Code Section 2080.1).

Fish and Game Code Designated Fully Protected Species

Fish and Game Code Sections 3511, 4700, 5050, and 5515 designate several birds, mammals, reptiles and amphibians, and fish, respectively, as fully protected species. Take and possession are prohibited under the Fish and Game Code and may not be authorized by CDFW, except in limited circumstances. For example, CDFW may authorize take of a fully protected species by permit for necessary scientific research, including efforts to recover the species.

California Native Plant Protection Act

Sections 1900–1913 of the Fish and Game Code codify the Native Plant Protection Act (NPPA) of 1977, which is intended to preserve, protect, and enhance endangered, threatened, or rare native plants in California. Under Section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. A species is rare when, although not threatened with immediate extinction, it is present in such small numbers throughout its range that it may become endangered if its environment worsens.

The California Fish and Game Commission exercises authority to designate native plants as rare under the NPPA and, for endangered plants, both under the NPPA and CESA. Like the CESA, CDFW enforces the NPPA and exercises related permitting authority by regulation, as well as through complementary regulations governing CDFW's incidental take permitting program under the CESA (California Code of Regulations [CCR] Title 14, Sections 783.0–783.8 and 786.9). Also like the CESA, take and possession, among other things, of native rare and endangered plants protected under the NPPA are prohibited, except as authorized by law. There are a few exceptions to the take prohibition in the NPPA, including for agricultural and nursery operations; emergencies; and after properly notifying CDFW for vegetation removal from canals, roads, and other sites, changes in land use, and in certain other situations.

The relationship between the CESA and NPPA is complex and subject to legal debate. Generally speaking, a CESA Section 2081 permit for incidental take of listed threatened and endangered plants may be required, with certain exceptions. (Fish and Game Code, Section 1907, subd. (a)). CCR Title 14, Section 786.9 similarly allows CDFW to authorize take of plants listed as rare pursuant to the NPPA, if that take is incidental to otherwise lawful activities and if certain conditions are met.

CDFW maintains the Special Vascular Plants, Bryophytes, and Lichens List for California (CDFW 2025b) as part of the CNDDB. The list is updated quarterly and is reviewed and updated by rare plant status review groups managed jointly by CDFW and CNPS. Plant species, subspecies, or varieties are assigned a California Rare Plant Rank (CRPR) based on their level of endangerment. Plants with CRPR 1A are presumed extirpated in California and either rare or extinct elsewhere. Plants with a CRPR 1B rank are rare, threatened, or endangered in California or elsewhere. Plants with a 2A rank are presumed extirpated in California but common elsewhere. Plants with a 2B rank are rare, threatened or endangered in California but more common elsewhere. For purposes of this analysis, plants with a rank of 1A, 1B, 2A, or 2B are considered rare plants under CEQA Section 15380. For plants with a CRPR 3 rank, CDFW and CNPS lack sufficient information to assign them another code, and CRPR 4 indicates limited distribution of plants that may become rare in the future. Plants with CRPR 3 and 4 ranks may be reviewed on a case-by-case basis to determine whether they should be considered rare plants under CEQA Section 15380.

Fish and Game Code Safe Harbor Agreements

Fish and Game Code Sections 2089.2 through 2089.26 allow CDFW to authorize incidental take of a species listed as endangered, threatened, candidate, or a rare plant, through a Safe Harbor Agreement (SHA) if implementation of the agreement is reasonably expected to provide a net conservation benefit to the species, among other provisions. SHAs are intended to encourage landowners to voluntarily manage their lands to benefit CESA-listed species without subjecting those landowners to additional regulatory restrictions as a result of their conservation efforts. In addition, at the end of the agreement period, participants may return the enrolled property to the baseline conditions that existed at the beginning of the SHA.

Natural Community Conservation Planning Act

The Natural Community Conservation Planning Act (Fish and Game Code Sections 2800–2835) details the State's policies on the conservation, protection, restoration, and enhancement of the State's natural resources and ecosystems. This law identifies conservation planning as an officially recognized policy that can be used to eliminate conflicts between protection of the State's natural resources and the need for growth and development. The law also promotes conservation planning to enhance coordination and cooperation among private interests, agencies, and landowners, and aid in multispecies, multihabitat management. Where CDFW approves a natural community conservation plan, it may authorize by permit the otherwise prohibited taking of any covered species whose conservation and management are provided for in the plan, including CESA-listed species and fully protected species. The Natural Community Conservation Planning Act provides an alternative means for CDFW to authorize the incidental take of species that are listed as threatened or endangered or are candidates for listing under CESA.

California Fish and Game Code Section 1600

California Fish and Game Code Section 1602 states that it is unlawful to "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake" without first notifying CDFW of that activity. Thereafter, if CDFW determines and provides notification that the activity will not substantially adversely affect any existing fish or wildlife resources, the activity may commence. However, if CDFW determines that the activity may substantially adversely affect an existing fish or wildlife resource, a lake or streambed alteration agreement may be required, which would need to include reasonable measures necessary to protect the affected resource(s), before conducting the activity or activities described in the notification. (Fish and Game Code Section 1602).

Sections 1600–1616 of the Fish and Game Code state that it is unlawful to do any of the following without first notifying CDFW:

- Substantially divert or obstruct the natural flow of the bed, channel, or bank of any river, stream, or lake.
- Substantially change the bed, channel, or bank of any river, stream, or lake.
- Use any material from the bed, channel, or bank of any river, stream, or lake.
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake in California.

With certain exceptions, a lake or streambed alteration agreement must be obtained if CDFW determines that a project will conduct one or more of the above activities and is expected to result in substantial adverse effects on existing fish and wildlife resources. The lake or streambed alteration agreement must include measures to protect fish and wildlife.

Restoration Management Permit

The Restoration Management Permit Act (Assembly Bill (AB) 1581) signed on September 27, 2024, added Chapter 6.7 to the California Fish and Game Code. AB 1581 consolidates five of the most common CDFW authorizations typically needed for restoration projects into a single, streamlined permit called the Restoration Management Permit (RMP). The RMP is designed for permitting beneficial management and restoration activities including: 1) take of CESA threatened, endangered, or candidate species; 2) take of Fully Protected Species; 3) take of plant species designated as "rare" pursuant to the NPPA; 4) take of other species including mammals, birds, fish, amphibians, or reptiles; and 5) authorization of impacts to rivers, lakes, and streams that would otherwise be subject to a lake or streambed alteration agreement.

Porter-Cologne Water Quality Control Act

The State Water Resources Control Board (State Water Board), through its nine regional water boards, regulates waters of the State through the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). Waters of the State are defined as any surface water or groundwater, including saline waters, within the boundaries of the state. The State Water Board and regional water boards may exert jurisdiction over waters of the State regardless of federal jurisdictional status. The Porter-Cologne Act also charges the State Water Board and regional water boards with establishing and protecting beneficial uses of waters of

the State. These beneficial uses may include protection for uses of water that support terrestrial ecosystems, aquatic ecosystems, and habitat for special-status species. Along linear aquatic features, the Central Valley Regional Water Quality Control Board generally considers their jurisdiction to extend to the ordinary high-water mark (i.e., same areal extent that the USACE claims jurisdiction over for those aquatic features that are jointly waters of the United States under the CWA and waters of the State under Porter-Cologne Act). Waters of the State determined to be jurisdictional under the Porter-Cologne Act would require, if affected, waste discharge permitting and/or a certification under CWA Section 401 (in the case of a required USACE CWA Section 404 permit) issued by the regional water board (in unique circumstances where a project overlaps multiple regional water board jurisdictions, the State Water Board would be responsible for the CWA Section 401 certification).

California Food and Agriculture Code

More than 30 different laws address the State's mandate to prevent the introduction and spread of injurious animal pests, plant diseases, and noxious weeds. These laws describe procedures and regulations related to the following topics:

- Plant quarantines.
- Regulation of noxious weed seed.
- Emergency pest eradications to protect agriculture.
- Pests as public nuisances.
- Vectors of infestation and infection.
- The sale, transport, and propagation of noxious weeds.
- The protection of native species and forests from weeds.

Most of these laws and their associated regulations (CCR Title 3) are enforced by the California Department of Food and Agriculture.

California Department of Food and Agriculture Integrated Pest Control Branch Programs

The Integrated Pest Control Branch of the California Department of Food and Agriculture conducts a wide range of pest management and eradication projects as part of the Plant Health and Pest Prevention Services Division's Pest Prevention Program. Assessments and fees are collected for some program activities and services. The branch cooperates with other State agencies, federal and county agencies, research institutions, agricultural industries, and other nongovernmental organizations.

California's Weed Management Area Program

"Weed management areas" are local organizations that bring together landowners and managers (federal, State, county, city, and private) in a county or multicounty geographic area to coordinate efforts and expertise against common invasive and noxious weed species. The weed management area functions under the authority of a mutually developed memorandum of understanding. It develops a strategic plan that helps to prioritize eradication, control, and containment projects, as well as other weed management area activities. The strategic plan also identifies what each partner contributes toward the overall cooperative

nature of the weed management area. The program includes 48 weed management areas covering all 58 counties in the state. The proposed Project area falls within the Yolo weed management area.

Sections of the California Fish and Game Code Pertaining to Invasive and Noxious Plant Species

At least five laws and their associated regulations address or relate to invasive and noxious plant species. The applicable code sections include Fish and Game Code Sections 2080–2089, 2118, 2270–2272, 2300, 6400–6403, and 15000 et seq. The intent of these laws is to regulate the importation and transportation of live wild animals and plants, restrict placement of live aquatic animals or plants in State waters, and regulate the operation of aquaculture industries. CDFW is responsible for implementing these laws.

California Wetlands Conservation Policy

The California Wetlands Conservation Policy was adopted in 1993 (Executive Order W-59-93). The goal of this policy is to ensure no overall net loss of wetlands and achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property.

Delta Reform Act of 2009 and Delta Plan

This topic is discussed in Section 3.10, “Hydrology and Water Quality.”

State Wildlife Action Plan

Each state develops a state wildlife action plan to serve as the comprehensive wildlife conservation strategy required for the receipt of federal funds through the State and Tribal Wildlife Grants program. California last updated its plan in 2015 (CDFW 2015). The State Wildlife Action Plan provides a blueprint for the actions necessary to address the highest priorities for conserving California’s aquatic, marine, and terrestrial resources. Implementation of this plan relies on making important and helpful conservation information more accessible to resources managers and the public, and on developing lasting partnerships with a broad array of governments, agencies, organizations, businesses, and citizens.

Special-Status Species

Special-status species are legally protected under the CESA and FESA or other regulations or are considered sufficiently rare by the scientific community to qualify for such listing. These species fall into several categories:

(1) Species listed or proposed for listing as threatened or endangered under the FESA (CFR Title 50, Sections 17.12 and 17.11 [listed plants and listed animals, respectively], and various notices in the *Federal Register* [proposed species]).

(2) Species that are candidates for possible future listing as threatened or endangered under the FESA (*Federal Register* Title 61, No. 40, February 28, 1996).

(3) Species listed or proposed for listing by the State of California as threatened or endangered under the CESA (CCR Title 14, Section 670.5).

(4) Plants listed as rare or endangered under the California NPPA (California Fish and Game Code Section 1900 et seq.).

(5) Animal species of special concern to CDFW.

(6) Animals fully protected under the California Fish and Game Code (Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

(7) Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as rare or endangered even if the species is not on one of the official lists (CEQA Guidelines Section 15380).

(8) Plants considered by CDFW and CNPS to be "rare, threatened or endangered in California" (CRPRs 1A, 1B, 2A, and 2B).[1]

Species recognized under these terms are collectively referred to as *special-status species*.

Sensitive Natural Communities

Sensitive natural communities are communities identified by local or regional plans, policies, or regulations from CDFW or USFWS. (CEQA Guidelines Appendix G.)

These communities may be considered sensitive because they include specific vegetation or habitat as having limited distribution statewide or within a county or region (California Natural Diversity Database [CNDDB] Rank of S1–S3) or because they contain wetlands and other waters that are protected under federal and state laws. Federal and state laws and regulations applicable to special-status natural communities include:

- Section 1602 of the California Fish and Game Code
- Sections 401 and 404 of the CWA

A project's substantial adverse effect on a sensitive natural community may be of special concern for a variety of reasons, including locally or regionally declining status or because they provide important habitat to common and special-status species. Some of these habitats or their constituent plant alliances and associations are monitored and reported in the CNDDB, which is maintained by CDFW.

Regional and Local

The following regional and local policies relevant to the proposed Project based on location, project type, and/or environmental setting have been included for context; however, DWR, as a State agency, is not subject to local ordinances or policies.

Yolo County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)

The Yolo County HCP/NCCP provides conservation for 12 species, including Swainson's hawk, tricolored blackbird, GGS, burrowing owl, valley elderberry longhorn beetle, California tiger salamander, white-tailed kite, western pond turtle, western yellow-billed cuckoo, bank swallow, least Bell's vireo, and

[1] CDFW works in collaboration with the CNPS to maintain a list of plant species native to California that have low numbers or limited distribution, or that are otherwise threatened with extinction. These species are categorized by their rarity in the CRPR system. For further information about the CRPR system and the specific ranks, see "California Rare Plant Ranking System" in Section 3.6.3, "Regulatory Setting." While surveys for CRPR Rank 3 and Rank 4 plant species were conducted, the lead agency does not consider these plants to be special-status.

palmate-bracted bird's beak. The Yolo Habitat Conservancy completed the plan in 2018 and began implementation on January 11, 2019. The plan provides take coverage and associated mitigation for infrastructure (e.g., roads and bridges) and development activities (e.g., agricultural facilities, housing, and commercial buildings) planned for construction over the next 50 years in Yolo County. The plan conserves 8,000 acres of habitat and coordinates conservation efforts for these lands.

Yolo County 2030 Countywide General Plan

The Yolo County 2030 General Plan (Yolo County 2009) outlines goals and policies intended for the protection of biological resources countywide. Relevant goals and policies from this planning document include the following:

Goal CO-2: Biological Resources. Protect and enhance biological resources through the conservation, maintenance, and restoration of key habitat areas and corresponding connections that represent the diverse geography, topography, biological communities, and ecological integrity of the landscape.

Policy CO-2.1: Consider and maintain the ecological function of landscapes, connecting features, watersheds, and wildlife movement corridors.

Policy CO-2.3: Preserve and enhance those biological communities that contribute to the County's rich biodiversity, including blue oak and mixed oak woodlands, native grassland prairies, wetlands, riparian areas, aquatic habitat, agricultural lands, heritage valley oak trees, remnant valley oak groves, and roadside tree rows.

Policy CO-2.4: Coordinate with other regional efforts (e.g., Yolo County HCP/NCCP) to sustain or recover special-status species populations by preserving and enhancing habitats for special-status species.

Policy CO-2.10: Encourage the restoration of native habitat.

Policy CO-2.16: Existing native vegetation shall be conserved where possible and integrated into new development if appropriate.

Policy CO-2.20: Encourage the use of wildlife-friendly Best Management Practices to minimize unintentional killing of wildlife, such as restricting mowing during nesting season for ground-nesting birds or draining of flooded fields before fledging of wetland species.

Policy CO-2.40: Require that impacts to species listed under the State or federal Endangered Species Acts, or species identified as special-status by the resource agencies, be avoided to the greatest feasible extent. If avoidance is not possible, fully mitigate impacts consistent with applicable local, State, and Federal requirements.

Policy CO-2.42: Projects that would impact Swainson's hawk foraging habitat shall participate in the Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County entered into by the CDFG [California Department of Fish and Game, now CDFW] and the Yolo County HCP/NCCP Joint Powers Agency, or satisfy other subsequent adopted mitigation requirements consistent with applicable local, State, and federal requirements.

3.6.4 Impact Analysis and Mitigation Measures

Significance Criteria

In accordance with Appendix G of the CEQA Guidelines, an impact related to terrestrial biological resources is considered significant if the proposed Project would do any of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS.
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, wetland, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or State habitat conservation plan.

Methodology and Assumptions

As discussed in Chapter 1, "Introduction," the proposed Project is a "restoration project" as defined in Section V of the SRGO (State Water Board 2022a: Section V, p. 2); therefore, this Draft SEIR supplements and incorporates by reference the Final SRGO Program EIR, including its appendices (State Water Board 2022b). As provided by CEQA Guidelines Section 15163(b), a supplement to an EIR need contain only the information necessary to make the previous EIR adequate for the project as revised. This means that only those project-specific activities that would introduce new significant environmental effects or cause a substantial increase in the severity of significant effects identified in the SRGO Program EIR need to be evaluated. Where existing information and analysis in the SRGO Program EIR are considered sufficient to evaluate the impacts of the proposed Project, no additional environmental review is provided.

As further outlined in Chapter 1, and as required by CEQA, this Draft SEIR incorporates by reference the general protection measures and species protection measures outlined in the Final SRGO Program EIR Appendices E and F, which are intended to avoid and minimize impacts on sensitive resources. Consistent with the Final SRGO Program EIR, the impact analysis for each resource area assumes that applicable general protection measures and species protection measures would be implemented and enforced in the same way as mitigation measures, consistent with Section 15126.4 of the CEQA Guidelines, and that the proposed Project would be constructed and operated in compliance with relevant federal and State regulations. As such, if the analysis has determined that incorporating one or more general protection measures and/or species protection measures into the proposed Project would reasonably mitigate an impact, then the impact conclusion is less than significant. If the analysis has determined that an impact

would remain significant after the incorporation of appropriate general protection measures and species protection measures, then mitigation measures from the Final SRGO Program EIR and/or project-specific mitigation measures have been included in this Draft SEIR to reduce the magnitude of the impact. All mitigation measures are from the Final SRGO Program EIR unless specifically stated otherwise.

The following impact analysis considers the potential impacts related to terrestrial biological resources associated with implementation of the proposed Project. The impact analysis evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities (long-term, temporary). However, the effects of restoration elements themselves, once constructed, would not require earth-moving activities that would influence special-status species, their habitat, or other sensitive communities or wetlands; therefore, the analysis presented for Impacts 3.6-1 through 3.6-7 combines a discussion of the long-term impacts of constructed restoration elements with the impacts of operations, monitoring, and maintenance activities associated with those elements.

The approach to assessing impacts on terrestrial biological resources was to review existing environmental studies, current data (see "Data Sources" section above), and modeling results conducted for the proposed Project (see Section 3.10, "Hydrology and Water Quality"). From this work, lists of species that have potential to be impacted both directly, indirectly, permanently and temporarily as a result of proposed Project were evaluated. In addition, field surveys within the proposed Project area were conducted by ESA's qualified terrestrial biologists in 2020, 2021, and 2023. These field surveys were used to delineate the extent of aquatic resources within the proposed Project area as well as evaluate existing habitat quality within the proposed Project area and the potential for special-status plant and wildlife species to occur in the proposed Project area or vicinity.

Impacts and Mitigation Measures

Table 3.6-5 summarizes the impact conclusions presented in this section for easy reference.

TABLE 3.6-5
SUMMARY OF IMPACT CONCLUSIONS—TERRESTRIAL BIOLOGICAL RESOURCES

Impact Statement	Construction Activities	Constructed Restoration Elements	Operations, Monitoring, and Maintenance Activities
3.6-1: Implementation of the proposed Project could adversely affect habitat for special-status plant species.	LTS	LTSG	LTSG
3.6-2: Implementation of the proposed Project could adversely affect habitat for special-status wildlife species.	LTSG	LTSG	LTSG
3.6-3: Implementation of the proposed Project could result in adverse effects on riparian habitat or sensitive natural communities.	LTSG	LTSG	LTSG
3.6-4: Implementation of the proposed Project could result in adverse effects on State and federally protected wetlands through direct removal, hydrological interruption, or other means.	LTSG	LTSG	LTSG
3.6-5: Implementation of the proposed Project could interfere with the movement of native resident and migratory wildlife species.	LTSG	LTSG	LTSG
3.6-6: Implementation of the proposed Project could conflict with local policies or ordinances protecting biological resources.	LTS	LTS	LTS

Impact Statement	Construction Activities	Constructed Restoration Elements	Operations, Monitoring, and Maintenance Activities
3.6-7: Implementation of the proposed Project could conflict with the provisions of an adopted habitat conservation plan or natural community conservation plan.	LTS	LTSM	LTSM

NOTES: LTS = less than significant; LTSG = less than significant with implementation of general protection measures; LTSM = less than significant with implementation of mitigation measures

SOURCE: Data compiled by Environmental Science Associates in 2025.

The Final SRGO Program EIR identified general protection measures to reduce the impacts to terrestrial biological species. **Table 3.6-6** lists the impacts identified in Table 3.6-5 and the corresponding general protection measures that are applicable to the proposed Project. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection measure.

TABLE 3.6-6
SUMMARY OF TERRESTRIAL BIOLOGICAL RESOURCES IMPACTS AND GENERAL PROTECTION MEASURES

Final SRGO Program EIR General Protection Measures for Terrestrial Biological Resources	Applicability to Proposed Project (by Impact Statement)				
	Impact 3.6-1	Impact 3.6-2	Impact 3.6-3	Impact 3.6-4	Impact 3.6-5
GPM-1: Receipt and Copies of All Permits and Authorizations	-	CA	CA, CRE, OMMA	CA	CA
GPM-2: Construction Work Windows	-	CA, CRE, OMMA	CA	-	CA, CRE, OMMA
GPM-3: Construction Hours	-	CA, CRE, OMMA	-	-	CA, CRE, OMMA
GPM-4: Environmental Awareness Training	-	CA, CRE, OMMA	CA, CRE, OMMA	-	CA, CRE, OMMA
GPM-5: Environmental Monitoring	CRE, OMMA	CA, CRE, OMMA	CA	CA, CRE, OMMA	CA, CRE, OMMA
GPM-6: Work Area and Speed Limits	-	CA, CRE, OMMA	CA	-	CA, CRE, OMMA
GPM-7: Environmentally Sensitive Areas	CRE, OMMA	CA, CRE, OMMA	CA, CRE, OMMA	CA, CRE, OMMA	CA, CRE, OMMA
GPM-8: Prevent Spread of Invasive Species	CRE, OMMA	-	CA	CA	-
GPM-9: Practices to Prevent Pathogen Contamination	CRE, OMMA	-	CA, CRE, OMMA	CA, CRE, OMMA	-
GPM-10: Equipment Maintenance and Materials Storage	-	CA, CRE, OMMA	CA, CRE, OMMA	CA, CRE, OMMA	-
GPM-11: Material Disposal	-	-	CA	CA, CRE, OMMA	-
GPM-12: Fugitive Dust Reduction	-	-	CA, CRE, OMMA	-	-
GPM-13: Trash Containment and Removal	-	CA, CRE, OMMA	CA	-	-
GPM-14: Project Cleanup after Completion	-	-	CA	CA	-
GPM-15: Revegetate Disturbed Areas	-	CA, CRE, OMMA	CA, CRE, OMMA	CA	-

Final SRGO Program EIR General Protection Measures for Terrestrial Biological Resources	Applicability to Proposed Project (by Impact Statement)				
	Impact 3.6-1	Impact 3.6-2	Impact 3.6-3	Impact 3.6-4	Impact 3.6-5
WQHM-1: Staging Areas and Stockpiling of Materials and Equipment	-	CA, CRE, OMMA	-	CA, CRE, OMMA	-
WQHM-2: Storm Water Pollution Prevention Plan	-	CA, CRE, OMMA	-	CA	-
WQHM-3: Erosion and Sediment Control Measures	-	-	-	CA	-
WQHM-4: Hazardous Materials Management and Spill Response Plan	-	CA, CRE, OMMA	CA, CRE, OMMA	CA, CRE, OMMA	-
WQHM-5: In-Water Concrete Use	-	CA	-	CA	-
WQHM-6: Accidental Discharge of Hazardous Materials	-	CA, CRE, OMMA	CA, CRE, OMMA	CA, CRE, OMMA	-
IWW-1: Appropriate In-Water Materials	-	-	-	CRE, OMMA	-
IWW-2: In-Water Vehicle Selection and Work Access	-	-	-	CRE, OMMA	-
IWW-3: In-Water Placement of Materials, Structures, and Operation of Equipment	-	-	-	CRE, OMMA	-
IWW-6: Dewatering/Diversion				CA	
IWW-8: Removal of Diversion and Barriers to Flow	-	-	-	CRE, OMMA	-
IWW-13: Dredging Operations and Dredging Materials Reuse Plan	-	-	-	CRE, OMMA	-
VHDR-1: Avoidance of Vegetation Disturbance	CRE, OMMA	CA	-	-	-
VHDR-2: Native and Invasive Vegetation Removal Materials and Methods	CRE, OMMA	CA	CA, CRE, OMMA	-	-
VHDR-3: Revegetation Materials and Methods	-	CA	CA, CRE, OMMA	-	-
VHDR-4: Revegetation Erosion Control Materials and Methods	-	CA	-	-	-
VHDR-5: Revegetation Monitoring and Reporting	-	CA	-	-	-
VHDR-6: General Herbicide Use	CRE, OMMA	-	-	CRE, OMMA	-
VHDR-7: Herbicide Application Planning	CRE, OMMA	-	-	CRE, OMMA	-
VHDR-8: Herbicide Application Reporting	CRE, OMMA	-	-	CRE, OMMA	-

NOTES: - = Not Applicable; CA = Construction Activities; CRE = Constructed Restoration Elements; OMMA = Operations, Maintenance, and Monitoring Activities

Impacts 3.6-6 and 3.6-7 are not included in this table, as general protection measures listed were not applicable.

SOURCE: State Water Board 2022a, ESA 2025

The Final SRGO Program EIR identified species protection measures contained in to reduce the impacts to terrestrial biological species. **Table 3.6-7** summarizes the impact statements identified from Table 3.6-5 and the corresponding species protection measures that are applicable to the proposed Project. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each species protection measure.

TABLE 3.6-7
SUMMARY OF TERRESTRIAL BIOLOGICAL RESOURCES IMPACT STATEMENTS AND SPECIES PROTECTION MEASURES

Protection Measure Category	Species Protection Measure	Impact 3.6-1	Impact 3.6-2					Impact 3.6-3	Impact 3.6-4	Impact 3.6-5
			GGS	WPT	BUOW	LBV	NEST BIRDS			
General Species Protection Measures (SPM-)	1: Preconstruction Surveys	-	CA	CA	CA	CA	CA	-	-	-
	2: Environmentally Sensitive Areas and/or Wildlife Exclusion	-	CA	CA	CA	CA	CA	-	-	-
	3: Species Protection Construction Work Windows	-	CA, CRE, OMMA	CA, CRE, OMMA	CA	CA	CA	-	-	CA, CRE, OMMA
	4: Species Capture, Handling, and Translocation	-	CA, CRE, OMMA	CA, CRE, OMMA	-	-	-	-	-	CA, CRE, OMMA
	5: Special-Status Species Entrapment Prevention	-	CA, CRE, OMMA	CA, CRE, OMMA	CA	-	-	-	-	CA, CRE, OMMA
	6: Airborne Noise Reduction	-	-	-	CA	CA, CRE, OMMA	CA, CRE, OMMA	-	-	CA, CRE, OMMA
Amphibian (AMP-) Guild Protection Measures	1: Wildlife Passage Design	-	-	-	-	-	-	-	-	-
	2: Rain Event Limitations	-	-	-	-	-	-	-	-	-
	3: Preconstruction Survey	-	-	-	-	-	-	-	-	-
	4: Disease Prevention and Decontamination	-	-	-	-	-	-	-	-	-
	5: Lighting	-	-	-	-	-	-	-	-	-
	6: Clearing and Grubbing Vegetation	-	-	-	-	-	-	-	-	-
	7: Pump Screens	-	-	-	-	-	-	-	-	-
	8: Removal of Non-native Invasive Species	-	-	-	-	-	-	-	-	-
	9: Placement of Suitable Erosion Control Material	-	-	-	-	-	-	-	-	-
	10: Encounters with Species	-	-	-	-	-	-	-	-	-
	11: Species Observations and Handling Protocol	-	-	-	-	-	-	-	-	-

Protection Measure Category	Species Protection Measure	Impact 3.6-1	Impact 3.6-2					Impact 3.6-3	Impact 3.6-4	Impact 3.6-5
			GGS	WPT	BUOW	LBV	NEST BIRDS			
Reptile (REP-) Guild Protection Measures	1: Preconstruction Survey	-	CA, CRE, OMMA	CA, CRE, OMMA	-	-	-	-	-	-
	2: Environmentally Sensitive and Wildlife Exclusion Area	-	CA, CRE, OMMA	CA, CRE, OMMA	-	-	-	-	-	-
	3: Clearing and Grubbing Vegetation	-	CA, CRE, OMMA	CA	-	-	-	-	-	-
	4: Prohibited Use of Rodenticides	-	CA, CRE, OMMA	-	-	-	-	-	-	CA, CRE, OMMA
	5: Species Observations and Encounters	-	CA, CRE, OMMA	CA, CRE, OMMA	-	-	-	-	-	CA, CRE, OMMA
	6: Species Handling and Relocation	-	CA, CRE, OMMA	CA, CRE, OMMA	-	-	-	-	-	CA, CRE, OMMA
Bird (BIRD-) Species Protection Measures	1: Habitat Assessment	-	-	-	CA, CRE, OMMA	CA, CRE, OMMA	CA, CRE, OMMA	-	-	-
	2: Nest Protection Work Window	-	-	-	CA, CRE, OMMA	CA, CRE, OMMA	CA, CRE, OMMA	-	-	CA, CRE, OMMA
	3: Work Area Limits	-	-	-	CA, CRE, OMMA	CA, CRE, OMMA	CA, CRE, OMMA	-	-	CA, CRE, OMMA
	4: Site Access Restrictions	-	-	-	CA, CRE, OMMA	CA, CRE, OMMA	CA, CRE, OMMA	-	-	CA, CRE, OMMA
	5: Monitoring	-	-	-	CA, CRE, OMMA	CA, CRE, OMMA	CA, CRE, OMMA	-	-	CA, CRE, OMMA
Mammal Species (MAM-) Protection Measures	1: Conduct Habitat Assessment	-	-	-	-	-	-	-	-	-
	2: Avoidance Areas	-	-	-	-	-	-	-	-	-
	3: Use of Handheld Tools	-	-	-	-	-	-	-	-	-
	4: Species Trapping and Relocating	-	-	-	-	-	-	-	-	-
	5: Reporting Requirements	-	-	-	-	-	-	-	-	-

Protection Measure Category	Species Protection Measure	Impact 3.6-1	Impact 3.6-2					Impact 3.6-3	Impact 3.6-4	Impact 3.6-5
			GGS	WPT	BUOW	LBV	NEST BIRDS			
Invertebrate (INVERT-) Species Protection Measures	1: Implement California Freshwater Shrimp Measures	-	-	-	-	-	-	-	-	-
	2: Vernal Pool Branchiopods Measures	-	-	-	-	-	-	-	-	-
	3: Implement Valley Elderberry Longhorn Beetle Protocol	-	-	-	-	-	-	-	-	-
	4: Implement Butterfly Protection Measures	-	-	-	-	-	-	-	-	-
Plant (PLANT-) Species Protection Measures	1: Habitat Assessment and Surveys	CRE, OMMA	-	-	-	-	-	-	-	-
	2: Seasonal Avoidance of Vernal Pool Plant Species and Other Annual and Perennial Species	CRE, OMMA	-	-	-	-	-	-	-	-
	3: Exclusion Buffer Establishment	CRE, OMMA	-	-	-	-	-	-	-	-
	4: Work Restrictions in the Exclusion Buffer	CRE, OMMA	-	-	-	-	-	-	-	-
	6: Herbicide Application, Clearing, and Ground Disturbance	CRE, OMMA	-	-	-	-	-	-	CRE, OMMA	-

NOTES: - = Not Applicable; CA = Construction Activities; CRE = Constructed Restoration Elements; OMMA = Operations, Maintenance, and Monitoring Activities

1. Species Codes for which measures apply during Construction:
   GGS = Giant garter snake; WPT = western pond turtle; BUOW = Burrowing owl; BIRDS (Swainson's hawk, Tricolored blackbird, special-status birds).

Key: Measures can be read by code in parentheses in Protection Measure Category and the Species Protection Measure combined. For example, for the first row, "GPM-1: Preconstruction Surveys."

Impacts 3.6-6 and 3.6-7 are not included in this table, as species protection measures listed were not applicable.

SOURCE: State Water Board 2022a, compiled by Environmental Science Associates in 2025

Impact 3.6-1: Implementation of the proposed Project could adversely affect habitat for special-status plant species.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities for restoration projects on habitat for special-status plant species. As indicated in Table 3.6-6, the Final SRGO Program EIR contains the general protection measures to reduce the impacts of construction activities on special-status plant species. Additionally, as indicated in Table 3.6-7, the Final SRGO Program EIR found that restoration projects that could adversely affect habitat for special-status plant species would implement the following species protection measures, as applicable: SPM-1 through SPM-6, and PLANT-1 through PLANT-6. However, given the uncertainty of whether special-status plants could be avoided during construction, this impact was determined to be significant and unavoidable in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-33).

Related to the proposed Project, the Final SRGO Program EIR evaluated the installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; removal of legacy structures; creation of depressions, berms, and drainage features; and the installation of cofferdams during construction (see Final SRGO Program EIR: Section 4.6.4, pp. 4-14 through 4-17). Also, related to the proposed Project, the Final SRGO Program EIR included grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials (see Final SRGO Program EIR: Section 4.6.4, pp. 4-14 through 4-17).

Focused botanical surveys of the proposed Project area did not find any special-status plants; therefore, none of the general or species protection measures listed in the Final SRGO Program EIR apply to construction of the proposed Project. The impact from construction of the proposed Project on special-status plants would be ***less than significant***.

The impacts of construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-29 through 3.5-33), and the Final SRGO Program EIR adequately addressed such impacts related to adverse impacts on special-status plant habitat.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO, including the potential effects on special-status plants. Maintenance of constructed facilities for restoration projects permitted under the Order, including restored habitats, is expected to have effects on special-status plants similar to those described above for proposed Project construction. The magnitude and duration of these impacts would likely be reduced, because the scale of equipment use and ground disturbance would be limited and spread out over months, years, or decades. The Final SRGO Program EIR's analysis of constructed facilities and operations and maintenance of those facilities included all of the same general and species protection measures listed above under "Effects of Construction Activities" to reduce the impacts of operations, monitoring, and

maintenance activities on special-status plants. However, given the uncertainty of whether impacts on special-status plants could be avoided during operations and maintenance of restoration sites, this impact was determined to be significant and unavoidable in the Final SRGO Program EIR. No mitigation measures were identified (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-36).

Because the SRGO does not describe the size, location, implementation timing, or exact configuration of specific restoration projects, the Final SRGO Program EIR states that an understanding of such restoration project-specific factors is necessary to evaluate potential impacts of constructed restoration elements on special-status plants; this evaluation includes identifying feasible adjustments in restoration design project planning to avoid special-status plants and implementation of general protection measures and/or mitigation measures, as applicable. The restoration action under the proposed Project that would create more tidal and freshwater wetland habitat would likely expand habitat opportunities for many special-status plant species that rely on such habitat types. While no special-status plants were identified during focused botanical surveys, there is a potential that special-status plants that rely on tidal wetland habitats may colonize the proposed Project area in the future. To address potential impacts on special-status plant species from operations, monitoring, and maintenance activities, the following general and species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project in the event that monitoring (as described in Section 2.4.2, "Tidal Wetlands, Transition Zones, and Floodplains") shows that the restored Project area has become occupied by special-status plants: GPM-5, GPM-7, GPM-8, GPM-9, PLANT-1, PLANT-2, PLANT-3, PLANT-4, VHDR-1, and VHDR-2. Additionally, since localized herbicides may be employed during operations and maintenance, VHDR-6, VHDR-7, VHDR-8, and PLANT-6 would also apply to the proposed Project.

Certain protective measures identified in the Final SRGO Program EIR are not applicable to the proposed Project; for example, VHDR-3 is not germane because operations, monitoring, and maintenance activities associated with the proposed Project do not entail modifications to existing site contours as would happen during the construction phase. Because GPM-5, GPM-7, GPM-8, GPM-9, PLANT-1, PLANT-2, PLANT-3, PLANT-4, PLANT-6, VHDR-1, VHDR-2, VHDR-6, VHDR-7, and VHDR-8 would be implemented, the impact of operations, monitoring, and maintenance activities associated with the proposed Project would result in a ***less-than-significant impact with implementation of general protection measures and species protection measures***.

The impacts of constructed restoration elements and operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-33 through 3.5-36), and the Final SRGO Program EIR adequately addressed such impacts related to adverse impacts on special-status plant habitat.

Impact 3.6-2: Implementation of the proposed Project could adversely affect habitat for special-status wildlife species.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, as discussed above under Impact 3.6-1. As indicated in Table 3.6-6, the Final SRGO Program EIR contains the following general protection measures to reduce the impacts of construction activities on special-status terrestrial wildlife: GPM-2 through GPM-7,

GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, WQHM-5, WQHM-6, VHDR-1, VHDR-2, VHDR-3, VHDR-4, and VHDR-5 (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-38).

Additionally, as indicated in Table 3.6-7, the Final SRGO Program EIR contains the following general and species-specific special-status wildlife species protection measures to reduce the impacts of construction activities on special-status terrestrial wildlife: SPM-1 through SPM-6, AMP-1 through AMP-11, REP-1 through REP-6, BIRD-1 through BIRD-5, MAM-1 through MAM-5, and INVERT-1 through INVERT-4 (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-38 and 3.5-39).

Given the uncertainty of whether special-status wildlife and their habitat could be avoided during construction, this impact was determined to be significant and unavoidable in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-40). No mitigation measures were identified.

The Final SRGO Program EIR expected that supplemental analyses would be conducted during project-level planning to specifically determine which special-status could be affected by the proposed Project. Accordingly, in preparation of this Draft SEIR, DWR analyzed those specific special-status terrestrial wildlife species that would have potential to be impacted by the proposed Project, because this level of analysis was not provided in the Final SRGO Program EIR. The analysis provided below evaluates the specific types of construction activities that would take place under the proposed Project and the potential for the respective special-status terrestrial wildlife to be affected.

Giant Garter Snake

GGS has the potential to be present in areas designated for construction access, construction site preparation (e.g., demolition of existing infrastructure), earthwork, and for equipment staging and/or stockpiling. Proposed construction activities could adversely affect GGS individuals primarily through vehicle strikes and being crushed during demolition and removal of existing water control infrastructure. Construction could also negatively impact the species by obstructing movement corridors, reducing prey base, or attracting predators. Project construction would occur from April 1 through November 1, which would largely overlap the active season for GGS, May 1 to October 1. The potential for direct mortality is lower during the active season than during the dormant period because snakes can move to avoid danger. In addition to the following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife (i.e., GPM-1 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, WQHM-5, WQHM-6, VHDR-1, VHDR-2, VHDR-3, VHDR-4, and VHDR-5), the following general and reptile species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect GGS: SPM-1, SPM-2, SPM-3,[2] SPM-4, SPM-5, REP-1, REP-2, REP-3, REP-4, REP-5, and REP-6.

Western Pond Turtle

The proposed Project would impact existing WPT aquatic habitat through disturbance during site preparation, earthwork, and for equipment staging and/or stockpiling. Proposed construction activities could adversely affect WPT individuals primarily through vehicle strikes. In addition, site preparation and construction activities could obstruct the movement of and reduce the prey base for the WPT.

[2] To protect GGS, construction activities within 200 feet of suitable aquatic habitat within the current range of for GGS will be confined to May 1 through October 1. Extended work windows within 200 feet of suitable aquatic habitat may be approved with prior approval from USFWS and CDFW.

The proposed Project area likely provides poor nesting habitat, given the fact that excessive soil saturation is not conducive to proper egg development for WPT, and the fact that hatchlings overwinter in the nest chamber after hatching (i.e., during the period when proposed Project area would be flooded) (Ashton et al. 1997). A preconstruction survey for special-status species reptiles would be conducted to verify that WPT nests are absent from the proposed Project area.

In addition to the following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife (i.e., GPM-1 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, WQHM-5, WQHM-6, VHDR-1, VHDR-2, VHDR-3, VHDR-4, and VHDR-5), the following general and reptile species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect WPT: SPM-1, SPM-2, SPM-3,[3] SPM-4, SPM-5, REP-1, REP-2, REP-3, REP-5, and REP-6.

Burrowing Owl

While the potential for burrowing owl to occupy the proposed Project area is reduced due to lack of suitable burrows, suitable habitat for this species is present in the proposed Project area as they could still occupy suitable artificial structures (e.g., dry culverts), which can support breeding by the species. In addition to the following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife (i.e., GPM-1 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, WQHM-5, WQHM-6, VHDR-1, VHDR-2, VHDR-3, VHDR-4, and VHDR-5), the following general and bird species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect burrowing owl: SPM-1, SPM-2, SPM-3,[4] SPM-5, SPM-6, BIRD-1, BIRD-2, BIRD-3, BIRD-4, BIRD-5.

Tricolored Blackbird

Because there is potential nesting habitat in the proposed Project area, the following general and bird species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect tricolored blackbird: SPM-1, SPM-2, SPM-3,[5] SPM-5, SPM-6, BIRD-1, BIRD-2, BIRD-3, BIRD-4, BIRD-5.

Swainson's Hawk

No Swainson's hawk breeding activity was observed during surveys conducted at the proposed Project area by ESA biologists. Additionally, there are no known active Swainson's hawk nests (i.e., active within the past 5 years) present within the proposed Project area. Given the lack of nests, no impacts on Swainson's hawk breeding habitat are anticipated.

In the event that Swainson's hawks start to nest within the proposed Project area prior to the start of construction, construction of the proposed Project would have the potential to affect breeding conditions for the species. General disturbance, including exposure to noise, vibration, and dust, could adversely affect nesting Swainson's hawks by altering their nesting behaviors (e.g., prompting adults to abandon eggs or chicks in nests). Construction activities are anticipated between April 16 through October 31,

[3] To protect WPT, for activities that involve in-water work, work will be avoided from October 1 to March 31.

[4] Since it is not feasible for construction activities to be limited to outside the breeding season for burrowing owl, BIRD-5 will be implemented.

[5] Since it is not feasible for construction activities to be limited to outside the nesting season for tricolored blackbird, BIRD-5 will be implemented.

overlapping the nesting season for Swainson's hawk. Construction work, including removal of select riparian trees, during the nesting season could result in the destruction of nests and eggs and the mortality of nestlings. In the event the proposed Project would require removal of an active Swainson's hawk nest tree, DWR would seek incidental take coverage from CDFW under the RMP process prior to its removal.

The effects of converting foraging habitat for Swainson's hawk to tidal wetland habitat through constructing tidal channels that connect tidal action to the Toe Drain were evaluated. There would not be a substantial change in foraging habitat quality associated with this construction activity because there are already only low levels of small mammal activity observed within the proposed Project area under existing conditions, based on the minimal rodent burrows observed by ESA biologist during surveys conducted in 2020 and 2021.

In addition to the following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife (i.e., GPM-2 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, WQHM-5, WQHM-6, VHDR-1, VHDR-2, VHDR-3, VHDR-4, and VHDR-5), the following general and bird species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect Swainson's hawk: SPM-1, SPM-2, SPM-3,[6] SPM-6, BIRD-1, BIRD-2, BIRD-3, BIRD-4, and BIRD-5.

Least Bell's Vireo

Since this species may occupy the proposed Project area, and proposed Project activities involve impacts to existing riparian habitat, protective measures were identified for this species. In addition to the following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife (i.e., GPM-1 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, WQHM-5, WQHM-6, VHDR-1, VHDR-2, VHDR-3, VHDR-4, and VHDR-5), the following general and bird species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect least Bell's vireo: SPM-1, SPM-2, SPM-3,[7] SPM-6, BIRD-1, BIRD-2, BIRD-3, BIRD-4, and BIRD-5.

Other Special-Status Birds

Proposed Project construction activities could adversely affect special-status bird species by resulting in mortality. Also, general disturbance, including exposure to noise, vibration, and dust, could adversely affect nesting birds by altering their nesting behaviors (e.g., prompting adults to abandon eggs or chicks in nests). Construction work, including removal of riparian trees, during the nesting season could result in the destruction of nests and eggs and the mortality of nestlings. In addition to the following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife (i.e., GPM-2 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, WQHM-5, WQHM-6, VHDR-1, VHDR-2, VHDR-3, VHDR-4, and VHDR-5), the following general and bird species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect special-status bird species, including mountain plover, northern harrier, and song sparrow: SPM-1, SPM-2, SPM-3,[8] SPM-6, BIRD-1, BIRD-2, BIRD-3, BIRD-4, and BIRD-5.

[6] Since it is not feasible for construction activities to be limited to outside the nesting season for Swainson's hawk, BIRD-5 will be implemented.

[7] Since it is not feasible for construction activities to be limited to outside the nesting season for least Bell's vireo, BIRD-5 will be implemented.

[8] Since it is not feasible for construction activities to be limited to outside the bird nesting season, BIRD-5 will be implemented.

Impact Conclusion

To address potential impacts on special-status wildlife species from construction activities, appropriate general and species protection measures proposed in the Final SRGO Program EIR were identified above for each respective special-status terrestrial wildlife species. Species-specific protection measures related to special-status amphibian species, mammal species, and invertebrate species are not applicable to the proposed Project, because the proposed Project area does not support them. The impact of construction on special-status wildlife would be ***less than significant with implementation of general protection measures and applicable species protection measures.***

The effects of construction associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-36 through 3.5-40), and the Final SRGO Program EIR adequately addressed such impacts related to adverse impacts on special-status wildlife habitat.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of operations, monitoring, and maintenance activities for restoration projects to affect habitat for special-status wildlife species. Most long-term impacts on terrestrial biological resources of implementing the restoration projects permitted under the SRGO should be neutral or beneficial, because the specific purpose of these projects would be to correct existing conditions that contribute to resource degradation. Nevertheless, there are circumstances in which restoration projects designed to specifically benefit special-status fish species may result in tradeoffs with specific terrestrial special-status wildlife.

The Final SRGO Program EIR's analysis of constructed restoration elements and operations and maintenance of those facilities included all of the same general and species protection measures listed above under "Effects of Construction Activities" to reduce impacts of operations, monitoring, and maintenance activities on special-status wildlife (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-41 through 3.5-43). However, given the uncertainty of whether impacts on special-status wildlife could be avoided during operations and maintenance of restoration sites, this impact was determined to be significant and unavoidable in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-43). No mitigation measures were identified.

The Final SRGO Program EIR expected that supplemental analyses would be conducted during project-level planning to more specifically determine which special-status terrestrial wildlife could be affected by the proposed Project. Accordingly, the analysis provided below for this Draft SEIR evaluates how operations, monitoring, and maintenance activities under the proposed Project would affect those special-status terrestrial wildlife previously considered above for impacts associated with construction-related activities.

Giant Garter Snake

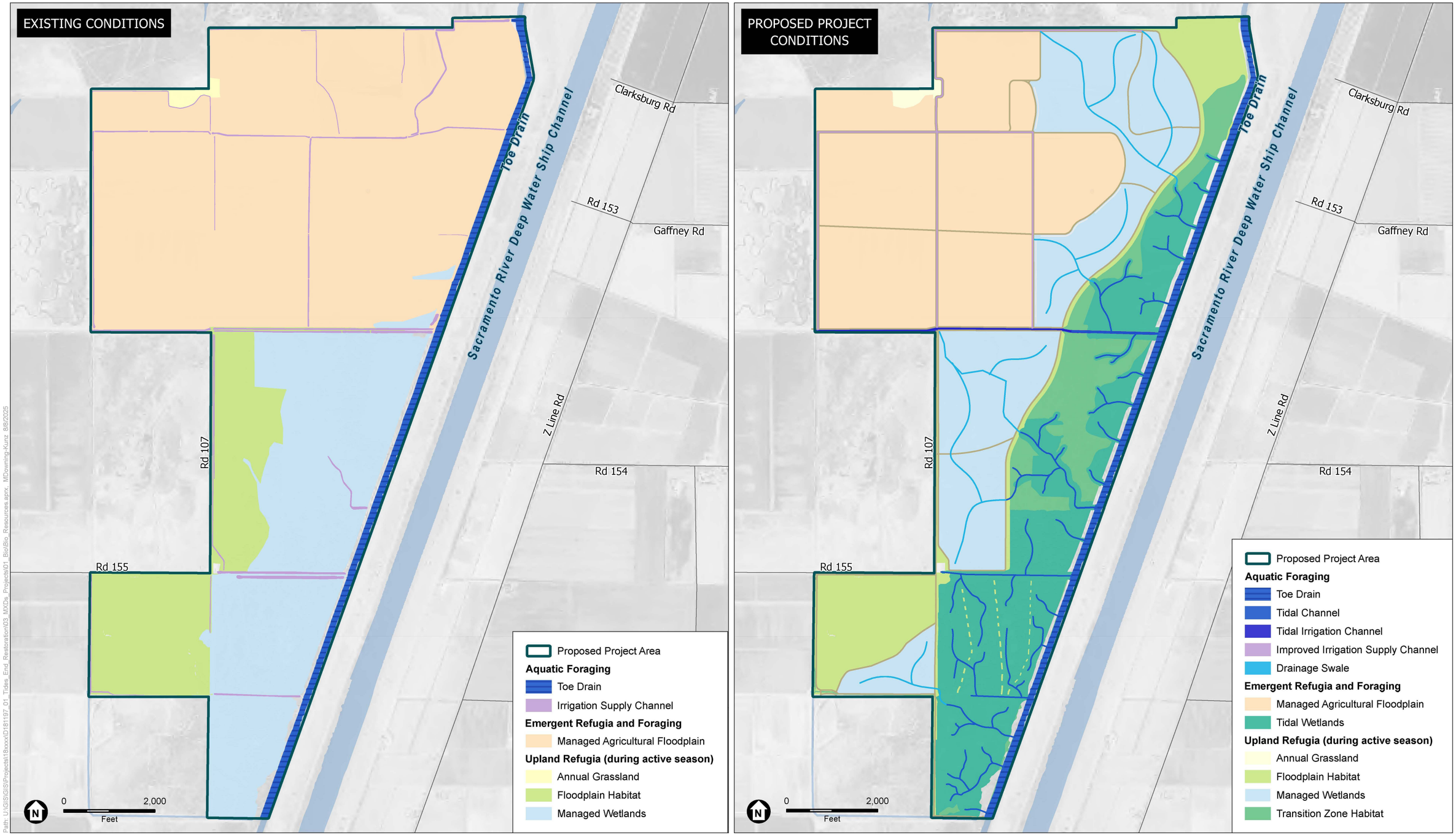
For GGS, aquatic habitat which contains more open water allows the species to swim and forage for prey, as well as help with thermoregulation. Such areas are identified in **Figure 3.6-2** as "Aquatic Foraging Habitat." Areas with more dense emergent vegetation can also support GGS by providing them areas to

hide from predators as well as provide them opportunities to ambush their own prey. These areas are identified in Figure 3.6-2 as "Emergent Refugia and Foraging." Upland habitat that is located near suitable aquatic habitat functions to provide GGS with opportunities during their active season to thermoregulate and avoid their predators; upland habitat for GGS often includes areas that contain mammal burrows, soil cracks and fissures, and/or riprap. Figure 3.6-2 identifies those areas that would function as upland refugia during the GGS active season.

Restoration of tidal wetland habitats under the proposed Project would provide additional suitable aquatic habitat conditions for GGS compared to existing conditions from approximately 97.1 acres to approximately 126.3 acres. As shown in Figure 3.6-2, the proposed Project would result in a gain in GGS aquatic foraging habitat, with most of the increases occurring within the tidal channel networks that would be created within the restored tidal wetland complexes. These tidal channel networks vary in size, with smaller channels having an expected average width of 24 feet and the very largest channels having a width of 41 feet. Also as shown in Figure 3.6-2, additional GGS aquatic foraging habitat under the proposed Project would be present within the irrigation supply channel and the drainage swale.

The total spatial extent of emergent refugia and foraging habitat for GGS is expected to be reduced (from approximately 1,205.3 acres to approximately 1,130.6 acres) when comparing existing conditions and the proposed Project (see Figure 3.6-2). Under existing conditions, emergent refugia and foraging habitat for GGS is due to the presence of managed floodplain agriculture associated with rice lands (approximately 1,205.3 acres); under the proposed Project, such emergent refugia and foraging habitat for GGS would be available in the tidal wetlands (i.e., the vegetated areas of the tidal wetland complex outside the tidal channel network) and to the extent that the areas of the proposed Project area identified as managed floodplain agriculture in active rice production (**Table 3.6-8**). The areas of the proposed Project area that would be restored to managed wetlands area not expected to provide aquatic habitat for GGS, because they would be flooded from October through February – a time of year when the species is much less aquatic. The functional value of the emergent refugia and foraging habitat for GGS is expected to improve under the proposed Project. The USFWS Recovery Plan for GGS recognizes the high value provided by continuous perennial wetlands as compared to rice. For example, this Recovery Plan calls for preserving block pairings of habitat consisting of a 539-acre block of contiguous perennial wetlands and a 1,578-acre contiguous block of active rice lands separated by no more than five miles; alternatively, the Recovery Plan calls for preserving a pair of habitat blocks consisting of two 539-acre blocks of contiguous perennial wetland separated by no more than five miles (i.e., the preservation ratio of rice lands: perennial wetland ratio is nearly 3:1) (USFWS 2017).

The proposed Project also entails establishment of transition zone habitat between the tidal wetlands and floodplains. This transition zone in the near-term would provide upland habitat adjacent to suitable aquatic habitat, which GGS often utilize for cover and for basking for thermoregulation. The proposed Project is expected to increase upland habitat for GGS during their active season, from approximately 881.7 acres under existing conditions to 918.1 acres under the proposed Project. With sea-level rise, this transition zone is expected to ultimately transition into tidal wetlands. The proposed Project area west of the Toe Drain levee is expected to provide minimal overwintering habitat for GGS, because the Yolo Bypass would continue to be subject to extensive inundation regimes during the wet season.



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Figure 3.6-2
Giant Garter Snake Habitat Changes

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TABLE 3.6-8
GIANT GARTER SNAKE HABITAT CHANGES

Habitat Function for Giant Garter Snake	Habitat Feature	Existing Conditions (approximate acreage)	Proposed Project Conditions (approximate acreage)
Aquatic Foraging	Toe Drain	60.6	61.6
	Irrigation Supply Canal or Improved Irrigation Supply Channel	36.5	11.3
	Tidal Channel	--	29.2
	Tidal Irrigation Channel	--	10.8
	Drainage Swale	--	13.4
Subtotal of Aquatic Foraging	--	**97.1**	**126.3**
Emergent Refugia and Foraging	Managed Agricultural Floodplain	1,205.3	709.9
	Tidal Wetlands	--	420.7
Subtotal of Emergent Refugia and Foraging	--	**1,205.3**	**1,130.6**
Upland Refugia (During Active Season)	Annual Grassland	8.9	7.6
	Managed Wetlands	572.3	539.3
	Transition Zone Habitat	--	151.7
	Floodplain Habitat	300.5	219.5
Subtotal of Upland Refugia (During Active Season)	--	**881.7**	**918.1**

SOURCE: Data compiled by Environmental Science Associates in 2025

Maintenance of constructed restoration elements for the proposed Project, including restored habitats, is expected to have effects on GGS similar to those described above for proposed Project construction. The magnitude and duration of these impacts on GGS would likely be reduced, because the scale of equipment use and ground disturbance would be limited. In addition to the following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife (i.e., GPM-2 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, and WQHM-6), the following general and reptile species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect GGS similar during operations, monitoring, and maintenance activities: SPM-3,[9] SPM-4, SPM-5, REP-1, REP-2, REP-3, REP-4, REP-5, REP-6.

Western Pond Turtle

For WPT, suitable aquatic habitat within the proposed Project area would be present in open water channels. As identified in **Figure 3.6-3**, the proposed Project would result in a net gain of aquatic habitat for the WPT. Figure 3.6-3 shows the distribution of suitable aquatic habitat (channels and open water) for WPT under existing conditions and under the proposed Project within the proposed Project area. The net increase in aquatic habitat (approximately 126.3 acres compared to approximately 97.1 acres) under the proposed Project is mainly associated with the establishment of the various tidal channel networks

[9] To protect GGS, construction activities within 200 feet of suitable aquatic habitat within the current range of for GGS will be confined to May 1 through October 1. Extended work windows within 200 feet of suitable aquatic habitat may be approved with prior approval from USFWS and CDFW.

(approximately 29.2 acres of tidal channels) within the larger tidal wetland complexes that would be restored along the east side of the proposed Project area along the Toe Drain (**Table 3.6-9**). Potential basking habitat for the species would also be present within these channels. Additionally, the quality of this constructed restored habitat would be improved through reduced human disturbance and management activities as compared to existing conditions. Maintenance of constructed restoration elements for the proposed Project, including restored habitats, is expected to have effects on WPT similar to those described above for proposed Project construction. The magnitude and duration of these impacts on WPT would likely be reduced, because the scale of equipment use and ground disturbance would be limited. In addition to the following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife (i.e., GPM-2 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, and WQHM-6), the following general and reptile species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect WPT during operations, monitoring, and maintenance activities: SPM-3,[10] SPM-4, SPM-5, REP-1, REP-2, REP-5, REP-6.

TABLE 3.6-9
WESTERN POND TURTLE HABITAT CHANGES

Habitat Type	Existing Conditions	Proposed Project
Toe Drain	60.6	61.6
Irrigation Supply Canal or Improved Irrigation Supply Channel	36.5	11.3
Tidal Channel	--	29.2
Tidal Irrigation Channel	--	10.8
Drainage Swale	--	13.4
Total	**97.1**	**126.3**

Burrowing Owl

Constructed restoration elements of the proposed Project may result in foraging habitat opportunities for burrowing owl within the managed wetlands, transition zone habitat, and floodplain habitats during periods when they are not typically flooded (generally March through September). However, the change in acreage of managed wetlands from the proposed Project would only minimally change existing conditions. Given the annual (or occasionally biannual) flooding in the Yolo Bypass that occurs under existing conditions, the proposed Project area was already observed to lack the small mammal burrows that this species requires to occupy on a long-term basis.

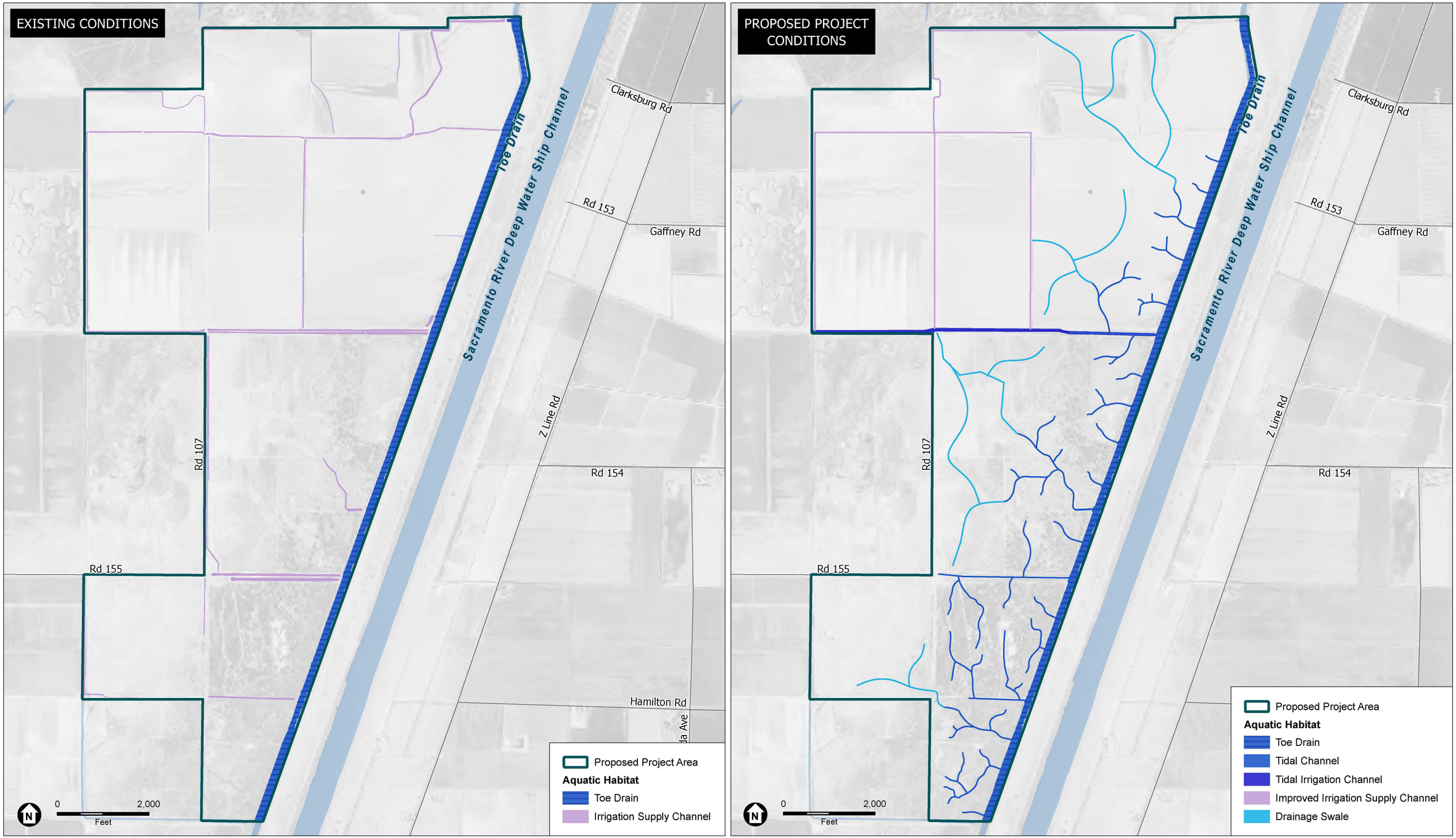
Maintenance of restoration elements under the proposed Project is expected to have effects on burrowing owl similar to those described above for proposed Project construction. The magnitude and duration of these impacts on burrowing owl would likely be reduced, because the scale of equipment use and ground disturbance would be limited.

The following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife would protect burrowing owl from the proposed Project's operations, monitoring,

[10] To protect WPT, for activities that involve in-water work, work will be avoided from October 1 to March 31.

EXISTING CONDITIONS

PROPOSED PROJECT CONDITIONS



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Figure 3.6-3
Western Pond Turtle Aquatic Habitat Changes

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and maintenance activities: GPM-2 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, and WQHM-6. Given these considerations, the effects of the proposed Project's operations, monitoring, and maintenance activities on burrowing owl are expected to be minimal. The following general and bird species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect western burrowing owl: BIRD-1 through BIRD-5.

Tricolored Blackbird

The tidal wetlands that would be restored under the proposed Project are expected to provide increased opportunities for tricolored blackbird breeding. Suitable foraging habitat for tricolored blackbird within the proposed Project area includes the tidal wetlands, managed wetlands, managed floodplain agriculture, and floodplain habitat that allow them access to abundant insect prey. Given the proposed Project would provide increased suitable breeding habitat for the species, the impact on tricolored blackbirds would be net beneficial.

Maintenance of restoration elements under the proposed Project is expected to have effects on tricolored blackbirds similar to those described above for proposed Project construction. The magnitude and duration of these impacts on tricolored blackbirds would likely be reduced, because the scale of equipment use and ground disturbance would be limited.

The following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife would protect tricolored blackbird during the proposed Project's operations, monitoring, and maintenance activities: GPM-2 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, and WQHM-6. The following general and bird species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect tricolored blackbirds in the event nesting colonies are established close to where maintenance activities need to take place: SPM-6, BIRD-1, BIRD-2, BIRD-3, BIRD-4, BIRD-5.

Swainson's Hawk

The increase in the extent of riparian forest would eventually create additional nesting opportunities for Swainson's hawks. A substantial temporal lag is expected between when the riparian vegetation planted under the proposed Project becomes suitable breeding habitat for Swainson's hawks, because this species typically selects tall, mature trees for its nests.

Figure 3.6-4 shows Swainson's hawk habitat within the proposed Project area under existing conditions as compared to the distribution of such habitat under the proposed Project. Under existing conditions, most of the Swainson's hawk foraging habitat is within the southern portion of the proposed Project area. Portions of the proposed Project area to the north (Capitol Oil property) currently managed in rice is poor foraging habitat for Swainson's hawk because inundation of the rice fields diminishes the population of burrowing rodent prey and the rice stalks further reduce foraging efficiency. Foraging habitat includes annual grassland, managed wetlands, floodplain habitat, and salt grass flat (882.1 acres total). With the proposed Project, there would be approximately 932.4 acres of annual grassland, managed wetlands, transitional zone habitat and floodplain habitat that represent areas of potential foraging habitat for Swainson's hawks (**Table 3.6-10**). The managed wetlands would be filled in the fall and drained by spring. When drained, these areas of the proposed Project area can be used for foraging by Swainson's hawks during their breeding season. The relatively low levels of small mammal activity observed within

the proposed Project area under existing conditions (based on minimal rodent burrows observed) is expected to remain similarly reduced with the prey density within the proposed Project area once the constructed restoration elements are operational.

The following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife would protect Swainson's hawk during the proposed Project's operations, monitoring, and maintenance activities: GPM-2 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, and WQHM-6. The following general and bird species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect Swainson's hawks in the event active hawk nests are established in trees close to where maintenance activities take place: SPM-6, BIRD-1, BIRD-2, BIRD-3, BIRD-4, BIRD-5.

TABLE 3.6-10
SWAINSON'S HAWK FORAGING HABITAT CHANGES

Habitat Type	Existing Conditions	Proposed Project
Annual Grassland	8.9	7.6
Managed Wetlands	572.3	552.7
Transitional Zone Habitat	--	151.7
Floodplain Habitat	300.5	220.4
Salt Grass Flat	0.4	--
Total	**882.1**	**932.4**

Least Bell's Vireo

Restoration of riparian habitat under the proposed Project would provide additional suitable habitat for this species. The following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife would protect least Bell's vireo during the proposed Project's operations, monitoring, and maintenance activities: GPM-2 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, and WQHM-6. The following general bird species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect special-status bird species, including least Bell's vireo: SPM-6, BIRD-1, BIRD-2, BIRD-3, BIRD-4, and BIRD-5.

Other Special-Status Birds

Maintenance of constructed restoration elements under the proposed Project, including restored habitats, is expected to have effects on mountain plover, northern harrier, and song sparrow similar to those described above for proposed Project construction. The magnitude and duration of impacts on these bird species would likely be reduced, because the scale of equipment use and ground disturbance would be limited. The following general protection measures identified in the Final SRGO Program EIR to protect special-status terrestrial wildlife would protect special-status birds during the proposed Project's operations, monitoring, and maintenance activities: GPM-2 through GPM-7, GPM-10, GPM-13, GPM-15, WQHM-1, WQHM-2, WQHM-4, and WQHM-6. The following general and bird species protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project to protect special-status bird species, including mountain plover, northern harrier, and song sparrow: SPM-6, BIRD-1, BIRD-2, BIRD-3, BIRD-4, and BIRD-5.

EXISTING CONDITIONS

PROPOSED PROJECT CONDITIONS

Clarksburg Rd
Rd 153
Gaffney Rd
Z Line Rd
Rd 154
Rd 107
Rd 155
Hamilton Rd
Sacramento River Deep Water Ship Channel
Toe Drain

Proposed Project Area
Foraging Habitat
Floodplain Habitat
Managed Wetlands
Annual Grassland
Salt Grass Flat
Transition Zone Habitat

0 2,000 Feet

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Figure 3.6-4
Swainson's Hawk Foraging Habitat Changes

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Impact Conclusion

To address potential impacts on special-status wildlife species from constructed restoration elements and operations, monitoring, and maintenance activities, appropriate general and species protection measures proposed in the Final SRGO Program EIR were identified above for each respective special-status terrestrial wildlife species. Species-specific protection measures related to special-status amphibian species, mammal species, and invertebrate species are not applicable to the proposed Project, because the proposed Project area does not support them, and the restoration design is not expected to create new habitat for such species. The impact would be ***less than significant with implementation of general protection measures.***

The impacts of constructed restoration elements and the operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-40 through 3.5-43), and the Final SRGO Program EIR adequately addressed such impacts related to adverse impacts on special-status wildlife habitat.

Impact 3.6-3: Implementation of the proposed Project could result in adverse effects on riparian habitat or sensitive natural communities.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO, including the potential effects on riparian habitat or other sensitive natural communities. Construction of restoration projects permitted under the SRGO could result in the disturbance or removal of sensitive habitats, including wetlands and other waters of the United States and riparian habitat when vegetation is trimmed and removed to facilitate construction access or grading work. Because the Final SRGO Program EIR does not describe the specific size, location, implementation timing, or configuration of restoration projects, the Final SRGO Program EIR states that an understanding of such restoration project-specific factors is necessary to evaluate potential impacts of constructed restoration elements on riparian habitat or other sensitive natural communities, and identify appropriate regulatory requirements, general protection measures, and/or mitigation measures. The Final SRGO Program EIR contains the following general protection measures to reduce the impacts of construction activities on sensitive natural communities: GPM-5, GPM-7, GPM-8, GPM-12, GPM-15, WQHM-4, VHDR-2, VHDR-3. Additionally, restoration projects that could adversely affect riparian habitat or sensitive natural communities would implement the following species protection measures, as applicable: SPM-1, SPM-2, INVERT-1, INVERT-2, INVERT-3 (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-44).

This impact of construction on riparian habitat and sensitive natural communities (e.g., tule wetlands) was determined to be less than significant with implementation of general protection measures in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-45), and therefore no mitigation measures were identified.

Consistent with the types of construction activities evaluated by the Final SRGO Program EIR, construction of the proposed Project would require activities as described under Impact 3.6-1.

Construction work for the proposed Project would affect riparian habitats (riparian forest and riparian scrub) in the proposed Project area. Based on preliminary drawings, a limited amount of riparian vegetation would be removed from within the riparian forest along the Toe Drain to enable the reintroduction of tidal influence within the proposed Project area (**Table 3.6-11**). In total approximately 4.2 acres of riparian habitat would be removed during construction of the proposed Project (**Figure 3.6-5**). The loss of riparian vegetation, including large trees, would reduce potential nesting and roosting habitats for special-status wildlife species. Riparian forests could be indirectly affected by sedimentation; dust generation; accidental leaks or spills of fuel or soil; accidental introduction of invasive plant species carried as seeds on construction equipment or personnel; and soil disturbance, which tends to benefit the spread of invasive plant species. Invasive plant species can outcompete native plant species, reducing the complexity and quality of habitat for native vegetation.

TABLE 3.6-11
RIPARIAN HABITAT CHANGES

	Existing	Conserved	Converted	New	Total Post Project
Riparian Forest	26.1	23.0	3.1	10.2	33.2
Riparian Scrub	1.1	0	1.1	3.3	3.3
Total	**27.2**	**23.0**	**4.2**	**13.5**	**36.5**

SOURCE: Data compiled by Environmental Science Associates in 2025

The amount of newly planted riparian habitat (riparian forest and riparian scrub) under the proposed Project would exceed the amount of affected riparian habitat. There would be approximately 10.2 acres of new riparian forest under the proposed Project, as compared to approximately 3.1 acres of riparian forest loss during construction (Figure 3.6-5). Thereby, the proposed Project would result in a net gain in riparian habitat extent compared to existing conditions. Additionally, approximately 23.0 acres of existing riparian forest would be retained. There would be a loss of approximately 1.1 acres of existing riparian scrub during construction, while 3.3 acres of new riparian scrub would be planted under the proposed Project (Figure 3.6-5). Thereby, there would be net gain in riparian scrub under the proposed Project. The general protection measures identified below would also address potential indirect effects of construction on the riparian forest to be preserved in place, such as reducing fugitive dust generation and preventing the spread of invasive exotic plants that can compete with native riparian plants.

There would be temporary effects on managed tule wetlands within the proposed Project area from ground-disturbing activities. However, because this same area would be restored to tidal action for restoration into tidal wetlands (with associated tules), the proposed Project would ultimately improve the ecological functionality of the existing tule wetlands.

The proposed Project would not entail any total loss of wetland or other jurisdictional waters of the United States or State, because the entire proposed Project area would remain within the Yolo Bypass floodplain. As described below in more detail under Impact 3.6-4, construction of the proposed Project would result in 9.5 acres of new berms (following berm reconfiguration under the restoration design) as compared to existing conditions, meaning an increase in the areal extent of functional inundated wetland habitat.

Rd 153
Toe Drain
Sacramento River Deep Water Ship Channel
Rd 154
Rd 107
Rd 155
Z Line Rd
Hamilton Rd
Mallard Rd
Proposed Project Area
Riparian Habitat Effects
Riparian Forest - New
Riparian Forest - Existing, Kept
Riparian Forest - Existing, Loss
Riparian Scrub - New
Riparian Scrub - Existing, Loss
0
1,400
Feet
Path: U:\GIS\GIS\Projects\18xxxx\D181197_01_Tides_End_Restoration\03_MXDs_Projects\01_Bio\Bio_Resources aprx, MDowning-Kunz 8/7/2025

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Figure 3.6-5
Riparian Habitat Effects

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To address potential impacts on riparian forest and other sensitive natural communities from construction activities, the following general protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project: GPM-5, GPM-7, GPM-8, GPM-12, GPM-15, WQHM-4, VHDR-2, and VHDR-3. Additionally, the following measures would also be implemented: GPM-1, GPM-2, GPM-4, GPM-6, GPM-9, GPM-10, GPM-11, GPM-13, GPM-14, and WQHM-6. With the aforementioned measures, the construction of the proposed Project would result in a ***less-than-significant impact with implementation of general protection measures.***

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-43 through 3.5-45), and the Final SRGO Program EIR adequately addresses the potential for construction impacts of the proposed Project on riparian habitat and other sensitive natural communities.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO, including the potential effects of constructed facilities (natural and artificial infrastructure), operations, monitoring, and maintenance activities on riparian habitat or other sensitive natural communities. The Final SRGO Program EIR evaluated constructed facilities and determined that most long-term impacts on riparian habitat and other sensitive natural communities from implementing the restoration projects permitted under the SRGO should be neutral or beneficial, because the specific purpose of these projects would be to correct existing conditions that contribute to resource degradation. The analysis in the Final SRGO Program EIR included all of the same general and species protection measures listed above under "Effects of Construction Activities" to reduce the impacts of operations, monitoring, and maintenance activities on sensitive natural communities (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-46).

Under certain circumstances, the SRGO Program EIR determined that the effects of constructed restoration elements may convert particular terrestrial natural community habitats – including ones considered sensitive by CDFW – to other generally aquatic community types. This impact was therefore determined to be significant and unavoidable in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-46). No mitigation measures were identified.

The proposed Project includes the expansion of riparian forest, riparian scrub, and tidal wetland habitat within the proposed Project area relative to existing conditions. Even though removal of riparian habitat would occur during proposed Project construction, the constructed restoration elements of the proposed Project would expand riparian and tidal wetland habitat within the proposed Project area. Therefore, the proposed Project would result in a net gain of sensitive natural communities. Ongoing long-term maintenance of the proposed Project area may result in short-term impacts on riparian habitat, particularly if the maintenance would require vegetation management. There is also potential for indirect effects of maintenance activities on the riparian forest and riparian scrub, such as from fugitive dust generation, although the relative intensity of these indirect effects would be much lower compared to those associated with the construction phase of the proposed Project. With the implementation of general protection

measures applicable to the protection of sensitive natural communities during maintenance activities, long-term impacts from operations, monitoring, and maintenance would be minimized.

Riparian scrub and riparian forest occur within the proposed Project area along the Toe Drain. The riparian scrub and riparian forest are primarily limited to a narrow corridor west of the Toe Drain channel (Figure 3.6-5). The domination of willows along this riparian corridor is likely due to their higher tolerance for extended inundation regimes relative to other riparian tree species, such as cottonwoods. Being immediately adjacent to the Toe Drain, the riparian corridor is already subject to the influence of tidal influence within the Toe Drain during existing conditions. Given these considerations, the change in hydrology under the proposed Project – including the reintroduction of tidal influence and restoration of tidal wetlands along the eastern portion of the proposed Project area – would not be expected to impair the ability for retained riparian forest and riparian scrub along the Toe Drain to persist.

To address potential impacts on riparian forest and other sensitive natural communities from operations, monitoring, and maintenance activities, the following general protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project: GPM-1, GPM-4, GPM-7, GPM-9, GPM-12, GPM-15, WQHM-4, VHDR-2, VHDR-3. Additionally, GPM-10 and WQHM-6 would also be implemented. With the aforementioned measures, the impact of constructed restoration elements and operations, monitoring, and maintenance activities associated with the proposed Project would result in a ***less-than-significant impact with implementation of general protection measures***.

Constructed restoration elements and operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-45 through 3.5-47), and the Final SRGO Program EIR adequately addresses the potential for such impacts of the proposed Project on riparian habitat and other sensitive natural communities.

Impact 3.6-4: Implementation of the proposed Project could result in adverse effects on State and federally protected wetlands through direct removal, hydrological interruption, or other means.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO, as discussed above for Impact 3.6-1. The Final SRGO Program EIR identified the following general protection measures to reduce the impacts of construction activities on State and federally protected wetlands and other waters during construction: GPM-5, GPM-7, GPM-10, GPM-11, GPM-14, GPM-15, WQHM-1, WQHM-2, WQHM-3, WQHM-4, WQHM-5, WQHM-6, IWW-1, IWW-2, IWW-3, IWW-4, IWW-8, IWW-11, IWW-13 (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-47 and 3.5-48).

This impact of construction on State and federally protected wetlands and other waters was determined to be less than significant with implementation of general protection measure in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-48). No mitigation measures were identified.

Construction of the proposed Project would result in direct and indirect impacts on waters of the United States and State. Construction activities would occur throughout potentially jurisdictional waters of the United States and State. Construction of the proposed Project would involve the removal of existing berms

and infrastructure, and the reconfiguration of berms and installation of new infrastructure in accordance with the restoration plan. Construction of the proposed Project entails the installation of infrastructure (e.g., headwalls, rice boxes, pumps) within future restored or enhanced wetland habitat; the total extent of these new infrastructure elements across the entire proposed Project area is 5,590 square feet, or 0.135 acre.[11] Additionally, limited amounts of riprap would be placed at culvert openings to prevent erosion of berms; the extent of this riprap across the entire proposed Project area is 44,370 square feet, or 1.019 acre.

DWR would meet the USACE's requirements under the CWA Section 404 permitting process (e.g., Nationwide Permit 27 or Sacramento District's Regional General Permit 16). For example, the proposed Project was designed consistent with the terms of Regional Permit 16 which call for temporary construction-related impacts to be sited to avoid and minimize impacts to managed wetlands and other aquatic resources, to avoid any impacts to vernal pools, and to result in an overall increase in aquatic function and services. In addition, DWR would comply with the Central Valley Regional Water Board's requirements for compliance with CWA Section 401. For example, by tiering off the State Water Board's Final SRGO Program EIR, DWR is already committing to adhering to any aquatic resource protection measures that would be required by the Central Valley Regional Water Quality Control Board pursuant to approval of projects under the SRGO. Furthermore, as required by Section 1602 of the California Fish and Game Code, DWR would notify CDFW of any proposed Project impacts on the bed, bank, or channel of a river, stream, or lake. Because the proposed Project would increase the area of jurisdictional wetlands and waters and would result in an uplift of ecological functions (once operational) compared to existing conditions (see Table 2-3 in Chapter 2, "Project Description"), no compensatory mitigation for minor construction-related effects to jurisdictional wetlands and other waters are expected.

To address potential impacts on jurisdictional wetlands and other waters from construction activities, the following general protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project: GPM-1, GPM-5, GPM-7, GPM-8, GPM-9, GPM-10, GPM-11, GPM-14, GPM-15, WQHM-1, WQHM-2, WQHM-3, WQHM-4, WQHM-5, WQHM-6, and IWW-6. Is. Because these measures would be implemented consistent with the Final SRGO Program EIR, the impact of construction activities associated with the proposed Project would result in a ***less-than-significant impact with implementation of general protection measures***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-47 and 3.5-48), and the Final SRGO Program EIR adequately addresses the potential for construction impacts of the proposed Project on jurisdictional wetlands and other waters.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO, including the potential effects of constructed facilities

[11] To avoid double counting areal extents, the acreage of culvert pipes that run buried within the prism of the berms was not included in this total. Essentially only the portions of infrastructure visible from aerial view of proposed Project area were included in this value of 0.135 acre.

(natural and artificial infrastructure), operations, monitoring, and maintenance activities on jurisdictional wetlands and other waters. The Final SRGO Program EIR evaluated constructed facilities and determined that most long-term impacts on wetlands and other waters from implementing the restoration projects permitted under the SRGO should be neutral or beneficial, because the specific purpose of these projects would be to correct existing conditions that contribute to resource degradation. For example, seasonal floodplain restoration and wetland restoration projects are expected to expand the footprint of wetlands and other waters under federal and/or State jurisdiction. The Final SRGO Program EIR's analysis of constructed facilities and operations and maintenance of those facilities included all of the same general and species protection measures listed above under "Effects of Construction Activities" to reduce the impacts of operations, monitoring, and maintenance activities on jurisdictional wetlands and other waters (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-48 and 3.5-49).This impact from effects of constructed facilities, operations, monitoring, and maintenance activities on jurisdictional wetlands and other waters was determined to be less than significant with implementation of general protection measures in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-49).

The proposed Project would have long-term beneficial effects on the extent and functionality of wetlands (see Chapter 2, "Project Description" under Section 2.2.5 Managed Floodplain and 2.2.6 Facilities Improvements). The proposed Project would expand the footprint of tidal wetlands and managed wetlands compared to existing conditions. The design would introduce tidal flows from the Toe Drain to the proposed Project area to create tidal wetlands. The restored tidal wetland habitats are expected to be largely self-maintaining after the initial period of vegetation establishment. During the establishment period, manual removal of invasive plants (including aquatic plants) and harmful algal blooms using mechanical means may be necessary. While unlikely, use of localized herbicides may be employed, if highly invasive species become present in the proposed Project area. Maintenance of constructed facilities, including restored habitats, is expected to have effects on wetlands and other waters of the United States and/or State similar to those described for proposed Project construction. However, the effects would be reduced in scope because the scale of equipment use, and ground disturbance is expected to be much smaller.

To address potential impacts on jurisdictional wetlands and other waters from monitoring, and maintenance activities, the following general protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project: GPM-5, GPM-7, GPM-9, GPM-10, GPM-11, WQHM-1, WQHM-4, WQHM-6, IWW-1, IWW-2, IWW-3, IWW-8, and IWW-13. Additionally, since localized herbicides may be employed during operations and maintenance, PLANT-6, VHDR-6, VHDR-7, and VHDR-8 would also apply to the proposed Project.

IWW-11 is not proposed because the operations, monitoring, and maintenance activities under the proposed Project are not expected to involve in-water pile driving. Because GPM-5, GPM-7, GPM-9, GPM-10, GPM-11, WQHM-1, WQHM-4, WQHM-6, IWW-1, IWW-2, IWW-3, IWW-8, IWW-13, VHDR-6, VHDR-7, VHDR-8, and PLANT-6 would be implemented, the impact of constructed restoration elements and operations, monitoring, and maintenance activities associated with the proposed Project would result in a ***less-than-significant impact with implementation of general protection measures***.

Constructed restoration elements and operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant

impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-48 through 3.5-50), and the Final SRGO Program EIR adequately addresses the potential for such impacts of the proposed Project on jurisdictional wetlands and other waters.

Impact 3.6-5: Implementation of the proposed Project could interfere with the movement of native resident and migratory wildlife species.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO, including the potential effects of construction on the movement of native resident and migratory wildlife species. Construction work for restoration projects permitted under the Order could temporarily affect wildlife movement and migration conditions and alter the foraging patterns of resident wildlife species in the proposed Project area. These effects would result primarily from ground and noise disturbances generated by construction equipment and personnel. The Final SRGO Program EIR identified the following general protection measures to reduce the impacts of construction activities on the movement of native resident and migratory wildlife species during construction: GPM-2, GPM-3, GPM-4, GPM-5, GPM-6, GPM-7, VHDR-1, VHDR-2, and VHDR-3 (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-50 and 3.5-51).

Additionally, the Final SRGO Program EIR stated that the following species protection measures would be implemented for restoration projects that could interfere with the movement of native resident and migratory wildlife species: SPM-1, SPM-2, SPM-3, SPM-4, SPM-5, SPM-6, AMP-1, AMP-2, AMP-3, AMP-4, AMP-5, AMP-6, AMP-7, AMP-8, AMP-9, AMP-10, AMP-11, REP-1, REP-2, REP-3, REP-4, REP-5, REP-6, BIRD-1, BIRD-2, BIRD-3, BIRD-4, BIRD-5, MAM-1, MAM-2, MAM-3, MAM-4, MAM-5, INVERT-1, INVERT-2, INVERT-3, and INVERT-4 (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-51 and 3.5-52).

This impact of construction on the movement of native resident and migratory wildlife species was determined to be less than significant with implementation of general protection measure in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-52).

Construction activities for the proposed Project could temporarily interfere with the local movement of native resident or migratory wildlife species. Grading and other ground-disturbing activities could temporarily disrupt the movement of reptiles and amphibians, such as GGS and WPT. However, construction work would not substantially interfere with the movement of these species because they could move through adjacent unaffected habitat (i.e., there would not be establishment of a public road, railway, canal, or permanent fence that is typically considered to be a “barrier” to functional movement of herpetofauna) (CDFW 2022). Construction activities, including equipment and personnel movement and vegetation removal, could interfere with the movement of other terrestrial wildlife species, such as small mammals or birds (e.g., songbirds may adjust their movement patterns to avoid humans and large equipment). However, these activities are not expected to cause substantial effects on the movement of these species, which are mobile and can move away from construction areas to unaffected areas. Proposed Project construction noise could temporarily alter the foraging patterns of resident wildlife species in the proposed Project area, but it is not expected to substantially interfere with foraging because these species could move to nearby unaffected habitat.

To address potential impacts on the movement of native resident and migratory wildlife species from construction activities, the following general protection measures and species protection measures for reptiles, amphibians, and birds proposed in the Final SRGO Program EIR would apply to the proposed Project: GPM-1 GPM-2, GPM-3, GPM-4, GPM-5, GPM-6, GPM-7, SPM-3, SPM-4, SPM-5, SPM-6, REP-4, REP-5, and REP-6, BIRD-2, BIRD-3, BIRD-4, and BIRD-5.

Species-specific protection measures related to special-status amphibian species, mammal species, and invertebrate species are not applicable to the proposed Project, because the proposed Project area does not support them. Construction of the proposed Project would implement general protection measures GPM-1, GPM-2, GPM-3, GPM-4, GPM-5, GPM-6, and GPM-7; general species protection measures SPM-3, SPM-4, SPM-5, and SPM-6; reptile species protection measures REP-4, REP-5, and REP-6; and bird species protection measures BIRD-2, BIRD-3, BIRD-4, and BIRD-5. This impact on movement of native resident and migratory wildlife species would be ***less than significant with implementation of general protection measures and species protection measures.***

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-50 through 3.5-52), and the Final SRGO Program EIR adequately addresses the potential for construction impacts of the proposed Project on movement of native resident and migratory wildlife species.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the effects of restoration projects that the SRGO would encourage and promote, including long-term impacts on movement of terrestrial wildlife species. As stated in the Final SRGO Program EIR, the general expectation would be that restoration projects would generally have beneficial, or at least neutral, effects on movement of wildlife species. The Final SRGO Program EIR determined that the impact from effects of constructed facilities, operations, monitoring, and maintenance activities on the movement of native resident and migratory wildlife species was less than significant with implementation of the same general and species protection measures listed above under “Effects of Construction Activities” (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-52 through 3.5-54).

Implementing the managed wetland and tidal wetland restoration under the proposed Project would improve the value of the site as a stopover site for migratory birds. Further, the proposed Project is expected to improve hydrologic connectivity in a manner that would be beneficial to the movement of highly aquatic reptile species such as WPT and GGS. Some terrestrial species with more limited mobility could be negatively affected by the large-scale tidal wetland restoration that would occur under the proposed Project, but overall the Project is largely expected to improve the movement of and migration by terrestrial wildlife. Monitoring and maintenance activities may have effects that are similar to those previously described for construction activities, but the relative scale of those effects would be much smaller in intensity and duration.

To address potential impacts on the movement of native resident and migratory wildlife species from effects of constructed facilities, operations, monitoring, and maintenance activities, the following general

protection measures and species protection measures for reptiles, amphibians, and birds proposed in the Final SRGO Program EIR would apply to the proposed Project: GPM-2, GPM-3, GPM-4, GPM-5, GPM-6, GPM-7, SPM-3, SPM-4, SPM-5, SPM-6, REP-4, REP-5, REP-6, BIRD-2, BIRD-3, BIRD-4, and BIRD-5.

Species-specific protection measures related to special-status amphibian species, mammal species, and invertebrate species are not applicable to the proposed Project, because the proposed Project area does not support them and the restoration design would not create new habitat for such species. Because GPM-2, GPM-3, GPM-4, GPM-5, GPM-6, GPM-7, SPM-3, SPM-4, SPM-5, SPM-6, REP-4, REP-5, REP-6, BIRD-2, BIRD-3, BIRD-4, and BIRD-5 would be implemented, the impact of operations, monitoring, and maintenance activities associated with the proposed Project on the movement of native resident and migratory wildlife species would be ***less than significant with implementation of general protection measures and species protection measures***.

Constructed restoration elements and operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-52 through 3.5-54), and the Final SRGO Program EIR adequately addressed such impacts related to movement of native resident and migratory wildlife species.

Impact 3.6-6: Implementation of the proposed Project could conflict with local policies or ordinances protecting biological resources.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the construction-related effects of restoration projects that the SRGO would encourage and promote, including the potential for conflicts with local policies or ordinances protecting biological resources. The Yolo County General Plan identifies policies intended for protection of biological resources, including Policy CO-2.1, which calls for maintaining ecological functions of landscapes, connecting features, watersheds, and wildlife movement corridors; Policy CO-2-3, which calls for preserving and enhancing certain biological communities with rich biodiversity such as riparian areas and aquatic habitat; and Policy CO-2.10 which calls for restoration of native habitat. As stated in the Final SRGO Program EIR, generally restoration projects undertaken by State agencies would be exempted from local policies or ordinances, thereby eliminating the potential for identification of a "conflict." Most State agencies have adopted environmental commitments similar to those identified in local policies and ordinances for biological resources, which increases the likelihood that State agencies would be in compliance with local requirements even though they are not obligated to do so. The impacts associated with conflicts with policies or ordinances protecting biological resources would be less than significant with implementation of the general and species protection measures listed for impacts associated with construction activities in Impacts 3.6-1 through 3.6-5, above. As a State agency, DWR is not subject to local ordinances; however, as described under Impacts 3.6-1 through 3.6-5, general and species protection measures would be applied during proposed Project construction, as applicable. Certain species-specific protection measures related to special-status amphibian species, mammal species, and invertebrate species are not applicable to the proposed Project, because the proposed Project area does not support them. To the extent feasible, implementation of the proposed Project would comply with applicable adopted County ordinances protecting biological resources, provided they are consistent with DWR's internal environmental policies. This impact would be ***less than significant***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-54 and 3.5-55), and the Final SRGO Program EIR adequately addresses the potential for construction impacts of the proposed Project as it pertains to conflicts with local ordinances or policies.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the operations and maintenance effects of restoration projects that the SRGO would encourage and promote, including the potential for conflicts with local policies or ordinances protecting biological resources. This impact from effects of constructed facilities, operations, monitoring, and maintenance activities was determined to be less than significant in the Final SRGO Program EIR. The Final SRGO Program EIR's analysis of constructed facilities and operations and maintenance of those facilities included all of the same general and species protection measures listed above under "Effects of Construction Activities" to reduce the conflicts of constructed facilities, operations, monitoring, and maintenance activities on local policies or ordinances protecting biological resources (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-55 and 3.5-56).

The applicable general protection measures from the Final SRGO Program EIR previously identified in Impacts 3.6-1 through 3.6-5 of this Draft SEIR to be implemented during the construction phase would be adequate to minimize conflicts with local policies or ordinances protecting biological resources. Species-specific protection measures related to special-status amphibian species, mammal species, and invertebrate species are not applicable to the proposed Project, because the proposed Project area does not support them and the restoration design is not expected to create new habitat for such species. To the extent feasible, implementation of operations, monitoring, and maintenance activities by DWR for the proposed Project would comply with applicable adopted County ordinances protecting biological resources, provided they are consistent with DWR's internal environmental policies. This impact would be ***less than significant***.

Constructed restoration elements and operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-55 and 3.5-56), and the Final SRGO Program EIR adequately addresses the potential for construction impacts of the proposed Project as it pertains to conflicts with local ordinances or policies.

Impact 3.6-7: Implementation of the proposed Project could conflict with the provisions of an adopted habitat conservation plan or natural community conservation plan.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the construction-related effects of restoration projects that the SRGO would encourage and promote, including the potential for conflicts adopted habitat conservation plans or natural community conservation plans. This impact on adopted conservation plans from the construction of restoration projects promoted by the Final SRGO Program EIR was determined to be less than significant with implementation of the general and species protection measures listed for impacts associated with construction activities in Impacts 3.6-1 through 3.6-5, above (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-56).

The proposed Project area is located within the area covered by the Yolo HCP/NCCP, which provides conservation for 12 species (i.e., Swainson's hawk, tricolored blackbird, GGS, burrowing owl, valley elderberry longhorn beetle, California tiger salamander, white-tailed kite, western pond turtle, western yellow-billed cuckoo, bank swallow, least Bell's vireo, and palmate-bracted bird's beak); see Section 3.6.3, "Regulatory Setting." This plan strikes a balance between natural resources conservation and economic development in the county. The proposed Project would be consistent with the overall biological goals listed in the HCP/NCCP to improve conservation opportunities in Yolo County for its 12 covered species. Additionally, the proposed Project construction would not interfere with any existing permanent conservation easement that is part of the reserve system land holdings for the Yolo HCP/NCCP.

Construction activities for the proposed Project were evaluated for their consistency with the Yolo HCP/NCCP; the applicable general protection measures from the Final SRGO Program EIR previously identified in Impacts 3.6-1 through 3.6-5 of this Draft SEIR to be implemented during the construction phase would be adequate to eliminate any conflicts with the Yolo HCP/NCCP. Certain species-specific protection measures related to special-status amphibian species, mammal species, and invertebrate species are not applicable to the proposed Project, because the proposed Project area does not support them. Construction-related impacts associated with a conflict with the approved Yolo HCP/NCCP are ***less than significant***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, p. 3.5-56), and the Final SRGO Program EIR adequately addresses the potential for construction impacts of the proposed Project as it pertains to conflicts with previously adopted habitat conservation plans.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the operations and maintenance effects of restoration projects that the SRGO would encourage and promote, including the potential for conflicts with an adopted HCP or NCCP. The Final SRGO Program EIR determined that because most restoration projects permitted under the SRGO would focus primarily on benefits to aquatic species, while the overwhelming majority of conservation plans in California focus on terrestrial plants and wildlife, there is a foreseeable situation in which such a conflict could occur with an adopted HCP or NCCP. As part of the State Water Board or a regional water board's issuance of a Notice of Applicability (NOA) for a project, compliance with ***Mitigation Measure TERR-1: Coordinate with CDFW, USFWS, and Permittees Regarding HCPs, NCCPs, and Other Conservation Plans*** would be required when applicable. Mitigation Measure TERR-1 requires coordination with CDFW, USFWS, and permittees regarding HCPs, NCCPs, and other conservation plans. The Final SRGO Program EIR found this impact to be less than significant with implementation of this mitigation measure (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-56 through 3.5-58).

Portions of the proposed Project area could overlap with priority areas for acquisition by the Yolo Habitat Conservancy for inclusion its reserve system, as identified in Figure 3.6-6, "Priority Acquisition Areas," of the Yolo HCP/NCCP. Ultimately, the Scientific and Technical Advisory Committee for the Yolo Habitat Conservancy uses Figure 3.6-6 of the Yolo HCP/NCCP, the guidelines identified in the

Conservation Strategy of the HCP/NCCPs, and on-site visits to evaluate whether individual lands meet priority acquisition criteria. The impact from potential conflicts with the Yolo HCP/NCCP is potentially significant.

Consistent with the Final SRGO Program EIR, as part of the State Water Board or a regional water board's issuance of a NOA for the proposed Project, compliance with ***Mitigation Measure TERR-1*** would be required. Implementation of this mitigation measure would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, appropriate regional water board, or other authorizing regulatory agency.

> **Mitigation Measure TERR-1: Coordinate with CDFW, USFWS, and Permittees Regarding HCPs, NCCPs, and Other Conservation Plans.**
>
> If the site for a restoration project permitted under the Order is within the planning area for any adopted HCP, NCCP, or similar conservation plan, the CEQA lead agency for the project shall consult with the plan permittee(s), CDFW, and/or USFWS, as applicable, to identify any potential conflicts with the plan's goals, objectives, or conservation measures. As part of this consultation, the CEQA lead agency shall seek input regarding potential design features, conservation measures, or other mitigation strategies to avoid potential conflicts and achieve substantial conformance with the objectives of the HCP, NCCP, or similar conservation plan. The CEQA lead agency shall implement these elements as applicable to ensure that the restoration project conforms to applicable goals and policies set forth in the adopted conservation plan.

With implementation of Mitigation Measure TERR-1 this impact would be ***less than significant with implementation of mitigation measures***.

Constructed restoration elements and operation, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.5-56 through 3.5-58), and the Final SRGO Program EIR adequately addresses the potential for construction impacts of the proposed Project on conflicts with an adopted HCP or NCCP.

3.7 Biological Resources—Aquatic

3.7.1 Introduction

This Draft SEIR supplements the previously certified Final SRGO Program EIR and addresses proposed modifications, changed circumstances, and new information not described in that prior environmental document. This section of the Draft SEIR discusses the potential for the proposed Project to result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR related to aquatic biological resources (e.g., fisheries) (see Final SRGO Program EIR: Section 3.6.4, pp. 3.6-17 through 3.6-31). The environmental setting and evaluation of impacts on aquatic biological resources are based on a review of existing, publicly available literature and data and biological surveys completed for the proposed Project described in Appendix C to this Draft SEIR, "Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report."

Comments were received in response to the NOP addressing aquatic biological resources. See Appendix B to this Draft SEIR for NOP comment letters. These comments were considered during preparation of this Draft SEIR.

The impact analysis in Section 3.7.4 evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities on aquatic biological resources in the proposed Project area. This impact analysis concludes that implementation of the proposed Project would have less-than-significant impacts or beneficial effects on aquatic biological resources in the proposed Project area.

3.7.2 Environmental Setting

The following sections introduce the existing conditions in the region and proposed Project area as they relate to aquatic biological resources and describe the special-status species and critical habitat known to occur or that have the potential to occur in the proposed Project area. See Section 3.6, "Biological Resources–Terrestrial," for a discussion of terrestrial species and habitats, including wetlands and non-wetland waters.

3.7.3 Data Sources

The aquatic resources environmental setting for the proposed Project area and surrounding areas was determined through review of pertinent literature and database queries. The sources of reference data reviewed for this evaluation include the following:

- National Marine Fisheries Service (NMFS) critical habitat mapper (NMFS 2025).
- U.S. Fish and Wildlife Service (USFWS) list of species that may be affected by projects in the area (USFWS 2025).
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) query of the Saxon and surrounding eight U.S. Geological Survey (USGS) topographic quadrangles (CDFW 2025).

- *Tide's End Multibenefit Restoration Project Preliminary Biological Resources Report*, included as Appendix C to this Draft SEIR, summarizing various biological surveys conducted within the proposed Project area by Environmental Science Associates biologists.

Regional Existing Conditions for Aquatic Biological Resources– Central California Valley

The Central California Valley ecoregion encompassing the proposed Project area is distinguished by flat, intensively farmed plains with long hot, dry summers and mild winters (USGS 2012). The state's two major rivers, the Sacramento River and the San Joaquin River, flow from the north and south ends of the Central California Valley ecoregion, joining to feed the Sacramento–San Joaquin Delta (Delta) and San Pablo Bay. Streams drain mostly to the Sacramento River, with a few in the south draining to the lower San Joaquin River. Within the floodplains of these rivers and streams, seasonal wetlands and flooded agricultural land provide seasonal rearing habitat for native fish species.

The Delta is characterized by numerous sloughs (tidal streams) and channels that form where the Sacramento, San Joaquin, Cosumnes, Mokelumne, and Calaveras rivers enter the region. Water from these rivers coalesces in the Delta and is influenced by tidal action, streamflow, and water diversions as it flows toward San Francisco Bay. The western part of the ecoregion includes large areas of brackish and seasonal freshwater marshes and wetlands that surround Grizzly Bay and Suisun Bay.

The Central California Valley ecoregion includes at least nine known special-status fish species. Among the special-status fish species are delta smelt; Sacramento River winter-run, spring-run, and fall-run Chinook salmon; longfin smelt; Central Valley steelhead distinct population segment (DPS); Sacramento splittail; white sturgeon; and the southern DPS of North American green sturgeon.

Existing Conditions for Aquatic Biological Resources in the Yolo Bypass

The Yolo Bypass is located on the western floodplain of the Sacramento River, historically referred to as the Yolo Basin (see Figure 2-1). This low-lying area was subject to the seasonal inundation of floodwaters from the nearby Sacramento River and its numerous tributaries (CDFG 2008). The Yolo Bypass was established as the primary flood control mechanism in the Sacramento River Basin and acts as a relief valve for floodwaters in the Sacramento River. Hydrology and operations of the Yolo Bypass are described in further detail in Section 3.10, "Hydrology and Water Quality." Additional land uses within the Yolo Bypass provide multiple benefits including flood protection, agricultural production, and fish and wildlife habitat.

Fish Growth and Survival in the Yolo Bypass

Throughout the Yolo Bypass, inundated agricultural fields and restoration projects provide floodplain habitat for fish and birds and enhance the production of phytoplankton, which is food for zooplankton and in turn a key food source for salmonids and delta smelt (CDFW and DWR 2024; Lehman et al. 2007; Reclamation and DWR 2019; Katz et al. 2017). Production of phytoplankton has been found to increase substantially in the Yolo Bypass when it is inundated compared to adjacent Sacramento River locations (Lehman et al. 2007). In addition, drainage of agricultural fields naturally distributes aquatic forage via the Yolo Bypass and Toe Drain (located on the eastern edge of the proposed Project area) (Reclamation and DWR 2019). During the summer and fall, agricultural discharge into the Yolo Bypass can result in increased productivity in the Toe Drain and downstream in the estuary, potentially improving food

production for delta smelt (Reclamation and DWR 2019). Restoration of tidal wetlands and seasonal floodplain habitat, as well as managed agriculture (managed wetlands and agriculture) that drains through the marsh to the Toe Drain, has the potential to further increase the production of phytoplankton, zooplankton, and invertebrates, which in turn would benefit a number of fish species and the aquatic ecosystem as a whole.

The Yolo Bypass is a migration corridor for adult and juvenile anadromous fish during overtopping events. When the Yolo Bypass is flooded during overtopping and inundation events, salmonids and sturgeon are entrained into the Yolo Bypass through the Fremont Weir notch. Native fishes conveyed onto the Yolo Bypass then gain access to important seasonal floodplain habitat (Sommer et al. 2001a, 2001b; Feyrer et al. 2006). Studies have shown that juvenile Chinook salmon reared in the Yolo Bypass floodplain demonstrated better growth and survival than those reared in the mainstem Sacramento River (Johnston et al. 2018). However, because the Yolo Bypass is designed to drain rapidly, fish have a short duration in which to rear in these beneficial floodplain habitats (Katz et al. 2017; Sommer et al. 2020; NMFS 2021). Improving access to floodplain habitat and increasing the amount of time that fish rear in floodplains leads to enhanced growth from high floodplain food productivity (Katz et al. 2017).

Research over the past two decades has shown that the seasonally flooded Yolo Bypass lands and tidal wetlands in the Cache Slough Complex support a suite of native fishes, including Chinook salmon and delta smelt, and provide important food web resources to aquatic ecosystems in the Delta (Sommer et al. 2020; NMFS 2021; Sommer et al. 1997, 2001a, 2001b; Jeffres et al. 2008, 2020). These same studies show that when the Yolo Bypass floods, the inundated floodplain is not optimal because the landscape has been highly modified to drain rapidly, as compared to historic wetlands under natural, pre-development flood patterns (Katz et al. 2017; Sommer et al. 2020; NMFS 2021). Natural hydrology would have seen the historic Yolo Basin flood multiple times annually and stay wet for months. Today, the Yolo Bypass connects to the river in about 2 out of 3 years, but most inundation events are of short duration.

South of the proposed Project area in the southern Yolo Bypass, the Lookout Slough, Yolo Flyway Farms, and Lower Yolo Ranch Tidal Restoration projects enhance tidal wetland habitat for delta smelt and rearing habitat for salmonids. Together, these projects with the proposed Project and other existing tidal wetlands would create a contiguous tidal restoration assemblage that encompasses more than 16,000 acres in the Cache Slough Complex (DWR 2019). These tidal wetland restoration areas would be at the downstream receiving area of food production efforts taking place with floodplain restoration in the northern Yolo Bypass.

Existing Conditions for Aquatic Biological Resources in the Proposed Project Area

The proposed Project area is located within the southern portion of the Yolo Bypass (see Figure 2-1). The Toe Drain is the eastern boundary of the proposed Project area. The Toe Drain flows along the eastern edge of the Yolo Bypass and empties into Prospect Slough, approximately 3.6 miles downstream of the proposed Project area, which ultimately drains into the Cache Slough Complex. The entire proposed Project area generally slopes gently from northwest to southeast, draining toward the Toe Drain, although hydrology is managed through the use of ditches, canals, check dams/structures, culverts, and pumps. Lands north and west of the proposed Project area include managed wetlands, agricultural fields, and habitat mitigation banks that are both privately owned and owned by the State of California as part of the

Yolo Bypass Wildlife Area. The proposed Project area is bordered on the south by the Yolo Flyway Farms Tidal Habitat Restoration Project (see Figure 3.11-2).

The following section describes the connectivity within the proposed Project area as it relates to aquatic biological resources. See Section 3.10, "Hydrology and Water Quality," for additional description of the hydrologic setting.

Connectivity

All of the existing potential floodplain rearing habitats in the proposed Project area are constrained by barriers to fish passage. In particular, the existing berm and high ground along the west bank of the Toe Drain channel present a barrier for fish egress from the fields and ponds within the proposed Project area during floodplain drawdown (when water stage elevation is at or below the elevation of the berm crest). All portions of the Project area currently drain to the Toe Drain via a collection of ditches and culverts that were installed to support agriculture and managed pond operations. Nearly all of the existing drainage culverts connected to the Toe Drain channel are fitted with "flap-gate" style tide gates and/or "sluice gate" type water control structures. Both the tide gates and water control structures are likely to present a barrier to fish passage. Several of these culverts are partially blocked by sediment or debris, and several of the tide gates appear to be in disrepair and potentially non-functional or partially functional. All of these existing drainage structures represent impediments to fish egress during some or all floodplain flow conditions.

In addition, numerous internal berms and road embankments subdivide the proposed Project area to support managed ponds for waterfowl and agriculture fields (primarily for rice cultivation). The presence of these berms and embankments results in numerous impounded basins in the interior of the Project area that present hazards for fish stranding as water levels recede after inundation. Many of these basins are partially drained by informal systems of ditches, culverts, and water control structures that have been installed by the farmers and pond managers. These drainage systems were not designed to support volitional fish passage,[1] many of these internal drainage structures and culverts are in poor condition (e.g., partially blocked by mud or organic debris), and the current operation of these drainage structures is not aligned with best practices to support fish passage.

Special-Status Species with Potential to Occur in the Proposed Project Area

Special-status species are regulated under the federal Endangered Species Act (FESA) and California Endangered Species Act (CESA) or other regulations or are species that are considered sufficiently rare by the scientific community to qualify for such listing. These species are classified in the following categories:

- Species listed or proposed for listing as threatened or endangered under the FESA (Code of Federal Regulations [CFR] Title 50, Section 17.11 [listed animals], and various notices in the *Federal Register* [FR] [proposed species]).

[1] "Volitional passage" refers to fish passage whereby fish transit a passage facility under their own swimming capability, using timing and behavior they choose, and under all naturally passable flows. Volitional passage means that fish can enter, traverse, and exit a passage facility under their own power, instinct, and swimming capability. The fish pass through the facility without the aid of any apparatus, structure, or device (i.e., they are not trapped, mechanically lifted or pumped, or transported) (NMFS 2022).

- Species that are candidates for possible future listing as threatened or endangered under the FESA (61 FR 40, February 28, 1996).
- Species listed or proposed for listing by the State of California as threatened or endangered under the CESA (California Code of Regulations [CCR] Title 14, Section 670.5).
- Animal Species of Special Concern to CDFW.
- Species that meet the definitions of rare and endangered under CEQA. A plant or animal species may be treated as "rare or endangered" even if not on one of the official lists so long as it meets the criteria of "rare or endangered" (CEQA Guidelines, Section 15380).

A list of special-status fish species that have the potential to occur in the proposed Project area was compiled based on data contained in the CNDDB (CDFW 2025); the USFWS List of Threatened and Endangered Species that May Occur in Your Proposed Project Location or May Be Affected by Your Proposed Project (USFWS 2025); and the National Endangered Species Act Critical Habitat Mapper (NMFS 2025). No site surveys were conducted for the purpose of identifying fish species in the proposed Project area. **Table 3.7-1** provides a list of special-status fish species, their general habitat requirements, and an assessment of their potential to occur in the vicinity of the proposed Project area.

The "Potential to Occur" categories are defined as follows:

- **None:** A species is determined to have no potential to occur if (1) its specific habitat requirements are not present; *AND/OR* (2) it is outside the range or presumed to be extirpated from the proposed Project area or region; *AND/OR* (3) a survey has been conducted according to agency protocol and the species was not found.
- **Low**: A species is determined to have a low potential to occur if (1) its known current distribution or range is outside of but near the proposed Project area; *AND/OR* (2) only limited or marginally suitable habitat is present.
- **Moderate**: A species is determined to have a moderate potential to occur if (1) habitat is present in the proposed Project area or immediately adjacent areas; *AND* (2) the proposed Project area is in the known range of the species, even if the species was not observed during general biological surveys.
- **High:** A species is determined to have a high potential to occur or be present if (1) habitat is present in the proposed Project area or immediately adjacent areas; *AND* (2) the proposed Project area is in the known range of the species; *AND/OR* (3) there are recent and reliable records of the species on or near the site.

Conclusions regarding habitat suitability and species occurrence are based on the analysis of existing literature and databases described previously and known habitats occurring within the proposed Project area. Seven special-status species have high potential to occur and two special-status species have moderate potential to occur in the proposed Project area. Six species have low or no potential to occur in the proposed Project area. Only species classified as having a moderate or high potential for occurrence in the proposed Project area were considered in the impact analysis.

TABLE 3.7-1
SPECIAL-STATUS FISH SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROPOSED PROJECT AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Proposed Project Area
Fish				
Acipenser medirotris pop. 1	Green sturgeon–southern DPS	FT/SSC/--	Spawning occurs primarily in cool (11–15°C) sections of mainstem rivers in deep pools (8–9 meters) with substrate containing small to medium-sized sand, gravel, cobble, or boulder. Migration corridors include the Sacramento River. Juveniles may rear in the Sacramento River and associated riverine, subtidal, and intertidal habitats.	**High.** Green sturgeon have been recorded in the upper Yolo Bypass, the Toe Drain, and Cache Slough.
Acipenser transmontanus	White sturgeon	--/SC/--	Primarily inhabit estuaries of large river systems, migrating to freshwater to spawn. Spawning occurs primarily in cool (11–15°C) sections of mainstem rivers in deep pools (8–9 meters) with substrate containing small to medium-sized sand, gravel, cobble, or boulder. Primarily reside in the San Francisco Estuary.	**Moderate.** Adult white sturgeon could occur in the proposed Project area during upstream migration to spawning areas on the Sacramento River. Juveniles could occur while rearing and during their out-migration to the Delta.
Archoplites interruptus	Sacramento perch	--/SSC/--	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefer warm water. Aquatic vegetation is essential for young.	**None.** Extirpated from native range.
Hypomesus transpacificus	Delta smelt	FT/SE/--	Occurs in open surface waters in the Delta. Occurs seasonally in Suisun Bay, Carquinez Strait, and San Pablo Bay. Found in Delta estuaries with dense aquatic vegetation and low occurrence of predators. May be affected by downstream sedimentation.	**High.** DWR monitoring in the Toe Drain observed a higher number of delta smelt in the Yolo Bypass in recent years (2010–2016). Adult delta smelt were generally observed between February and April and juveniles from May through June.
Lampetra ayresii	River lamprey	--/SSC/--	Adults need clean, gravelly riffles in permanent streams to spawn successfully. Ammocoetes live in silty backwaters and eddies with muddy or sandy substrate into which they burrow.	**Low.** Can occur in the lower Sacramento and San Joaquin rivers, including the Delta.
Lampetra tridentata	Pacific lamprey	SC/SSC/--	Adults need clean, gravelly riffles in permanent streams to spawn successfully. Ammocoetes live in silty backwaters and eddies with muddy or sandy substrate into which they burrow.	**Low.** Can occur in the lower Sacramento and San Joaquin rivers, including the Delta.
Lavinia exilicauda exilicauda	Central California roach	--/SSC/--	Occurs in small, warm tributaries to larger streams that flow through open foothill woodlands of oak and foothill pine. Located in the foothills in much of the same region that contains the pikeminnow-hardhead-sucker assemblage.	**None.** Occurs upstream of large reservoirs or in tributary streams.
Lavinia symmetricus spp.	Sacramento hitch	--/SSC/--	Sacramento hitch inhabit warm lowland waters including clear streams, turbid sloughs, lakes, and reservoirs.	**Low.** In the Sacramento River, hitch appear to be spread across much of their native range, including the Delta.

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Proposed Project Area
Mylopharodon conocephalus	Hardhead	--/SSC/--	Hardhead are often found at low to mid elevations in relatively undisturbed habitats of larger streams with high water quality (clear, cool).	**Low.** In the Sacramento River, they are common and may be present in the Delta.
Oncorhynchus mykiss irideus pop. 11	Steelhead–Central Valley DPS	FT/--/--	This DPS enters the Sacramento and San Joaquin rivers and their tributaries from July to May; spawning from December to April. Young move to rearing areas in and through the Sacramento and San Joaquin rivers, the Delta, and San Pablo and San Francisco bays.	**High.** Primarily present in the Toe Drain during in-migration (adults) and out-migration (juveniles) periods. Steelhead have been recorded in the upper Yolo Bypass, the Toe Drain, and Cache Slough.
Oncorhynchus tshawytscha pop. 11	Chinook salmon–Central Valley spring-run ESU	FT/ST/--	Anadromous species using riverine, estuarine, and saltwater habitat. Adult migration potentially occurs from March through May. Juvenile out-migration occurs from November through April.	**High.** Primarily present in the Toe Drain during periods of in-migration (adults) and out-migration (juveniles).
Oncorhynchus tshawytscha pop. 13	Chinook salmon–Central Valley fall-/late fall-run ESU	SC/SSC/--	Anadromous species using riverine, estuarine, and saltwater habitat. Adult migration potentially occurs from June through December. Juvenile out-migration occurs from March through July.	**High.** Primarily present in the Toe Drain during periods of in-migration (adults) and out-migration (juveniles).
Oncorhynchus tshawytscha pop. 7	Chinook salmon–Sacramento River winter-run ESU	FE/SE/--	Anadromous species using riverine, estuarine, and saltwater habitat. Adult migration potentially occurs from January through May. Juvenile out-migration occurs from November through mid-March.	**High.** Primarily present in the Toe Drain during periods of in-migration (adults) and out-migration (juveniles).
Pogonichthys macrolepidotus	Sacramento splittail	--/SSC/--	Splittail spawn in shallow water over flooded vegetated habitat with a detectable water flow. Splittail larvae and juveniles remain in riparian or annual vegetation along shallow edges on floodplains.	**High.** Historically, Sacramento splittail were found as far north as Redding, California, and are occasionally observed in the American River. Sacramento splittail have been captured regularly in the Toe Drain.
Spirinchus thaleichthys	Longfin smelt	FE/ST/--	Euryhaline, nektonic, and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15–30 ppt but can be found in completely freshwater to almost pure seawater.	**Moderate.** While historically longfin smelt have been found as far north as Colusa, California, the species has been experiencing rapid decline. Longfin smelt have been captured in the Toe Drain as recently as 2014 and are known to spawn in the lower Sacramento River near or downstream of Rio Vista.

KEY: °C = degrees Celsius; Delta = Sacramento–San Joaquin Delta; DPS = distinct population segment; DWR = California Department of Water Resources; ESU = evolutionarily significant unit; ppt = parts per thousand

Federal: (NMFS, USFWS)
- FE = Listed as Endangered by the Federal Government
- FT = Listed as Threatened by the Federal Government

State: (CDFW)
- SE = Listed as Endangered by the State of California
- ST = Listed as Threatened by the State of California
- SC = Candidate for listing by the State of California
- SSC = California Species of Special Concern

Sources: NMFS 2025; CDFW 2025; USFWS 2025.

Special-Status Fish with Potential to Occur in the Proposed Project Area

Green Sturgeon

In North America, the southern DPS of green sturgeon is found from Ensenada, Mexico, to southeast Alaska. CDFW classified green sturgeon as a Class 1 Species of Special Concern in 1995 (Moyle et al. 1995). Class 1 Species of Special Concern are those that conform to the State definitions of threatened or endangered and could qualify for addition to the official list (14 CCR Section 15380[d]). On April 7, 2006, NMFS determined that the southern DPS of green sturgeon was threatened under the FESA (NMFS 2006a). On October 9, 2009, NMFS designated critical habitat for the green sturgeon southern DPS throughout most of its occupied range (NMFS 2009), including the Toe Drain adjacent to the proposed Project area.

Green sturgeon are widely distributed in the Delta and estuary areas. Historical and recent information confirms that green sturgeon occur in the Sacramento River and a few of its tributary rivers (the Feather, Yuba, and Bear rivers). Within the freshwater portion of their range, green sturgeon distribution is limited by impassable barriers such as Shasta and Keswick dams and Fremont Weir (NMFS 2018). Historic and present records indicate that spawning of green sturgeon is limited exclusively to the Sacramento River watershed (NMFS 2018). Adults typically migrate upstream into rivers between late February and late July. Spawning occurs from March to July, with peak spawning from mid-April to mid-June. Green sturgeon are believed to spawn every 3 to 5 years, although recent evidence indicates that spawning may be as frequent as every 2 years (NMFS 2005a). Adult green sturgeon broadcast their eggs in deep, fast water over large cobble substrate, where the eggs settle into the interstitial spaces (Moyle 2002). Larvae hatch from eggs between 6 and 8 days after spawning if temperature conditions are optimal. Larvae and young of year (fish less than 1 year old) forage and rear in riverine areas until they gain the ability to tolerate higher salinity concentrations.

Juvenile green sturgeon live in freshwater for up to 3 years using riverine, subtidal, and intertidal habitats in the lower Sacramento River and Delta (Radtke 1966; Klimley et al. 2015). Post-spawn fish behavior varies between holding for several months in the Sacramento River then out-migrating in the fall or winter or moving out of the river quickly during the spring or summer months (Heublein et al. 2009). Post-spawn out-migration through the Delta is also variable, with some adults traveling to the Pacific Ocean in 2–10 days and others remaining in the estuary for months. Green sturgeon have been recently recorded in the upper Yolo Bypass, the Toe Drain, and Cache Slough and therefore have a high potential to occur in the proposed Project area given the seasonal use of this habitat.

White Sturgeon

Like green sturgeon, white sturgeon are found from Ensenada, Mexico, to southeast Alaska. The San Francisco Estuary population of white sturgeon—the only reproducing population of white sturgeon in California—was previously classified as a Species of Special Concern by CDFW. On July 12, 2024, CDFW approved white sturgeon as a candidate species for listing as threatened under CESA. Candidate species for listing under CESA are granted full protections during the review process. Currently, there is no federal listing for white sturgeon.

White sturgeon primarily inhabit estuaries of large river systems, migrating to freshwater to spawn. Similar to green sturgeon, the spawning success of white sturgeon has been hindered by the construction of dams, such as Shasta Dam on the Sacramento River and Oroville Dam on the Feather River. Spawning

in the California Central Valley is now limited to the Sacramento River between Knights Landing and Colusa (Moyle 2002; Moyle et al. 2015) with observations of periodic spawning in the Feather and San Joaquin rivers (Beamesderfer et al. 2004; Jackson et al. 2015). Before spawning, white sturgeon move into the lower reaches of rivers during the winter and migrate upstream to spawning areas between December and early June (Moyle et al. 2015). Like green sturgeon, white sturgeon broadcast their eggs in deep, fast water over large cobble substrate, where the eggs settle into the interstitial spaces (Moyle 2002). Larvae hatch from eggs between 4 and 12 days after spawning if temperature conditions are optimal (Wang 1986). Larvae and young of year forage and rear in riverine areas until they gain the ability to tolerate higher salinity concentrations (McCabe and Tracy 1994). Recruitment success of juvenile white sturgeon is correlated with high spring flows and Delta outflow. High spring flows during juvenile rearing (i.e., between April and July) assist in moving larval sturgeon downstream into suitable rearing habitat quicker than years with low spring flows (Stevens and Miller 1970).

White sturgeon typically inhabit deep water over soft bottom substrates, feeding on or near the bottom (Moyle 2002). White sturgeon remain in the San Francisco Estuary throughout most of their lives (Klimley et al. 2015), but more evidence is showing that white sturgeon may move into marine environments as well (Sellheim et al. 2022; Scott and Crossman 1973). Adult and juvenile white sturgeon occur primarily in the San Francisco Estuary but may be present in the proposed Project area during upstream migration as adults and downstream migration as rearing juveniles. However, they have rarely been recorded in recent survey data and therefore have a moderate potential to occur in the proposed Project area.

Delta Smelt

The delta smelt is federally listed as threatened and listed as endangered by the State of California. This species is a semi-anadromous fish with an annual life cycle. A portion of adults move from Suisun Bay or river channels in the lower Delta to freshwater upstream and spawn in February to May (Moyle et al. 1992; Moyle 2002; Bennett 2005). However, recent distributional studies indicate that movement patterns of smelt are highly variable, depending on outflow, exports, channel configurations, and other factors (Moyle et al. 2016). An increasingly higher percentage of smelt caught in various surveys are found in freshwater areas, year-round, such as the Sacramento Deep Water Ship Channel and the Toe Drain of the Yolo Bypass (Merz et al. 2011; Sommer et al. 2011; Sommer and Mejia 2013). A recent series of laboratory tests indicated that delta smelt prefer to spawn on pebble and sand substrates (Lindberg et al. 2019). This suggests that freshwater Delta habitats with pebble and sand substrates could potentially be important spawning habitats for delta smelt.

Historically, the delta smelt was the most abundant pelagic fish species in the San Francisco Estuary (Moyle 2002), but by the early 1980s, abundance had declined dramatically (Sommer et al. 2007). Multiple factors have created habitat that is significantly less able to support smelt in large numbers. The ultimate cause of the decline in delta smelt is competition with people for water and habitat. Some of the proximate drivers of decline in delta smelt abundance include entrainment, altered hydrology, reduced food availability, predation, contaminants, habitat change, drought, and climate change (Moyle et al. 2016).

The lower Yolo Bypass is a known spawning area for delta smelt (USFWS 2004), and critical habitat has been designated for this species, including aquatic portions of the proposed Project area. In addition, delta smelt have been previously captured in the Yolo Bypass (Sommer et al. 2001a; Interagency Ecological Program 2023). DWR monitoring in the Toe Drain (a rotary screw trap located within one-half mile south of

the proposed Project area) observed a higher number of delta smelt in the Yolo Bypass in recent years (2010–2016) than in the late 1990s and early 2000s, in contrast to declining trends observed in other surveys in the San Francisco Estuary (Mahardja et al. 2019). Furthermore, long-term catch data from the YBFMP show that over an 11-year period, delta smelt were observed at monitoring stations near the proposed Project area between January and July (**Figure 3.7-1**), with no observations after July (Interagency Ecological Program 2023). **Table 3.7-2** lists the mean annual catch by month for each sample station from 2011 to 2023. Therefore, delta smelt have a high potential to occur in the proposed Project area.

TABLE 3.7-2
2011–2023 YOLO BYPASS FISH MONITORING PROGRAM,
DELTA SMELT MEAN ANNUAL CATCH BY MONTH

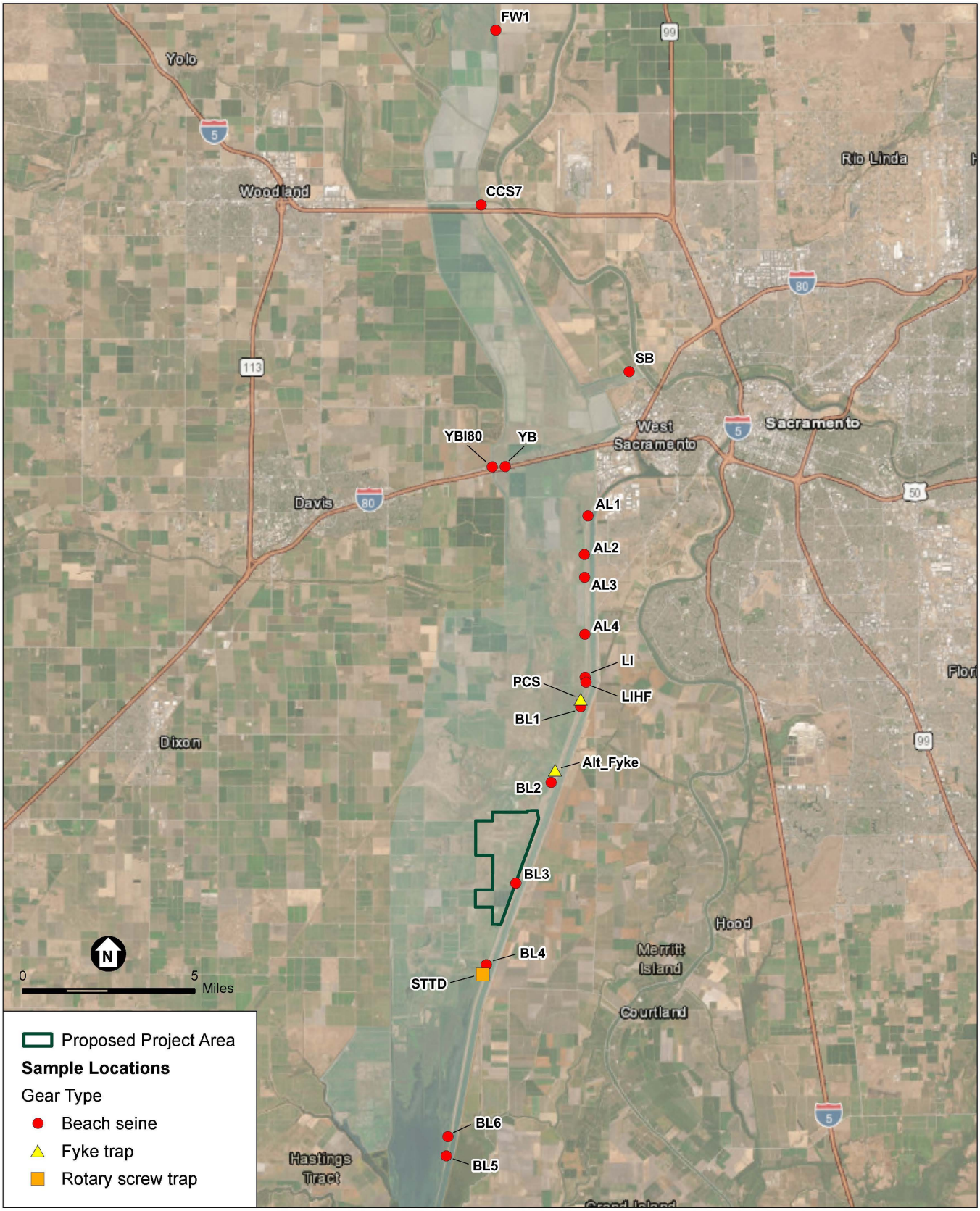
Month	Station Code BL1	Station Code BL2	Station Code BL3	Station Code BL4	Station Code PCS	Station Code STTD
January	0	0	0	0	0	1.2
February	0	0	0.11	0.4	0	10.8
March	0	0	0.22	0.1	0	9.54
April	0	0	0	0	0	1.5
May	0	0	0	0	0	11.6
June	0.2	0.1	0.1	0	0	6.8
July	0.1	0	0.2	0	0	0
August	0	0	0	0	N/A	N/A
September	0	0	0	0	0	N/A
October	0	0	0	0	0	N/A
November	0	0	0	0	0	N/A
December	0	0	0	0	0	0

Note: N/A = not available
Source: Interagency Ecological Program 2023

Central Valley Steelhead Distinct Population Segment

The Central Valley steelhead was federally listed as threatened on March 19, 1998 (NMFS 1998a). The threatened status of Central Valley steelhead was reaffirmed in NMFS's final listing determination on January 5, 2006 (NMFS 2006b). On September 2, 2005, NMFS designated critical habitat for Central Valley steelhead (NMFS 2005b), which includes the Toe Drain adjacent to the proposed Project area.

Steelhead have highly variable and complex life-history patterns but are broadly categorized into winter and summer reproductive ecotypes. Winter-run steelhead are the most widespread reproductive ecotype and are the only type currently present in Central Valley streams (McEwan 2001). Winter steelhead become sexually mature in the ocean and enter freshwater from August through April, typically spawning from December through April (NMFS 2014). Individual steelhead may spawn more than once, returning to the ocean between each spawning migration.



Ecosystem Investment Partners

TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 3.7-1
Sample Locations and Gear Type in the Yolo Bypass

Prepared by: ESA

SOURCE: Esri, 2025, IEP Yolo Bypass Fish Monitoring Program 2023, ESA 2025

Juvenile steelhead typically rear 1–2 years in freshwater before migrating to the ocean as smolts. Juvenile migration to the ocean generally occurs from December through August, with peak out-migration from January to May (McEwan 2001). Some juveniles (i.e., resident rainbow trout) may stay and mature in freshwater without migrating to the ocean. Resident rainbow trout can shift back to anadromy if conditions are appropriate. Juvenile steelhead tend to use bank habitat more frequently than the main channel, because bank habitat provides increased protection, shade, and food.

Adult and juvenile steelhead may move through the portions of the Yolo Bypass on their way to and from the ocean (i.e., adult migration and juvenile rearing and emigration) and have been documented in the Yolo Bypass and Toe Drain (Sommer et al. 2001a; Interagency Ecological Program 2023). Steelhead were observed at two locations nearest the proposed Project area during YBFMP sampling efforts from February through May and in November and December (Figure 3.7-1). **Table 3.7-3** lists the mean annual catch by month for each sample station from 2011 to 2023. The month with the highest mean annual catch for both locations was March, when steelhead are rearing in the Yolo Bypass (Interagency Ecological Program 2023). Therefore, steelhead have a high potential to occur in the proposed Project area.

TABLE 3.7-3
2011–2023 YOLO BYPASS FISH MONITORING PROGRAM,
STEELHEAD MEAN ANNUAL CATCH DATA BY MONTH

Month	Station Code PCS	Station Code STTD
January	0	0
February	0	0.1
March	0.18	0.72
April	0	0.3
May	0.1	0.8
June	0	0
July	0	0
August	N/A	N/A
September	0	N/A
October	0	N/A
November	0.11	N/A
December	0.18	0

Note: N/A = not available
Source: Interagency Ecological Program 2023

Central Valley Spring-run Chinook Salmon Evolutionarily Significant Unit

The Central Valley spring-run Chinook salmon ESU was federally listed as threatened on September 16, 1999 (NMFS 1999). The species' threatened status was reaffirmed in NMFS's final listing determination issued on June 28, 2005 (NMFS 2005c). NMFS designated critical habitat for Central Valley spring-run Chinook salmon on September 2, 2005 (NMFS 2005b), which includes the Toe Drain adjacent to the proposed Project area.

Historically, spring-run Chinook salmon occupied the upstream reaches of all major river systems in the Central Valley where no natural barriers existed. By the 1950s, however, populations in the San Joaquin River had been extirpated (Yoshiyama et al. 1998). Loss of access and holding areas with the construction of dams was a major contributing factor. Similarly, abundance of spring-run in the Sacramento River has been in decline, with only remnant runs occurring in Butte, Mill, and Deer creeks of the upper Sacramento River (Williams et al. 2016).

Adult spring-run Chinook salmon begin their upstream migration in March, with peak upstream migration occurring from May through June and ending in September. Spring-run Chinook salmon are sexually immature during upstream migration, and adults hold in deep, cold pools near spawning habitat until spawning commences in late summer and fall. Spring-run Chinook salmon spawn in the upper reaches of the mainstem Sacramento River and tributary streams (USFWS 1997). Spawning typically begins in late August and may continue through October. Juveniles emerge in November and December in most locations but may emerge later when water temperature is cooler. Newly emerged fry remain in shallow, low-velocity edgewater (CDFG 1998).

A small portion of an annual year-class of juvenile spring-run Chinook salmon may emigrate as post-emergent fry (less than 1.8 inches long) and reside in the Delta undergoing smoltification. However, most are believed to rear in the upper river and tributaries during winter and spring, emigrating as juveniles (more than 1.8 inches long). Rearing takes place in their natal streams, the mainstem of the Sacramento River, inundated floodplains (including the Sutter and Yolo bypasses), and the Delta. Downstream migration of yearlings typically coincides with the onset of the winter storm season, and migration may continue through March (CDFG 1998).

Spring-run Chinook salmon adults have the potential to occur in the proposed Project area during their upstream migration to spawn in tributaries of the Sacramento River. Juveniles have the potential to occur in the proposed Project area during their downstream migration from tributaries and through the Sacramento River. Therefore, spring-run Chinook salmon have a high potential to occur in the proposed Project area.

Central Valley Fall-/Late Fall–run Chinook Salmon Evolutionarily Significant Unit

Central Valley fall-/late fall–run Chinook salmon ESU are currently the most abundant and widespread salmon runs in California (Mills et al. 1997). This species is not listed under the FESA. On March 9, 1998, NMFS issued a proposed rule to list fall-run Chinook salmon as threatened (NMFS 1998b). However, on September 16, 1999, NMFS determined that the species did not warrant listing (NMFS 1999). On April 15, 2004, NMFS classified Central Valley fall-/late fall–run Chinook salmon as a species of concern (NMFS 2004). However, Essential Fish Habitat (EFH) is designated for this species. EFH is defined as those waters and substrate necessary for spawning, breeding, feeding, or growth to maturity. EFH includes currently and historically accessible habitat. CDFW has also designated this species as a California Species of Concern.

Adult fall-run Chinook salmon migrate into the Sacramento River and its tributaries from June through December in mature condition and spawn from late September through December, soon after arriving at their spawning grounds (Yoshiyama et al. 1998). The spawning peak occurs in October and November. Emergence occurs from December through March, and juveniles migrate downstream to the ocean soon

after emerging, rearing in freshwater for only a few months. Smolt out-migration typically occurs from March through July (Yoshiyama et al. 1998).

Late fall–run Chinook salmon migrate upstream before they are sexually mature and hold near spawning grounds for 1–3 months before spawning. Upstream migration takes place from October through April and spawning occurs from late January through April, with peak spawning in February and March (Yoshiyama et al. 1998). Fry emerge from April through June. Juvenile late fall–run Chinook salmon rear in their natal streams during the summer, and they remain in some streams throughout the year. Smolt out-migration can occur from November through May (Yoshiyama et al. 1998).

Fall-/late fall–run Chinook salmon adults have the potential to occur in the proposed Project area during their upstream migration to spawn in tributaries of the Sacramento River. Juveniles have the potential to occur in the proposed Project area during their downstream migration from the Sacramento River. Therefore, fall-/late fall–run Chinook salmon have a high potential to occur in the proposed Project area.

Sacramento River Winter-run Chinook Salmon Evolutionarily Significant Unit

The Sacramento River winter-run Chinook salmon evolutionarily significant unit (ESU) was listed as threatened under the FESA on August 4, 1989 (NMFS 1989). NMFS subsequently upgraded the federal listing to endangered on January 4, 1994 (NMFS 1994). NMFS designated critical habitat for Sacramento River winter-run Chinook salmon on June 16, 1993 (NMFS 1993); however, this critical habitat does not include waterways adjacent to the Project area.

Winter-run Chinook salmon spend 1–3 years in the ocean. Adults leave the ocean and migrate through the Delta into the Sacramento River from December through July, with peak migration in March. Adults spawn from mid-April through August (Moyle 2002). Downstream movement of juvenile winter-run Chinook salmon begins in August, soon after fry emerge.

Historically, winter-run Chinook salmon occupied and spawned in the upper reaches of the Sacramento River including the Little Sacramento, McCloud, and Pit rivers and Battle Creek (Moyle et al. 1989; Lindley et al. 2007). After construction of Shasta and Keswick dams, those habitats became unavailable. Currently, winter-run Chinook salmon are known to occur only in the mainstem of the Sacramento River, with spawning occurring between Keswick Dam near Redding and Red Bluff Diversion Dam (Lindley et al. 2007; NMFS 2016). The Sacramento River is the main migration route through the Delta. However, juveniles occasionally may stray into the central Delta and lower San Joaquin River system during out-migration because of entrainment into diversion channels.

Winter-run Chinook salmon adults have the potential to occur in the proposed Project area during their upstream migration to spawn in the Sacramento River near Redding. Juveniles have the potential to occur in the proposed Project area during their downstream migration through the Sacramento River. Therefore, winter-run Chinook salmon have a high potential to occur in the proposed Project area.

Sacramento Splittail

Sacramento splittail are not listed under the CESA or FESA but are considered a California Species of Special Concern. Sacramento splittail are a large (greater than 15 inches), long-lived cyprinid, endemic to the sloughs, lakes, and rivers of the Central Valley (Moyle 2002) and are most typically found in tidally influenced freshwater and estuarine habitats (e.g., the Delta and Suisun Bay) with salinities as high as 10–

18 ppt (Moyle et al. 2004). Nonbreeding splittail can survive wide fluctuations in temperature and low dissolved oxygen levels (less than 1 milligram of oxygen per liter), allowing them to live in slow-moving sections of rivers and sloughs (Moyle et al. 2004).

Adult Sacramento splittail begin a gradual upstream migration toward spawning areas sometime between late November and late January. Sacramento splittail spawn and rear on terrestrial vegetation and debris on floodplains inundated by high spring flows from late February through April (Moyle 2002). Spawning is associated with conditions such as changing water levels, lower water temperatures, and increasing length of day (Moyle et al. 2004). In the Sacramento River basin, the most important spawning areas appear to be the Yolo and Sutter bypasses, which flood extensively during wet years. In wet years, Sacramento splittail are commonly found in the Putah Creek Sinks, in the region where Putah Creek crosses the Yolo Bypass, and as discussed above, the Yolo Bypass provides valuable spawning and rearing habitat for splittail (Sommer et al. 1997, 2001a).

Sacramento splittail have been captured in the Toe Drain (Interagency Ecological Program 2023). Splittail were found at all six of the sample stations closest to the proposed Project area (Figure 3.7-1) and were observed each month throughout the year in at least one of the sample stations. Therefore, Sacramento splittail have a high potential to occur in the proposed Project area.

Threats to Sacramento splittail include habitat loss and degradation, loss of access to seasonally inundated floodplains, introduction of non-native species, entrainment in the Central Valley Project (CVP) and State Water Project (SWP) water export facilities, and harvest by recreational anglers.

Longfin Smelt

The longfin smelt is a relatively small (i.e., 90–110 millimeters [mm] standard length at maturity), semelparous, pelagic fish that occurs in estuaries of the Pacific North American coast, from Prince William Sound, Alaska, to San Francisco Bay, with landlocked populations found in Lake Washington, Washington, and Harrison Lake, British Columbia (Baxter 1999; Moyle 2002). In California, the longfin smelt inhabits the San Francisco Estuary; Humboldt Bay; and the Eel, Klamath, and Smith rivers (Baxter 1999). Spawning may occur from November through June, with peak spawning activity likely occurring from February through April (Moyle 2002). Longfin smelt have adhesive eggs and are presumed to spawn over sandy or gravel substrates, rocks, and aquatic plants (Wang 1986; Emmett et al. 1991; Robinson and Greenfield 2011). Most adults die after spawning; however, a few, mainly 1-year-old females, live another year and probably spawn a second time (USFWS 1997).

Longfin smelt young hatch and exist as yolk-sac larvae for 1 to 2 weeks (Robinson and Greenfield 2011). The larvae metamorphose into juveniles approximately 1 to 2 months after hatching, varying with water temperature (Emmett et al. 1991). Larvae tend to inhabit the upper third of the water column, while juveniles and adults occur in the lower two-thirds. However, juveniles and adults may make daily vertical migrations to the upper water column at night, tracking the diurnal movements of their prey (Moyle 2002).

Larvae have low salinity tolerance, and Kimmerer et al. (2009) documented that larvae and young juveniles were most numerous in water with a salinity of 2 parts per thousand (ppt), decreasing in abundance as salinity approached 15 ppt. Juveniles migrate to higher salinity water as they mature. For much of the species' life cycle, individuals are found in more brackish water with salinities up to 30 ppt,

and longfin smelt have been recorded beyond the Golden Gate Bridge, in marine waters where salinity approaches 35 ppt. The species is not tolerant of warmer water (exceeding 20 to 22 degrees Celsius [°C]) and, during summer, longfin smelt generally move to deeper water (including marine areas), possibly to avoid warmer water in shallower areas.

The longfin smelt was once one of the most abundant species observed in San Francisco Estuary surveys (Moyle 2002). The estuary's longfin smelt population has seen dramatic declines over several years (Rosenfield and Baxter 2007; Sommer et al. 2007; MacNally et al. 2010), resulting in its March 2009 inclusion on the list of pelagic fish species threatened under CESA (CDFG 2009). Longfin smelt are listed as endangered under FESA (USFWS 2024). Wetlands in the upper estuary and southern San Francisco Bay may be critical spawning habitats for longfin smelt (Grimaldo et al. 2016); however, no critical habitat has been designated for this species.

Adult longfin smelt are found mainly in Suisun, San Pablo, and San Francisco bays, although their distribution shifts upstream into the western Delta in years of low outflow (Baxter 1999; Moyle 2002). Dispersal of longfin smelt larvae downstream is likely dependent on the level of freshwater flow, with transport likely being reduced in drought years (Grimaldo et al. 2016). Longfin smelt have been captured in the Toe Drain during sampling events conducted as part of the Yolo Bypass Fish Monitoring Program (YBFMP) (Interagency Ecological Program 2023). Figure 3.7-1 presents a map of the YBFMP sampling sites. The following sample stations were included in this data summary: PCS, BL1, BL2, BL3, BL4, and STTD. While uncommon, a total of nine longfin smelt individuals have been observed at the station locations closest to the proposed Project area, with the most recent sighting occurring in 2014. The highest mean annual catch was observed in May and June (Interagency Ecological Program 2023). Therefore, due to lack of catches in the previous 10 years of sampling near the Project area, longfin smelt have a moderate potential to occur in the proposed Project area.

Critical Habitat

"Critical habitat" is defined in Section 3(5)A of the FESA as a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection if occupied by threatened or endangered species. Four designated critical habitats are present in the proposed Project area, as described below.

North American Green Sturgeon Critical Habitat

Designated critical habitat for the southern DPS of green sturgeon includes the Sacramento River; the Delta; and Suisun, San Pablo, and San Francisco bays below the mean higher high-water line (NMFS 2009).

Delta Smelt Critical Habitat

Designated critical habitat for delta smelt consists of all water and all submerged lands below ordinary high water and the entire water column bounded by and contained in Suisun Bay, which includes all contiguous water bodies contained within the statutory definition of the Delta, including the Sacramento and San Joaquin rivers (USFWS 1994). Critical habitat for delta smelt is designated in the following California counties: Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo.

Central Valley Steelhead Critical Habitat

Designated critical habitat for Central Valley steelhead includes the stream channels in the designated stream reaches and the lateral extent as defined by the mean higher high-water line in the Sacramento and San Joaquin rivers, their tributaries, and the Delta (NMFS 2005b).

Central Valley Spring-run Chinook Salmon Critical Habitat

Designated critical habitat for spring-run Chinook salmon includes all river reaches accessible in the Sacramento River and its tributaries in California; all waters from Chipps Island westward to the Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and the Carquinez Strait; all waters of San Pablo Bay westward of the Carquinez Bridge; and all waters of San Francisco Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge (NMFS 2005b).

3.7.4 Regulatory Setting

Federal and State regulations discussed in Section 3.6.3, "Regulatory Setting," of Section 3.6, "Biological Resources–Aquatic," of the Final SRGO Program EIR were reviewed for relevance to the proposed Project and are identified below as appropriate, along with any applicable new or updated policies since certification of the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.5.4, pp. 3.6-7 through 3.6-17). As a statewide, program-level document, the Final SRGO Program EIR did not discuss regional and local regulations; this Draft SEIR provides project-specific regional and local goals and policies to supplement the regulatory setting information provided in the Final SRGO PEIR.

Federal

Federal Endangered Species Act

See Section 3.6, "Biological Resources–Terrestrial," for a description of the FESA.

NMFS Programmatic Biological Opinion for the Central Valley

On August 31, 2018, NMFS issued a programmatic biological opinion (PBO) for restoration projects in the Central Valley. This PBO provides FESA coverage for several categories of restoration project types, where "restoration project" is defined as one that would result in a net increase in aquatic or riparian resource functions and services. Projects permitted by the PBO may include multiple benefits, such as flood management, groundwater recharge, recreation, or climate change adaptation. All permitted projects must meet the criteria of a restoration project defined by the PBO and must remain consistent with NMFS' recovery plans. Avoidance and minimization measures are also described in the PBO and must be included in the proposed projects, as applicable.

Magnuson-Stevens Fishery Conservation and Management Act

Under the Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (16 United States Code [USC] Section 1801 et seq.), NMFS, fishery management councils, and federal agencies are required to cooperatively protect EFH for commercially important fish species such as Pacific coast groundfish, Pacific salmon, highly migratory species, and coastal pelagic

fish and squid. As defined by the U.S. Congress, EFH includes "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."[2]

Central Valley Project Improvement Act

The Reclamation Projects Authorization and Adjustment Act of 1992 (Public Law 102-575) includes Title 34, the Central Valley Project Improvement Act (CVPIA). The CVPIA amended the CVP's authorization to include fish and wildlife protection, restoration, and mitigation as project purposes of the CVP having equal priority with irrigation and domestic uses of CVP water, and it elevated fish and wildlife enhancement to a level having equal purpose with power generation. Among the changes mandated by the CVPIA was the dedication of 800 thousand acre-feet of CVP yield annually to fish, wildlife, and habitat restoration.

The U.S. Department of the Interior's May 9, 2003, decision on the implementation of Section 3406(b)(2) of the CVPIA explains how Section 3406(b)(2) water will be dedicated and managed. Dedication of CVPIA 3406(b)(2) water occurs when the U.S. Bureau of Reclamation takes a fish and wildlife habitat restoration action based on the recommendations of USFWS (and in consultation with NMFS and CDFW), pursuant to Section 3406(b)(2). Water exports at the CVP pumping facilities have been reduced using "(b)(2) water" to decrease the risk of fish entrainment at the salvage facilities and to augment river flows.

Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants to waters of the United States. The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. See Section 3.10, "Hydrology and Water Quality," for a detailed description of the CWA.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 USC Section 651 et seq.), as amended in 1964, was enacted to protect fish and wildlife when federal actions control or modify a natural stream or body of water. The law requires federal agencies to consider the effect of water-related projects on fish and wildlife resources. The agencies must consult and coordinate with USFWS and State fish and game agencies to identify ways to prevent the loss of and damage to fish and wildlife resources, and to further develop and improve these resources.

National Invasive Species Act of 1996

The National Invasive Species Act (Public Law 104-332) reauthorized and amended the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990. The 1996 law mandated regulations to reduce environmental and economic impacts from invasive species and prevent the introduction and spread of aquatic nuisance species, primarily through ballast water.

In recent years, the U.S. Environmental Protection Agency (EPA) has joined the U.S. Coast Guard in regulating discharges of ballast water in the United States. Since February 2009, EPA has regulated ballast water, and other discharges incidental to normal vessel operations, under Section 402 of the CWA. U.S. Coast Guard regulations, developed under the National Invasive Species Act, generally require

[2] 16 USC Section 1802—Definitions (10).

ballast-water management (i.e., exchange) for vessels entering U.S. waters from outside of the 200-nautical-mile Exclusive Economic Zone of the U.S. The National Invasive Species Act also authorizes funding for research on the prevention and control of aquatic nuisance species in San Francisco Bay and the Delta, along the Pacific coast, and elsewhere in the United States.

Executive Order 13112: Invasive Species

Executive Order 13112 (February 3, 1999) directs federal agencies to prevent and control the introduction and spread of invasive non-native species in a cost-effective, environmentally sound manner to minimize their effects on economic, ecological, and human health. The executive order builds on existing laws, such as the National Environmental Policy Act, the Nonindigenous Aquatic Nuisance Prevention and Control Act, the Lacey Act, the Plant Pest Act, the federal Noxious Weed Act, and the FESA.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Water Code Section 13000 et seq.), enacted in 1969, articulates the federal CWA. The State Water Board and regional water boards (referred to collectively herein as "Boards") are the State agencies with primary responsibility for the coordination and control of water quality. See Section 3.6, "Biological Resources–Terrestrial," and Section 3.10, "Hydrology and Water Quality," for detailed descriptions of the Porter-Cologne Water Quality Control Act.

California Endangered Species Act

The CESA was enacted in 1984. Under CESA, the California Fish and Game Commission has the responsibility for maintaining a list of threatened and endangered species. Pursuant to CESA requirements, an agency reviewing a project within its jurisdiction must determine whether any State-listed endangered or threatened species may be present on the project site and whether the project would have a potentially significant impact on such species. In addition, CDFW encourages informal consultation on any project that may affect a candidate species. The CESA prohibits the take of California-listed animals and plants in most cases, but CDFW may issue incidental take permits for otherwise legal projects resulting in species take.

Project-related impacts on species identified on the CESA endangered or threatened list would be considered significant. "Take" of protected species incidental to otherwise lawful management activities may be authorized under Fish and Game Code Section 2081.

California Fish and Game Code

Lake and Streambed Alteration Agreement (Fish and Game Code Section 1602)

Fish and Game Code Section 1602 requires any person, government agency, or public utility proposing any activity that will divert or obstruct the natural flow or change the bed, channel, or bank of any river, stream, or lake, or proposing to use any material from a streambed, to first notify CDFW of such proposed activity.

Fully Protected Species (Fish and Game Code Sections 3511, 4700, 5050, 5515)

Certain species are considered "fully protected," meaning that the code explicitly prohibits all take of individuals of these species, except for take permitted for scientific research. Section 5050(a)(1) lists fully

protected amphibians and reptiles, Section 5515(a)(1) lists fully protected fish, Section 3511(a)(1) lists fully protected birds, and Section 4700(a)(1) lists fully protected mammals. Except as provided in Sections 2081.7 and 2835, fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take, except for collecting these species for necessary scientific research and relocation of the species for the protection of livestock.

Take Prohibition (Fish and Game Code Sections 86, 2080)

Fish and Game Code Section 86 defines "take" and Section 2080 prohibits "taking" of a species listed as threatened or endangered under CESA (Fish and Game Code Section 2080) or otherwise fully protected, as defined in Fish and Game Code Sections 3511, 4700, and 5050.

Safe Harbor Agreements (Fish and Game Code Section 2089.2)

See Section 3.6, "Biological Resources–Terrestrial," for a description of the Safe Harbor Agreements.

The Salmon, Steelhead Trout, and Anadromous Fisheries Program Act (Fish and Game Code Sections 6900–6930)

The Salmon, Steelhead Trout, and Anadromous Fisheries Program Act was enacted in 1988 after CDFW reported that the natural production of salmon and steelhead in California had declined dramatically since the 1940s, primarily as a result of lost stream habitat on many of the state's streams.

This law declares that it is State policy to increase the state's salmon and steelhead resources, and directs CDFW to develop a plan and program that strives to double the salmon and steelhead resources (Fish and Game Code Section 6902[a]). The law also establishes a State policy that existing natural salmon and steelhead habitat shall not be diminished further without offsetting the impacts of lost habitat (Fish and Game Code Section 6902[c]).

California Aquatic Invasive Species Management Plan

The California Aquatic Invasive Species Management Plan provides information for State agencies and other entities to use when they collaborate to fight aquatic invasive species. The plan proposes management actions for addressing threats posed by aquatic invasive species in California. It focuses on the non-native algae, crabs, clams, fish, plants, and other species that continue to invade California's creeks, wetlands, rivers, bays, and coastal waters (CDFG 2008).

State Wildlife Action Plan

Each state develops a state wildlife action plan to serve as the comprehensive wildlife conservation strategy required for the receipt of federal funds through the State and Tribal Wildlife Grants Program. California last updated its plan in 2015 (CDFW 2015). The State Wildlife Action Plan provides a blueprint for the actions necessary to address the highest priorities for conserving California's aquatic, marine, and terrestrial resources. Implementation of this plan relies on making important and helpful conservation information more accessible to resources managers and the public, and on developing lasting partnerships with a broad array of governments, agencies, organizations, businesses, and citizens.

Habitat Restoration and Enhancement Act

The Habitat Restoration and Enhancement Act of 2014 is an expedited permitting process with CDFW for landowners, State and local government agencies, and conservation organizations wanting to implement

small-scale, voluntary habitat restoration projects across California. Restoration and enhancement projects approved by CDFW, pursuant to this law, do not require additional permits from CDFW, such as a Lake or Streambed Alteration agreement or CESA permit.

As defined by the Habitat Restoration and Enhancement Act, habitat restoration or enhancement projects are projects with the primary purpose of improving fish and wildlife habitat and meet the eligibility requirements for the State Water Board's Order for Small Habitat Restoration Projects. Projects approved under the Habitat Restoration and Enhancement Act must meet the current size limitations in the State Water Board's Order for Small Habitat Restoration Projects, be consistent with widely recognized restoration practices, and avoid or minimize any incidental impacts.

CEQA Guidelines Section 15380

Although threatened and endangered species are protected by specific federal and State statutes, CEQA Guidelines Section 15380(d) provides that a species not listed on the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet the specific criteria of a rare or endangered species.

CEQA also specifies the protection of other locally or regionally significant resources, including sensitive wildlife natural communities or habitats (14 CCR Section 15206[b][5]). Unoccupied habitat does not merit protection under the FESA or CESA, but CEQA requires an assessment of such communities and potential project impacts. Natural communities that are identified in the CNDDB as sensitive are considered by CDFW to be significant resources and fall under the CEQA Guidelines for addressing impacts.

Regional and Local

The following regional and local policies relevant to the proposed Project based on location, project type, and/or environmental setting have been included for context; however, DWR, as a State agency, is not subject to local ordinances and policies.

Yolo County 2030 Countywide General Plan

The Yolo County 2030 General Plan (Yolo County 2009) outlines goals and policies intended for the protection of biological resources countywide. Policies guide the location, design, and quality of development to protect aquatic biological resources such as aquatic habitat, migration corridors, and ecosystems. Relevant goals and policies from this planning document include the following:

> **Goal CO-2: Biological Resources.** Protect and enhance biological resources through the conservation, maintenance, and restoration of key habitat areas and corresponding connections that represent the diverse geography, topography, biological communities, and ecological integrity of the landscape.
>
> > ***Policy CO-2.1:*** Consider and maintain the ecological function of landscapes, connecting features, watersheds, and wildlife movement corridors.
> >
> > ***Policy CO-2.2:*** Focus conservation efforts on high priority conservation areas (core reserves) that consider and promote the protection and enhancement of species diversity and habitat values, and that contribute to sustainable landscapes connected to each other and to regional resources.

Policy CO-2.3: Preserve and enhance those biological communities that contribute to the county's rich biodiversity, including blue oak and mixed oak woodlands, native grassland prairies, wetlands, riparian areas, aquatic habitat, agricultural lands, heritage valley oak trees, remnant valley oak groves, and roadside tree rows.

Policy CO-2.5: Protect, restore and enhance habitat for sensitive fish species, so long as it does not result in the large-scale conversion of existing agricultural resources.

Policy CO-2.9: Protect riparian areas to maintain and balance wildlife values.

Policy CO-2.10: Encourage the restoration of native habitat.

Policy CO-2.16: Existing native vegetation shall be conserved where possible and integrated into new development if appropriate.

Policy CO-2.24: Promote floodplain management techniques that increase the area of naturally inundated floodplains and the frequency of inundated floodplain habitat, restore some natural flooding processes, river meanders, and widen riparian vegetation, where feasible.

Policy CO-2.28: Balance the needs of aquatic and riparian ecosystem enhancement efforts with flood management objectives.

Policy CO-2.30: Protect and enhance streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat and vernal pools in land planning and community design.

Policy CO-2.34: Recognize, protect and enhance the habitat value and role of wildlife migration corridors for the Sacramento River, Putah Creek, Willow Slough, the Blue Ridge, the Capay Hills, the Dunnigan Hills and Cache Creek.

Policy CO-2.37: Where applicable in riparian areas, ensure that required state and federal permits/approvals are secured prior to development of approved projects.

Policy CO-2.38: Avoid adverse impacts to wildlife movement corridors and nursery sites (e.g., nest sites, dens, spawning areas, breeding ponds). Preserve the functional value of movement corridors to ensure that essential habitat areas do not become isolated from one another due to the placement of either temporary or permanent barriers within the corridors. Encourage avoidance of nursery sites (e.g., nest sites, dens, spawning areas, breeding ponds) during periods when the sites are actively used and that nursery sites which are used repeatedly over time are preserved to the greatest feasible extent or fully mitigated if they cannot be avoided. (DEIR MM BIO-4a)

Policy CO-2.41: Require that impacts to species listed under the State or federal Endangered Species Acts, or species identified as special-status by the resource agencies, be avoided to the greatest feasible extent. If avoidance is not possible, fully mitigate impacts consistent with applicable local, State, and Federal requirements. (DEIR MM BIO-5a)

3.7.5 Impact Analysis and Mitigation Measures

Significance Criteria

In accordance with Appendix G of the CEQA Guidelines, an impact related to aquatic biological resources is considered significant if the proposed Project would do any of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any fish species identified as a candidate, sensitive, or special-status fish species in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Impacts related to the following significance thresholds are addressed in Section 3.6, "Biological Resources–Terrestrial":

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by CDFW or USFWS.
- Have a substantial adverse effect on State and federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan.

Methodology and Assumptions

As discussed in Chapter 1, the proposed Project is a "restoration project" as defined in Section V of the SRGO (State Water Board 2022a: Section V, p. 2); therefore, this Draft SEIR supplements and incorporates by reference the Final SRGO Program EIR, including its appendices (State Water Board 2022b). As provided by CEQA Guidelines Section 15163(b), a supplement to an EIR need contain only the information necessary to make the previous EIR adequate for the project as revised. This means that only those project-specific activities that would introduce new significant environmental effects or cause a substantial increase in the severity of significant effects identified in the SRGO Program EIR need to be evaluated. Where existing information and analysis in the SRGO Program EIR is considered sufficient to evaluate the impacts of the proposed Project, no additional environmental review is provided.

As outlined further in Chapter 1, this Draft SEIR incorporates by reference the general protection measures and species protection measures outlined in Final SRGO Program EIR Appendices E and F, which are intended to avoid and minimize impacts on sensitive resources. Consistent with the Final SRGO Program EIR, the impact analysis for each resource area assumes that applicable general protection measures and species protection measures would be implemented and enforced in the same way as mitigation measures, consistent with Section 15126.4 of the CEQA Guidelines, and that the proposed Project would be constructed and operated in compliance with relevant federal and State

regulations and ordinances. Therefore, if the analysis has determined that incorporating one or more general protection measures and/or species protection measures into the proposed Project would reasonably mitigate an impact, then the impact conclusion is less than significant. If the analysis has determined that an impact would remain significant after the incorporation of appropriate general protection measures and species protection measures, then mitigation measures from the Final SRGO Program EIR and/or Project-specific mitigation measures have been recommended to further reduce the magnitude of the impact. All mitigation measures are from the Final SRGO Program EIR unless specifically stated otherwise.

The following impact analysis considers the potential impacts related to aquatic biological resources associated with implementation of the proposed Project. The impact analysis evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities.

The primary basis for the evaluation of existing conditions for this section refers to physical environmental conditions as they existed at the time of the CEQA NOP (July 23, 2024).

Therefore, the analysis of potential impacts on aquatic biological resources only evaluates changes to existing conditions without these restoration projects. The only reference to these restoration projects in the impact analysis is made to further describe the proposed Project's benefits under a condition with these restoration projects implemented. See Section 3.2, "Approach to Evaluate Impacts of the Proposed Project," for additional explanation of baselines for the proposed Project.

Impacts and Mitigation Measures

Table 3.7-4 summarizes the impact conclusions presented in this section for reference.

TABLE 3.7-4
SUMMARY OF IMPACT CONCLUSIONS—FISH AND AQUATIC RESOURCES

Impact Statement	Construction Activities	Constructed Restoration Elements	Operations, Monitoring, and Maintenance Activities
3.7-1: Implementation of the proposed Project could result in substantial adverse effects on special-status fish species directly, or indirectly through habitat modifications.	LTSG	B	LTSG
3.7-2: Implementation of the proposed Project could result in substantial adverse direct effects on the movement of native resident or migratory fish.	LTS	B	B

Notes: B = beneficial; LTS = less than significant; LTSG = less than significant with implementation of general protection measures
Source: Data compiled by Environmental Science Associates in 2025.

Impact 3.7-1: Implementation of the proposed Project could result in substantial adverse effects on special-status fish species directly, or indirectly through habitat modifications.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including the potential for construction

activities for restoration projects to affect special-status fish species directly, or indirectly through habitat modifications. The Final SRGO Program EIR evaluated the following construction activities: installation of infrastructure such as culverts, fish screens, and other water control structures to improve water management capabilities; removal of legacy structures; creation of depressions, berms, and drainage features; and the installation of cofferdams during construction. Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/ demobilization; stockpiling of construction materials; and disposal of excess materials.

The Final SRGO Program EIR found that these activities could result in temporary impacts on listed fish species and their habitat. Temporary impacts described in the Final SRGO Program EIR include physical disturbance to habitat; release and exposure of sediments and turbidity; noise, motion, and vibration disturbance; disturbance of riparian vegetation; release and exposure of construction-related contaminants; and direct effects from dewatering and fish relocation activities (see Final SRGO Program EIR: Section 3.6.4, pp. 3.6-19 through 3.6-27). The Final SRGO Program EIR identified general protection measures and species protection measures when applicable to a given project to reduce the impacts of project construction activities during in-water work to minimize the mobilization of sediment; during in-water pile driving; to avoid and/or minimize impacts on riparian vegetation; and on the release and exposure of construction-related contaminants, and measures to minimize the potential impacts of dewatering and relocating fish: GPM-2: Construction Work Windows, GPM-3: Construction Hours, GPM-4: Environmental Awareness Training, GPM-5: Environmental Monitoring, IWW-1: Appropriate In-Water Materials, IWW-2: In-Water Vehicle Selection and Work Access, IWW-3: In-Water Placement of Materials, Structures, and Operation of Equipment, IWW-4: In-Water Staging Areas and Use of Barges, IWW-5: Cofferdam Construction, IWW-6: Dewatering/Diversion, IWW-7: Fish and Aquatic Species Exclusion while Installing Diversion Structures, IWW-8: Removal of Diversion and Barriers to Flow, IWW-9: In-Water Pile Driving Plan for Sound Exposure, IWW-10: In-Water Pile Driving Methods, IWW-11: Sediment Contaminant during In-Water Pile Driving, IWW-12: Pile-Driving Monitoring, IWW-13: Dredging Operations and Dredging Materials Reuse Plan, VHDR-1: Avoidance of Vegetation Disturbance, VHDR-2: Native and Invasive Vegetation Removal Materials and Methods, VHDR-3: Revegetation Materials and Methods, VHDR-4: Revegetation Erosion Control Materials and Methods, VHDR-5: Revegetation Monitoring and Reporting, VHDR-6: General Herbicide Use, VHDR-7: Herbicide Application Planning, VHDR-8: Herbicide Application Reporting, WQHM-1: Staging Areas and Stockpiling of Materials and Equipment, WQHM-2: Storm Water Pollution Prevention Plan, WQHM-3: Erosion and Sediment Control Measures, WQHM-4: Hazardous Materials Management and Spill Response Plan, WQHM-5: In-Water Concrete Use, WQHM-6: Accidental Discharge of Hazardous Materials, SPM-3: Species Protection Construction Work Windows, FISH-1: Habitat Disturbance Avoidance and Minimization, FISH-2: Habitat Assessment and Surveys, FISH-3: Fish Capture and Relocation, and FISH-4: Reporting (see Final SRGO Program EIR: Section 3.6.4, pp. 3.6-20, 3.6-22, and 3.6-27).

Given the uncertainty regarding whether impacts on special-status fish species and disturbance of habitat could be avoided during construction activities where explosives are used for small dam removal, the Final SRGO Program EIR determined this impact to be significant and unavoidable. However, the Final SRGO Program EIR found that the general protection measures and species protection measures identified above would avoid and/or reduce other potential impacts to a less-than-significant level. No

mitigation measures were identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.6.4, pp. 3.6-26 and 3.6-27).

Consistent with the types of construction activities evaluated by the Final SRGO Program EIR, construction of the proposed Project would require the following: site preparation and mobilization/ demobilization; use of staging areas, access routes, and haul routes; grading and excavation; the installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; removal and salvage and/or disposal of existing pumps, pipes, and other water control structures and utility lines that are no longer needed under proposed Project conditions; reconfiguration and modification of irrigation and drainage features, such as canals, ditches, and berms; and installation of sheetpiles using vibratory hammer.

Construction activities to connect new channels to the Toe Drain would be conducted seasonally, in the late spring/early summer when the proposed Project area is expected to dry out and seasonally inundated areas are dry (see Chapter 2, "Project Description" under Section 2.3, "Proposed Project Construction"). However, if the proposed Project area is not able to fully dry out, in-water work (e.g., dewatering of the work area) would occur during the designated work window of August 1–November 30, which would protect both delta smelt and salmonids because these fish are not expected to be in the Project area during this time. These activities could result in temporary impacts on special-status fish species, including delta smelt, longfin smelt, Chinook salmon, steelhead, and green sturgeon.

Potential impacts on listed fish—specifically, sediment disturbance, increased turbidity, and noise from piling driving—would be temporary and would occur during periods when fish are not expected to be present in the proposed Project area. In addition, dewatering of the work area may lead to direct take of special-status fish through stranding and impingement, and indirect take through temporary loss, alteration, and temporary reduction of aquatic habitat for special-status fish. However, dewatered areas would be dry temporarily and would return to normal conditions upon completion of the construction activities. In addition, to avoid direct physical injury to special-status fish, sheetpile installation would be conducted using vibratory hammer and managed to not exceed the thresholds established by NMFS (Fisheries Hydroacoustic Working Group 2008).

Furthermore, implementation of the applicable general protection measures and species protection measures described in the Final SRGO Program EIR would further reduce potential impacts of construction activities on listed fish and their associated habitat. The general protection measures and species protection measures would minimize potential impacts of dewatering and fish relocation; they would also minimize potential degradation of aquatic habitat and resulting harm to special-status fish from introduced contaminants, release of sediments, and noise.

The following general protection measure and species protection measures are applicable to the proposed Project: GPM-2, GPM-4, GPM-5, IWW-1, IWW-2, IWW-3, IWW-6, IWW-7, IWW-8, IWW-9, IWW-10, IWW-11, IWW-12, WQHM-1, WQHM-2, WQHM-3, WQHM-4, WQHM-6, SPM-3, FISH-1, FISH-2, FISH-3, FISH-4. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection and species protection measure. Therefore, this impact would be ***less than significant with implementation of the general protection and species protection measures***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.6.4, pp. 3.6-19 through 3.6-27), and the Final SRGO Program EIR adequately addresses construction impacts related to adverse effects on special-status fish species that could occur directly, or indirectly through habitat modifications.

Effects of Constructed Restoration Elements

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including the potential for constructed facilities to affect special-status fish species directly, or indirectly through habitat modifications. Overall, the Final SRGO Program EIR determined that completing the activities described under the Final SRGO Program EIR would be beneficial, by increasing the quality and quantity of habitat for special-status fish species. The Final SRGO Program EIR determined that for all restoration project types, the resulting restored and/or enhanced habitat is expected to have beneficial impacts on aquatic resources (see Final SRGO Program EIR: Section 3.6.4, pp. 3.6-27 through 3.6-30). The Final SRGO Program EIR does not contain any general protection measures for the constructed facilities.

Consistent with the Final SRGO Program EIR, once constructed, the proposed Project's restoration elements are expected to be beneficial for special-status fish species compared to existing conditions. The quality and quantity of habitat would increase; and simplified operations allowing for fish passage would be implemented to reduce stranding and entrainment potential (see Chapter 2, "Project Description" under Section 2.4, "Operations, Monitoring, and Maintenance").

As described in Chapter 2, "Project Description" under Section 2.2 Proposed Project Restoration Elements and as shown on Figure 2-4 in Chapter 2, "Project Description" the proposed Project includes implementation of habitat types and operational improvements in the proposed Project area. .The proposed Project would replace acres of highly managed and disconnected marsh and agricultural floodplain habitat with tidal wetland and floodplain habitat designed to have connectivity to the Toe Drain. Numerous existing infrastructure elements that cause stranding risks for special-status fish species would be removed under the proposed Project, including approximately 51 spills/outfalls, 34 culverts, numerous ponded areas, dozens of water control structures with no fish passage elements, and miles of berms that disconnect habitat throughout the proposed Project area (Figure 3.7-1). The remaining culverts and water control structures would be redesigned with fish passage elements to further reduce stranding risk. In addition, four existing unscreened water pumps would be removed and replaced with a single pump station fitted with fish screens (Figure 3.7-1). These changes to existing conditions for special-status fish species under the proposed Project are described separately below for effects on fish growth and survival, predation, entrainment, and stranding.

The analysis of potential impacts of the proposed Project associated with constructed restoration elements is divided into the following subtopics that address the effects on fish growth and survival, predation, entrainment and stranding. A summary of the impact conclusions is also provided.

Effects on Fish Growth and Survival

In the long term, the proposed Project has the potential to provide substantial benefits to multiple special-status fish species and the aquatic ecosystem as a whole. In concert with the operation of the Big Notch

Project, the proposed complex of tidal wetlands, managed wetlands, floodplain agriculture, and seasonally inundated floodplains would enable juvenile Chinook salmon to gain access to and depart from high-value inundated habitat for longer durations during drier years. As the Big Notch opens and closes, it connects the Sacramento River with the Yolo Bypass landscape, leading to nutrient exchange throughout the floodplain and subsequently the Delta's food webs (DWR 2024). The proposed Project's floodplain and tidal wetlands would provide land surfaces to accommodate a fraction of this flow (and fish) onto a larger area in the Yolo Bypass, thus optimizing residence times and associated productivity while maintaining continuous volitional fish passage whenever fish are present. Furthermore, the restoration of tidal wetlands with dendritic channel networks has the potential to substantially benefit delta smelt.

Effects on Predation

Although the proposed Project's restoration elements would increase the quantity and quality of aquatic habitat for special-status fish, a beneficial impact, it may also provide habitat for predators, a potentially significant impact. The Toe Drain, which is adjacent to the proposed Project area, is a narrow, shallow channel that is seasonally prone to high temperatures and supports populations of predatory fish (Sommer et al. 2004). Therefore, non-native predatory fish species such as striped and largemouth bass may move into aquatic portions of the Project area post-implementation and may prey on delta smelt and juvenile salmonids.

Shallow-water floodplain and tidal wetland habitats, such as those that would be created by the proposed Project, have been observed to favor native species; deeper, more perennial river channel habitat in the Delta (like that present in the Toe Drain) favors non-native species, including predatory fish species (Brown et al. 2024). The Toe Drain is heavily altered with channelized, armored banks and limited fish cover, providing conditions that predatory fish prefer over the tidal channels and floodplain habitat that would be present in the proposed Project area. Therefore, the effect related to the risk of piscivorous predation of native fish species under the proposed Project is expected to be beneficial relative to existing conditions in the Toe Drain.

Restoration elements of the proposed Project would provide wading habitat for avian predators, including herons and egrets, thereby creating the potential for predation of listed fish species. However, the restored tidal channels are designed to provide areas of depth refugia from avian predators, thus reducing the potential for avian predation on delta smelt and juvenile salmonids. Also, as observed during previous surveys in the Yolo Bypass, the densities of avian predators are low relative to the thousands of hectares of available fish-rearing habitat present in the greater Yolo Bypass (Sommer et al. 2001a). Therefore, avian predation is unlikely to have a population-level effect on native fishes utilizing floodplain habitats in the region (Sommer et al. 2001a).

Effects of Entrainment

Operation of the pump station as part of the proposed Project has the potential to entrain or impinge listed fish species such as delta smelt and out-migrating juvenile salmonids. During operations, water pumped from the tidal wetlands into drainage canals could entrain or impinge fish swimming or feeding adjacent to the pump station.

However, as described in Chapter 2, "Project Description," any proposed new intakes would be designed to meet standards in accordance with CDFW (2000) and NMFS (1996) fish screening criteria. The screens would be designed to have an approach velocity equal to or less than 0.2 foot per second to meet

the USFWS screening criteria when delta smelt are present. Calculations suggest that a 1.75-mm screen opening size would be effective at excluding juvenile salmonids of 22 mm standard length and greater (ICF International 2016), which is the equivalent of around 25 mm fork length. Therefore, this would be expected to exclude all juvenile salmonids occurring in the vicinity of the pump station. Furthermore, the proposed Project's drainage features would be designed to allow volitional fish passage. Fish would always have a connection to the Toe Drain via fish passage structures (i.e., check boxes with orifices; see Chapter 2, "Project Description" under Section 2.3, "Proposed Project Construction"). Thus, entrainment of juvenile salmonids and adult delta smelt would be reduced from existing conditions.

Larval smelt (less than 25 mm in length), however, would still have the potential to be entrained by the pump station. Delta smelt have been observed in the vicinity of the proposed Project area (Interagency Ecological Program 2023), and the lower Yolo Bypass is a known spawning area for this species (USFWS 2004). However, the proposed Project would remove up to six existing unscreened lift pumps present on the site and install screened pump stations, thereby decreasing the risk of entrainment to larval delta smelt at the proposed Project area. In addition, any larval fish entrained by a pump station would now be exposed to control devices that allow for fish passage and would have a reduced risk of stranding compared to existing conditions (see the "Effects of Stranding" section below).

Furthermore, the proposed Project would greatly enhance the connectivity of the proposed Project area to the Toe Drain, through removal of a complex berm network, installation of water control structures designed for fish passage, and grading throughout the site. This would reduce concentrations of larval fish and potential exposure of smelt to lift pumps (see the "Effects of Stranding*"* section for details). Therefore, the potential loss of larval delta smelt would be low and entrainment would be reduced from existing conditions.

Effects of Stranding

To reduce the potential for stranding, implementation of the proposed Project would convert highly disconnected managed agricultural land and marshland to a simplified, connected mosaic of tidal wetland habitat, floodplain habitat, and managed agriculture and wetlands with infrastructure elements that allow for fish passage. Also, approximately 51 outflow/spill structures, three weir boxes, 34 culverts, and four unscreened pumps would be demolished on managed floodplain habitat (see Chapter 2, "Project Description" under Section 2.3, "Proposed Project Construction") and replaced with screened pumps and weir structures that allow fish passage as tested by the California Rice Commission (2025), and would be installed along the berms surrounding the managed floodplain. These structures would consist of boards with orifices that would allow fish passage through the structure (see Chapter 2, "Project Description" under Section 2.4.1, "Managed Floodplain"). When flooding within the Yolo Bypass recedes and water stage drops below the berm elevation, fish that have not receded with the outgoing water would remain in the wetlands within the managed floodplains. Fish could escape the managed floodplain through weirs outfitted with flashboards orifices connected to channels that flow to the Toe Drain. Therefore, demolition of these facilities in addition to installation of weir structures that allow for fish passage would enable the previously managed agriculture habitat to become a floodplain habitat more conducive to fish passage, increasing suitable rearing habitat for fish.

To further reduce juvenile stranding, the proposed Project features would be graded to allow volitional passage through the proposed Project area and reconnect with the Toe Drain. Multiple existing ponds and

berms that pose a potential risk for fish stranding would be removed, and canals, ditches, and other irrigation and drainage features would be reconfigured to provide connection and volitional passage between the restored floodplain and the Toe Drain. Thus, the potential for stranding in both the managed and unmanaged Project features would be reduced from existing conditions.

As with the rest of the Yolo Bypass, some amount of stranding may occur. Stranding would not be completely eliminated with implementation of the proposed Project; however, it would be reduced compared to existing conditions. As described above, the proposed Project would provide high-quality rearing habitat and enhanced connectivity between the Yolo Bypass and the Toe Drain, leading to increased primary and secondary food production and ultimately enhanced fish growth and survival.

Impact Conclusion

As described previously, implementation of the proposed Project has the potential to benefit listed fish species and their associated habitat. Impacts on special-status fish species from sediment disturbance and increased turbidity are expected to be relatively brief and confined. In the long term, the proposed Project would not eliminate potential loss from entrainment, stranding, and predation but would reduce such loss compared to existing conditions. Lastly, the proposed Project would be expected to provide increased primary and secondary food production and increased growth and survival of special-status fish species. Therefore, implementation of the proposed Project would substantially improve habitat quality for special-status fish species compared to existing conditions. This impact would be *beneficial*.

Constructed restoration elements associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.6.4, pp. 3.6-27 through 3.6-30), and the Final SRGO Program EIR adequately addresses the impacts of constructed restoration elements related to adverse effects on special-status fish species that could occur directly, or indirectly through habitat modifications.

Effects of Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of operations and maintenance activities to affect special-status fish species directly, or indirectly through habitat modifications. The Final SRGO Program EIR determined that for all restoration project types, the resulting restored and/or enhanced habitat is expected to have beneficial impacts on aquatic resources. However, temporary impacts could occur during maintenance activities for projects that would leave infrastructure at project sites after construction (e.g., stream crossings, fish passage improvements, and water conservation projects). Those structures would require operations and maintenance, which could lead to limited, ongoing adverse impacts on special-status fish species. The Final SRGO Program EIR found that operations and maintenance activities may lead to temporary mobilization of sediment, ground disturbance, chemical contamination, or vegetation removal. Overall, this impact would be potentially significant (see Final SRGO Program EIR: Section 3.6.4, p. 3.6-30). The Final SRGO Program EIR identified general protection measures and species protection measures when applicable to a given project which are described above under “Effects of Construction Activities.”

Consistent with the type of maintenance activities described in the Final SRGO Program EIR, and as described in Chapter 2, “Project Description” under Section 2.4, “Operations, Monitoring, and

Maintenance," operations, monitoring, and maintenance of the proposed Project would include active management of floodplain features (i.e., managed wetlands and floodplain agriculture) and more traditional operations, restoration monitoring, and maintenance of the proposed Project area as a whole. These activities would be beneficial in the long term, but they may result in short-term, temporary impacts on special-status fish and their habitat. These impacts are discussed below.

Maintenance activities for the proposed Project would involve minor ground-disturbing activities (e.g., maintenance dredging and filling in the irrigation canals) that could release sediments into the aquatic portions of the Project area. Suspended sediments in the water column have the potential to affect listed fish by disrupting normal feeding behavior, reducing growth rates, increasing stress levels, and reducing respiratory functions. Increased suspended solids can also affect aquatic organisms by reducing dissolved oxygen levels and light transmission, and when the sediment in the suspended solids resettles, it could potentially smother aquatic habitats and organisms. Changes in light transmission have the potential to limit photosynthesis and reduce foraging abilities for organisms that rely on visual signals for feeding (e.g., salmonids) (Anchor Environmental 2003). Substantially depressed oxygen levels (i.e., levels below 5.0 milligrams per liter [mg/l]) may cause respiratory stress to aquatic life, and levels below 3.0 mg/l may cause mortality.

Research with salmonids has shown that high turbidity concentrations can reduce feeding efficiency; decrease food availability; reduce dissolved oxygen in the water column; result in reduced respiratory functions and tolerance to diseases; and cause fish mortality (Berg and Northcote 1985; Gregory and Northcote 1993; Velagic 1995; Waters 1995). Even small pulses of turbid water can cause salmonids to disperse from established territories (Waters 1995), which can interrupt normal movement patterns, displace fish into less suitable habitat, and/or increase competition and predation, decreasing salmonids' chances of survival.

Nevertheless, much of the research mentioned above focused on turbidity levels significantly higher than those likely to result from the proposed maintenance activities, especially with implementation of the Final SRGO Program EIR's general protection measures. Therefore, the small pulses of moderately turbid water expected from the occasional proposed maintenance activities would likely cause only minor physiological and behavioral effects, such as dispersing listed fish from established territories, potentially increasing interspecific and intraspecific competition, and increasing predation risk for the small number of affected fish.

Furthermore, turbidity increases would be relatively brief and generally confined to within a few hundred feet of the activity. Turbidity levels would initially be higher than baseline levels, but the sediment would disperse and be re-deposited, and background levels would be expected to be restored within hours of the disturbance. Therefore, fish would be able to use their preferred habitats and continue their normal migration routes in a matter of hours.

However, maintenance activities could also accidentally introduce contaminants such as fuels, oils, hydraulic fluids, and other chemicals/compounds into the wetted environment, either directly through spills or incrementally through surface runoff from haul routes and staging areas. Such changes to aquatic habitats could affect fish by altering water temperature, pH, clarity, or chemical composition, as well as stream substrates, most likely by introducing silt, sand, soil, or gravel. These alterations could render

otherwise suitable habitat unsuitable for fish at least temporarily, or they could introduce contaminants that would affect fish health, reproductive success, and juvenile survival. If present in sufficient concentrations, contaminants could be toxic to fish and prey organisms occupying adjacent aquatic habitats. Contaminants could also alter oxygen diffusion rates and cause acute and chronic toxicity to aquatic organisms, thereby reducing growth and survival and possibly causing mortality of listed fish.

To minimize the potential effects of runoff from maintenance activities on receiving water quality, the species protection measures (see "Effects of Construction Activities") described in the Final SRGO Program EIR would be implemented.

As described previously, operations, maintenance, and monitoring activities for the proposed Project have the potential to affect listed fish species and their associated habitat. Effects on special-status fish species from operations and maintenance activities may lead to sediment disturbance and increased turbidity that are expected to be relatively brief and confined. The Final SRGO Program EIR identified the following general protection measures and species protection measures that are applicable to the proposed Project: GPM-2, GPM-4, GPM-5, IWW-1, IWW-2, IWW-3, IWW-4, IWW-13, WQHM-1, WQHM-2, WQHM-3, WQHM-4, WQHM-6, SPM-3, FISH-1, FISH-2, FISH-3, and FISH-4. These measures would reduce potential impacts from operations and maintenance activities on special-status fish species and their associated habitat. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection and species protection measure. Therefore, this impact would be ***less than significant with implementation of the general protection and species protection measures.***

Operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.6.4, p. 3.6-30), and the Final SRGO Program EIR adequately addressed the effects of operations, monitoring, and maintenance related to adverse effects on special-status fish species directly, or indirectly through habitat modifications.

Impact 3.7-2: Implementation of the proposed Project could result in substantial adverse direct effects on the movement of native resident or migratory fish.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities on the movement of native resident or migratory fish. The Final SRGO Program EIR found that construction-related impacts on fish movement are expected to be minimal and temporary. Therefore, the impact of Project construction activities on fish movement would be less than significant. The Final SRGO Program EIR does not contain any general protection measures applicable to this impact (see Final SRGO Program EIR: Section 3.6.4, p. 3.6-31).

Consistent with the types of construction activities evaluated by the Final SRGO Program EIR, construction of the proposed Project would require the following: site preparation and mobilization/ demobilization; use of staging areas, access routes, and haul routes; grading and excavation; the installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; removal and salvage and/or disposal of existing pumps, pipes, and other water control structures

and utility lines that are no longer needed under proposed Project conditions; reconfiguration and modification of irrigation and drainage features, such as canals, ditches, and berms; and installation of temporary cofferdams.

Project construction activities could temporarily affect fish movement. Instream construction activities could impede upstream passage of adult fishes as well as movement of juveniles by causing altered hydrologic conditions, such as temporarily increased velocities. However, work along the Toe Drain would only occur on the bank and would not impede flow, so the movement of juvenile or adult fishes is unlikely to be affected. Also, in-water work would occur during the designated work window of August 1 through November 30, which would protect both delta smelt and salmonids because they are not expected to be in or near the Project area during the work window. Therefore, impacts would be ***less than significant***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.6.4, pp. 3.6-30 and 3.6-31), and the Final SRGO Program EIR adequately addressed potential adverse effects on the movement of native resident or migratory fish.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of constructed facilities and operations and maintenance activities on the movement of native resident or migratory fish. The Final SRGO Program EIR found that the long-term effects of restoration projects would be beneficial or neutral. The specific purpose of all project types would be to restore and enhance existing conditions that contribute to degradation of fish habitat. Therefore, impacts on fish movement from construction of facilities and operations and maintenance of restoration projects would be beneficial. The Final SRGO Program EIR does not contain any general protection measures or species protection measures applicable to this impact (see Final SRGO Program EIR: Section 3.6.4, p. 3.6-31).

Related to the proposed Project, the Final SRGO Program EIR determined that removing artificial structures, improving fish passage, restoring habitat, and revegetating with native plants would all provide benefits for the migration of native fishes, either directly by creating new passage or indirectly by creating more suitable habitat, thus providing an improved migratory corridor for fish. As described previously, the proposed Project is expected to reduce stranding risk and entrainment risk for native fish species, thereby providing better conditions for native fish movement in the Project area (see the analysis presented in Impact 3.7-1 for additional details). In addition, maintenance activities are expected to inhibit fish movement locally; however, similar to the effects described in “Effects of Construction Activities” above, the impact would be temporary and isolated to in-water maintenance areas. Therefore, the effects of constructed restoration elements and operations, monitoring, and maintenance activities would be ***beneficial*** to the movement of native resident or migratory fish.

The constructed restoration elements and operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR:

Section 3.6.4, p. 3.6-31), and the Final SRGO Program EIR adequately addresses potential adverse effects on the movement of native resident or migratory fish.

3.8 Cultural Resources

3.8.1 Introduction

This Draft SEIR supplements the previously certified Final SRGO Program EIR and addresses proposed modifications, changed circumstances, and new information not described in that prior environmental document. This section of the Draft SEIR discusses the potential for the proposed Project to result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR related to cultural resources (see Final SRGO Program EIR: Section 3.7.4, pp. 3.7-12 through 3.7-25). The environmental setting and evaluation of potential impacts on cultural resources, including archaeological resources, relies on the information and findings presented in the confidential "Tide's End Multibenefit Restoration Project Cultural Resources Inventory Report" (Confidential Appendix G to this Draft SEIR). The technical report presents an overview of the environmental, ethnographic, and historic background of the proposed Project area, with an emphasis on aspects related to human occupation. More detailed information regarding the results of the cultural resources study can be found in the report.

No comments identifying or addressing cultural resources were received in response to the NOP. See Appendix B to this Draft SEIR, Tide's End Multibenefit Restoration Project Notice of Preparation and Comment Letters," for NOP comment letters. Tribal consultation completed according to the requirements of California Public Resources Code (PRC) Section 21080.3.1, 21080.3.2, and 21082.3 is described in Section 3.12, "Tribal Cultural Resources."

The impact analysis in this section evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities in the proposed Project area. This impact analysis concludes that implementation of the proposed Project would result in no impact on historical resources (architectural resources), and a less-than-significant impact with mitigation incorporated for archaeological resources and human remains.

For this analysis, the term "cultural resource" includes indigenous and historic-era sites, buildings, structures, districts, and landscapes, or other evidence associated with human activity considered of value to a culture, a subculture, or a community for scientific, traditional, religious, or other reason. These resources include the following types of CEQA-defined resources: historical resources, archaeological resources, and human remains.

CEQA Guidelines Section 15064.5 defines the term "historical resource" as follows:

- A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (CRHR).
- A resource included in a local register of historical resources, as defined in PRC Section 5020.1(k), or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g).
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the

lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and PRC Section 15064.5 apply. If an archaeological site does not meet the criteria for a historical resource contained in the CEQA Guidelines (PRC Section 15000 et seq.), the site may be treated in accordance with the provisions of PRC Section 21083, pertaining to unique archaeological resources.

The term "indigenous," rather than "prehistoric," is used as a synonym for "Native American–related" (except when quoting). "Pre-contact" is used as a chronological adjective to refer to the period before the arrival of Euro-Americans in the subject area. "Indigenous" and "pre-contact" are often but not always synonymous: The former term refers to a cultural affiliation and the latter is chronological.

This section also includes the key terms defined below.

- **Architectural Resource.** This resource type includes historic-era buildings, structures (e.g., bridges, canals, roads, utility lines, railroads), objects (e.g., monuments, boundary markers), and districts. Residences, cabins, barns, lighthouses, military-related features, industrial buildings, and bridges are some examples of architectural resources. If a resource is considered a ruin (e.g., a building lacking structural elements, a structure lacking a historic configuration), it is classified as an archaeological resource.
- **Archaeological Resource.** This resource type consists of indigenous, or pre-contact, and historic-era archaeological resources:
  - *Indigenous archaeological resources* consist of village sites, temporary camps, lithic scatters, roasting pits/hearths, milling features, petroglyphs, rock features, and burials. Associated artifacts include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs). Indigenous sites that were occupied into the historic era can have both pre-contact and historic-era artifacts.
  - *Historic-era archaeological resources* consist of townsites, homesteads, agricultural or ranching features, mining-related features, refuse concentrations, and features or artifacts associated with early military and industrial land uses. Associated artifacts include stone, concrete, or adobe footings and walls; artifact-filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.

3.8.2 Environmental Setting

Data Sources

Environmental Science Associates (ESA) reviewed publicly available data, cultural resource data, and proposed Project area–specific information. The following data sources assisted in this analysis:

- The Northwest Information Center (NWIC), the California Historical Resources Information System (CHRIS) repository that covers the proposed Project area and vicinity (0.5 mile). ESA received the NWIC results in June 2021 (NWIC File No. 20-2411).

- An additional, in-person records search conducted by ESA at the NWIC in March 2023 for the proposed Project area and areas within 0.5 mile. ESA requested additional site records and previous cultural reports from a wider area in April 2024.

ESA reviewed the following sources of historic maps and aerial photographs:

- Library of Congress (https://www.loc.gov/).
- David Rumsey Historical Map Collection (www.davidrumsey.com).
- The U.S. Geological Survey's (USGS) TopoView (https://ngmdb.usgs.gov/topoview/).
- The University of California, Santa Barbara's FrameFinder database (https://mil.library.ucsb.edu/ap_indexes/FrameFinder/).
- Historicaerials.com (provided by Nationwide Environmental Title Research, LLC).

ESA reviewed ethnographic literature for the proposed Project area to gather information on potential Native American villages, place names, or documented use of the area. ESA consulted the following sources:

- Handbook of the Indians of California (Kroeber 1976 [1925]).
- The Patwin and their Neighbors (Kroeber 1932).
- Handbook of North American Indians, Vol. 8 (California) (Heizer 1978).
- The Ethnogeography of the Plains Miwok (Bennyhoff 1977).

The surveys conducted within the proposed Project area are summarized in the confidential "Tide's End Multibenefit Restoration Project Cultural Resources Inventory Report" (Appendix G to this Draft SEIR), as described further below.

Assessment for Potential Cultural Resources in the Region, Yolo Bypass, and Proposed Project Area

In 2024, ESA archaeologists conducted an intensive pedestrian surface survey of all portions of the proposed Project area. The survey methods entailed walking parallel transects no more than 20 meters apart throughout the proposed Project area and recording, via field notes and photographs, the landscape attributes, surface soil and geological conditions, degree and types of disturbance, and general cultural resources sensitivity factors. The archaeologists also visited, photographed, and measured all structures in the proposed Project area to provide data for their analysis as potential architectural resources and looked for evidence of the former (abandoned) gas wells documented in the proposed Project area. The survey covered the entire proposed Project area.

Regional Existing Conditions for Cultural Resources

Ethnographic Context

At the time of Euro-American contact, the proposed Project area and vicinity was a region inhabited and used by the Plains Miwok and the Patwin (Johnson 1978; Levy 1978). Linguistic evidence suggests that the Plains Miwok descend from a Penutian-language speaking population that arrived in California 4000

to 4500 years before present (BP). The archaeological evidence for both Patwin and Miwok populations suggests that they had a subsistence focused on Delta and riparian environments and may have been in regular contact with each other (Moratto 2004 [1984]:553; Rosenthal et al. 2007:156–158). Depopulation and relocation of Central Valley Native Americans in the 19th century resulted in conflicting and incomplete information about Tribal locations.

Patwin

The Patwin territory was an extensive region within north-central California and included the lower portion of the west side of the Sacramento Valley west of the Sacramento River from about the location of the town of Princeton in the north to Benicia in the south (Kroeber 1976 [1925]). Within this large territory, the Patwin have traditionally been divided into River, Hill, and Southern groups; in actuality, a more complex set of linguistic and cultural differences existed than is indicated by these three geographic divisions (Johnson 1978:352).

The Patwin subsistence strategy focused largely on riparian habitat—fishing for salmon, perch, trout, pike, and other fish, through the use of nets and weirs. Hunting focused on elk, deer, antelope, bear, and a variety of waterfowl and gamebirds, and freshwater mussel and turtle were also collected. Sunflower, clover, wild oats, and a host of other edible seeds were utilized for food, with valley oak acorns a food staple (Johnson 1978:355). Many of the Patwin residential buildings were permanent, constructed from wood timber and built largely belowground (Johnson 1978:357–358).

The introduction of Euro-American culture negatively affected Patwin culture and peoples. By 1871–1872, when Stephen Powers surveyed California gathering ethnographic information, the Patwin culture appeared to him to be virtually extinct. Euro-American influences within Patwin territory increased dramatically as ranching and farming became popular in the area. Euro-American settlers, especially within the Sacramento Valley, quickly made inroads into lands occupied by Native Americans. Conflicts grew in number, and Patwin populations continued to decline from disease, military skirmishes, vigilante raids, and other causes. In 1972, the Bureau of Indian Affairs listed only 11 remaining Patwin descendants (Johnson 1978:352). Despite the massive decline in population, the Patwin still reside in Solano County and the vicinity and are represented locally by the Yocha Dehe Wintun Nation (Johnson 1978:352).

Plains Miwok

The Plains Miwok are part of the larger Eastern Miwok language group who form one of two major divisions of the Miwokan subgroup of Utian speakers. The Plains Miwok lived in the Central Valley along the Sacramento, Cosumnes, and Mokelumne rivers. Homes were built on high ground, with principal villages concentrated along major drainages (Levy 1978:408–409). Seasonality defined Plains Miwok subsistence strategies, and their economy was based on the use of natural resources from the grasslands and riparian corridors adjacent drainages. As with many California Native American groups, the Plains Miwok relied heavily on acorns for food. Other non-animal foods consisted of nuts, seeds, roots, greens, berries, and mushrooms. The Plains Miwok hunted tule elk, pronghorn antelope, rabbit, squirrel, beaver, quail, and waterfowl. Like the Patwin, the Plains Miwok subsistence strategy largely focused on riparian environments. Salmon was the principal animal food for the Plains Miwok, ranking above other river resources such as sturgeon. Salt, nuts, basketry, and obsidian were obtained through trade with the Sierra Miwok (Levy 1978:402–405).

As with other California Native American groups, Euro-American exploration and settlement of the area, particularly the gold rush of 1849, had a devastating effect on the Plains Miwok. The flood of miners who came to the area in search of gold brought diseases with them that decimated the populations. Those who survived were subjected to violence and prejudice at the hands of the miners, and the groups were eventually pushed out of their ancestral territory (Castillo 1978). Although this contact with settlers had a profound negative impact on the groups' populations through disease and violent actions, the Plains Miwok peoples survived and maintained strong communities and action-oriented organizations (Castillo 1978). The Plains Miwok find membership amongst several State- and federally recognized Tribes and continue to maintain their cultures.

Pre-contact Chronological Context

Categorizing the pre-contact period into cultural stages allows researchers to describe a broad range of archaeological resources with similar cultural patterns and components during a given time frame, thereby creating a regional chronology. Rosenthal et al. (2007) provide a framework for the interpretation of the Central Valley's pre-contact archaeological record and have divided human history into three basic periods: *Paleo-Indian* (13550–10550 BP), *Archaic* (10550–900 BP), and *Emergent* (900–300 BP). The Archaic period is subdivided into three sub-periods: *Lower Archaic* (10550–7550 BP), *Middle Archaic* (7550–2550 BP), and *Upper Archaic* (2550–900 BP) (Rosenthal et al. 2007). Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods. The following summary of the region's prehistory is derived principally from Rosenthal et al. (2007) and Moratto (2004 [1984]).

Paleo-Indian Period (13550–10550 BP)

Humans first entered the Central Valley sometime before 13,000 years ago. At that time, Pleistocene glaciers had receded to the mountain crests, leaving conifer forests on the mid- and upper elevations of the Sierra Nevada and a nearly contiguous confer forest on the Coast Ranges. The Central Valley was covered with extensive grasslands and riparian forests. The central Delta system had not yet developed. The Central Valley was home to a diverse community of large mammals, which soon became extinct. People were likely focused on large game hunting, although evidence remains scant, as does understanding of lifeways during this period.

Lower Archaic Period (10550–7550 BP)

The Paleo-Indian Period was followed by the Lower Archaic Period (10550–7550 BP). During this period, the ancient lakes, which had been the subsistence base during the Paleo-Indian Period, began to dry up. This led to the rapid expanse of oak woodland and grassland prairies across the Central Valley. After 10550 BP, a significant period of soil deposition ensued in the valley, capping older Pleistocene formation. This was followed around 7000 BP by a second period of substantial soil deposition in the valley.

The first evidence of milling stone technology appeared during this period, indicating an increased reliance on processing plants for food. This period is often termed the "Milling Stone Horizon" in southern California. The appearance of milling technology may also indicate less emphasis on hunting as individuals became more familiar with the local plant resources. Milling stones include handstones and milling slabs and are frequently associated with a diverse tool assemblage including cobble-based pounding, chopping, and scraping tools. Milling tools were used for processing seeds and nuts. The

Lower Archaic also saw the development of well-made bifaces used for projectile points and cutting tools, commonly formed from meta-volcanic greenstone and volcanic basalts. Most artifacts during this period were manufactured of local materials and trade was limited. The primary social unit remained the extended family (Fredrickson 1992).

Middle Archaic Period (7550–2550 BP)

After about 7550 BP, California was marked by a change in climate with warmer and drier conditions. Oak woodland expanded upslope in the Coast Ranges and conifer forest moved into the alpine zone in the Sierra Nevada. Rising sea levels led to the formation of the Delta and associated marshlands. An initial period of upland erosion and lowland deposition was followed by a long period of stabilization of landforms. Scant evidence of human occupation from this period has been found in the Sacramento Valley or the adjacent Coast Ranges. Most evidence comes from the Sierra Foothills in Calaveras and Tuolumne counties.

Upper Archaic Period (2550–900 BP)

Evidence for Upper Archaic human occupation in the Central Valley is much more extensive than for earlier periods. The development of the Holocene landscape buried older deposits, resulting in the identification of more sites from the Upper Archaic than from older periods of development. Alluvial deposition was partially interrupted by two consecutive droughts known as the Medieval Climatic Anomaly.

Two fundamental adaptations developed side-by-side during the Upper Archaic period, evidenced by a diversification in settlement patterns. Populations in the Central Valley tended toward large, high-density, permanent settlements. These villages were used as hubs from which the populace roamed to collect resources, utilizing a wide range of technologies. Alternatively, the populations in the foothills and mountains lived in less dense settlements, moving with the seasons to maximize resource returns. For both Central Valley and foothill/mountain populations, tools tended to be expedient and multipurpose for use in a wide variety of activities. Village sites show extended occupation as evidenced by well-developed midden, frequently containing hundreds of burials, storage pits, structural remains, hearths, ash dumps, and extensive floral and faunal remains.

Emergent Period (900–300 BP)

A major shift in material culture occurred around 900 BP, marking the beginning of the Emergent Period. Particularly notable was the introduction of the bow and arrow. The bow was adopted at slightly different times in various parts of the Sacramento Valley, but by 750 BP it was in use in the Delta region. The bow was accompanied by the Stockton Serrated point, an invention seemingly developed by people in the area and distinctive from point types used in other parts of the state. Another key element of material culture from this period is the big-head effigy ornaments thought to be associated with the Kuksu religious movement. In areas where stone was scarce, baked clay balls are found, presumably for cooking in baskets. Other diagnostic items from this period are bone tubes, stone pipes, and ear spools. Along rivers, villages are frequently associated with fish weirs, with fishing taking on an increasing level of importance in the diet of the local populace.

Historic-Period Context

The earliest European presence in California came with the Spanish exploration of the California coast in the mid–16th century. European expansion began when Spain established Franciscan missions throughout

the region to Christianize the indigenous population of California, and to gain political and social control of the area. Alongside the missions came a network of military establishments, or *presidios*, and civilian settlements, or *pueblos*. Exploration of the California hinterland focused predominantly on identifying rancho sites to support the mission network, as well as the recapture of runaway converts, or neophytes. While the Spanish had made forays into the Central Valley since the mid–18th century, the earliest non-indigenous presence in the region occurred in 1808, when Capitán Gabriel Moraga led an expedition from Mission San José to the northern Sacramento Valley. By the late 1820s, English, American, and French fur trappers, attracted by the valley's abundance of animal life, had established operations throughout the region (Rawls and Bean 2002).

The Mexican government began secularization of the missions in mid-1834, with mission lands granted to high-ranking Mexican Californian soldiers, politicians, and socialites. Most ranchos were intensively involved in the hide-and-tallow trade, supporting huge herds of cattle on their vast landholdings. Beginning in the 1830s, Americans began to migrate to California. Many Americans became Mexican citizens, married into prominent *Californio* families, and were granted lands from the governor.

The Sacramento Valley remained relatively isolated and sparsely populated until the California Gold Rush. Given Sacramento's proximity to mining areas, and its accessibility to maritime traffic via the Delta and major river systems, the area quickly became a trading and economic center. Commerce along the Sacramento River encouraged continued population growth, with many of the miners and farmers settling along its natural levees. Settlers recognized that the active floodplain deposited fertile soils in the lands nearest to the river, which supported bountiful crops and provided easy access to transportation corridors along the river itself. Ranchers and farmers found economic success in providing food and supplies for the miners, although frequent flooding troubled settlers' agricultural efforts and additional settlement (Hoover et al. 2002).

Existing Conditions for Cultural Resources in the Yolo Bypass

Historic-Period Context

Sacramento Deep Water Ship Channel

The Sacramento Deep Water Ship Channel (DWSC) is a large earthen channel, measuring 43 miles long, 200 feet wide, and 35 feet deep, that was constructed between 1949 and 1963 (USACE 1949). Residents and local officials in Sacramento and Yolo counties had spent much of the early 20th century entertaining various plans to establish a deep water harbor and channel that would enable modern cargo ships to transport agricultural goods and supplies along the Sacramento River between Sacramento and San Francisco Bay. "A deep-water channel to the sea," the *Woodland Daily Democrat* noted in 1934, "would be a wonderful improvement but a nightmare for those who'd have to pay for it." The article conceded that "Yolo would rejoice with Sacramento over its completion" and that "the two counties would benefit immeasurably with ocean-going vessels able to come up the river," but it also balked at the estimated $14–20 million cost (*Woodland Daily Democrat* 1934). The question of funding the venture was not resolved until the adoption of the latest iteration of the Rivers and Harbors Act in 1946, which authorized the "construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes" (Public Law 79-525, 1946). Under the provisions of the act of Congress, the Sacramento DWSC was authorized as a modification of the Sacramento River Shallow Draft Navigation Project, which was completed in 1904.

The Sacramento DWSC project was authorized in 1946 and construction began in 1949, but construction work was stopped in 1950 and did not resume until 1956. Construction of the Sacramento DWSC was completed in 1963, with ship operation beginning in June 1963. The channel provided the means for the transport of local agricultural products between Sacramento and the Bay Area (USACE and Port of West Sacramento 2011). A 1967 article from the *Winters Express* outlined the new expedited route: "Cargo ships from San Francisco Bay sail up the lower reaches of the Sacramento River to a point above Rio Vista. Here they take a course up a new man-made deep-water channel to the [Sacramento] Port Harbor cutting the river route by 15 miles" (*Winters Express* 1967).

The Sacramento DWSC's Toe Drain, an earthen ditch approximately 105 feet wide that runs parallel to the channel along its western side, is an ancillary feature of the Sacramento DWSC that was not part of the original 1946 plan, but rather a later addition to the final plan that was adopted before construction. Construction of the Toe Drain began in 1951 and involved the excavation of more than 2 million cubic yards of soil for the ultimately 18.5-mile-long feature (USACE and Port of West Sacramento 2011); presumably, some of this sediment was deposited within the proposed Project area to form current agricultural berms. In the mid-1980s, the U.S. Army Corps of Engineers (USACE) deepened the Sacramento DWSC to 35 feet (from the original 30 feet).

Hunting and Duck Clubs in the Sacramento River Delta and Yolo Basin

During the 19th century, local hunters formed hunting clubs on privately owned land throughout the Delta and Yolo Basin. Formed primarily for subsistence or recreational purposes, hunting clubs were often one of two types: gun-and-cattle clubs were hunting clubs often formed by cattle ranchers on reclaimed grazing lands, while duck clubs were popular among wheat farmers who used recreational shooting to hunt seasonal waterfowl that often damaged their crops. Historic records indicate that both club types were common in the region for much of the 19th century (ICF 2019:3–45).

The landscape of the Yolo Basin comprises part of the Pacific Flyway, a north-south migration route for birds that stretches approximately 10,000 nautical miles from Alaska to Patagonia, South America, that provides seasonal migratory flight paths used by geese, ducks, and other migratory fowl. In particular, regional wetlands are a central nexus for many of the eastern, central, and coastal routes of many individual species. The basin's agricultural infrastructure—such as leveed canals and weirs—further attracted waterfowl and other animals to nearby croplands (ICF 2019:3–45). Before the adoption of State hunting regulations, local commercial hunters often used double-barreled shotguns to shoot hundreds of waterfowl per hour and shipped game to the urban markets of Sacramento and San Francisco.

Preliminary research indicates that several historic waterfowl hunting clubs operated in the Yolo Basin during the first half of the 20th century. Historic hunting areas, such as Green's Lake, Long Pond, and Windmill Pond, had drawn sporting enthusiasts from Sacramento and nearby towns since the 19th century. By the 20th century, those popular hunting areas were supplemented by popular clubs, such as the Bonnettie Club, Fortis Club, Slavich's Club, Martin's Club, and Fireman's Club. The Fireman's Club, which was located on the Tule Ranch property approximately 2.5 miles northwest of the proposed Project area, consisted of a clubhouse raised on concrete pilings designed to withstand the periodic rising of floodwaters (CDFG 2008).

The popularity of sport hunting declined during the decades after World War II. This decline appears to have been caused in part by the rising popularity of other recreational activities among Americans, such as team sports and outdoor pursuits such as hiking, rock climbing, and boating (Bradley 2014).

Existing Conditions for Cultural Resources in the Proposed Project Area

Geology and Soils

The surficial geology of the proposed Project area consists of Holocene fine-grained alluvial fan deposits (Qhff) and Holocene basin deposits (Qhb), with the former underlying the majority of the proposed Project area and latter underlying the easternmost portion of the proposed Project area (Dawson 2009). Mapped soils within the proposed Project area consist of Clear Lake series clays (the majority of the proposed Project area), Capay series silty clays (the western and northeastern portions of the proposed Project area), and Riz series clay loams (a small area in the southwest portion of the proposed Project area) (USDA 2024). The following are the estimated ages of these soils, from Meyer and Rosenthal (2008):

- *Clear Lake series:* Latest Holocene (2000–150 BP).
- *Capay series:* Late Holocene (4000–2000 BP).
- *Riz series:* Mid-Holocene (7000–4000 BP).

Historic-era and modern engineering and use of the landscape, notably through agricultural activities, such as crop farming and construction and use of water conveyance/control structures, has disturbed the majority of the proposed Project area.

Flora and Fauna

Before Euro-American settlement of the area, the western two-thirds of the proposed Project area was characterized ecologically by wet meadow/seasonal wetland. The eastern third was characterized as nontidal freshwater emergent wetland and the eastern edge of the proposed Project area was tidal freshwater emergent wetland. Principal wet meadow/seasonal wetland flora would have included near-pool sparse cover species (e.g., goldfields [*Lasthenia* spp.]) and grassland species (e.g., creeping rye grass [*Elymus triticoides*]), while freshwater emergent wetland (both tidal and nontidal) flora would have been dominated by bulrush/tule, cattails, sedges, spikerushes, rushes, smartweed, willow, and the common reed (Whipple et al. 2012:42–44).

Before Euro-American settlement and landscape changes, many aquatic and avian species would have been found in and around the proposed Project area. The main avian species in the area would have included ducks, coots, cormorants, grebes, herons, cranes, egrets, gulls, geese, brants, swans, hawks, eagles, doves, quail, flickers, woodpeckers, owls, turkey vultures, and a number of passerines. Chinook salmon, white and green sturgeon, Pacific lamprey, steelhead rainbow trout, Sacramento sucker, western pikeminnow, sculpin, tule perch, pond turtle, freshwater mussel, and ridged mussel constitute the aquatic fauna that would have been present in the proposed Project area before Euro-American settlement. Large populations of tule elk, pronghorn deer, and black-tailed deer also would have been found in the vicinity. Other prominent terrestrial fauna in the area before settlement would have included grizzly bear, puma, gray fox, bobcat, coyote, badger, spotted skunk, striped skunk, beaver, weasel, river otter, raccoon, ringtail, and cottontail rabbit. The arrival of Euro-Americans to the area led to a dramatic decrease in the populations of the faunal species as a result of overhunting and habitat loss (Bartolome et al. 2008).

Historic-Period Context

The proposed Project area is partially within what were the marshlands of the Yolo Basin as recently as 1916 (USGS 1908, 1916a, 1916b, 1916c). The area was predominantly undeveloped, with few roads, buildings, or irrigation canals. By 1953–1954, historic topographic maps show irrigation canals appearing throughout the proposed Project area, consisting of multiple interconnected systems that do not appear to indicate a cohesive system. Additionally, at this time, the West Cut/Yolo Canal and the West Levee of the Yolo Bypass both appear on historic topographic maps east of the proposed Project area (USGS 1952a, 1952b, 1952c). Yolo County Assessor records indicate that the residence at 37991 County Road 107 was constructed in 1955. Into the 1960s and 1970s, additional irrigation canal infrastructure was constructed in the area, updating and expanding the local irrigation system. By 1968, the Sacramento DWSC and associated Toe Drain appear on topographic maps, along with expanded irrigation canal systems, as the Sacramento DWSC was completed in 1963 (USGS 1963, 1967, 1968). The current irrigation canal configuration appears on topographic maps by the mid-1990s (USGS 1993a, 1993b).

Saxon Gas Field

The Saxon Gas Field is present in the southern portion of the proposed Project area, in addition to other, now-abandoned gas wells. A total of 25 plugged natural gas wells are present in the proposed Project area. The original wells were typically more than 8,000 feet deep. Fifteen of the wells did not produce economically viable volumes of natural gas and were plugged shortly after drilling. Ten of the wells produced economically viable volumes of natural gas between December 1978 and December 2010. Of the 25 documented gas wells in the proposed Project area, eight were installed more than 45 years ago. As their productivity ceased, the wells were capped and abandoned, with little to no surficial physical evidence of their presence remaining. All gas wells in the proposed Project area had ceased production and been plugged before the end of 2012. Natural gas wells were abandoned by plugging the wells with a cement grout from the bottom of each well to the ground surface. The top portion of the grout plug and well casing was typically removed, and the ground area was covered with soil, leaving no surface indication of the former gas well. Well abandonment records indicate that 20 of the gas wells in the proposed Project area had at least the top 5 feet of well casing and grout plug cut off. The abandonment records for four gas wells in the proposed Project area are unclear as to cutoff depths; one other well is recorded as cut off to 4 feet below ground surface (ESA 2024).

California Historical Resources Information System and Survey Results for the Proposed Project Area

During the intensive pedestrian surface survey conducted by ESA in 2024, two architectural resources, neither previously recorded, were recorded in the proposed Project area. These resources consist of 37991 County Road 107 (residence and associated buildings), in the southwest portion of the proposed Project area; and the Sacramento DWSC Toe Drain, along the entire eastern edge of the proposed Project area. No archaeological resources or indicators thereof were observed within the proposed Project area during the survey, nor was there any evidence of the former natural gas wells documented in the proposed Project area.

The CHRIS has record of nine previous cultural resources studies that were conducted within 0.5 mile of the proposed Project area. Five of these studies covered some portion of the proposed Project area, with an estimated 25% of the current proposed Project area having been covered. The CHRIS has no record of any previously recorded cultural resource in or within 0.5 mile of the proposed Project area. However, the

CHRIS does have a record (site recordation) of a portion of the Sacramento DWSC Toe Drain (P-57-001573 [CA-YOL-000276H]), approximately 1.25 miles south of the proposed Project area.

Background research for this study did not identify any previously recorded cultural resources mapped in the proposed Project area but did identify two potential architectural resources in the proposed Project area: 37991 County Road 107 (Yolo County, California) and the Sacramento DWSC Toe Drain (a portion of which was previously recorded as P-57-001573 approximately 1.25 miles south of the proposed Project area). During the ESA field survey, the two aforementioned architectural resources were identified and recorded in the proposed Project area, with the former also including an archaeological component (ancillary building remnants). No other cultural resources were identified in the proposed Project area. In summary, two cultural resources were identified in the proposed Project area: 37991 County Road 107 (Yolo County, California); and P-57-001573 (Sacramento DWSC Toe Drain).

Hoffman et al. (2024) evaluated the CRHR eligibility of the two cultural resources identified in the proposed Project area (37991 County Road 107, P-57-001573 [Sacramento DWSC Toe Drain]) and concluded that both resources are not eligible for the CRHR. Therefore, no historical resources or unique archaeological resources, as defined by CEQA, are known or likely to be present in the proposed Project area.

37991 County Road 107 (Yolo County, California)

Description

This previously unrecorded resource, which was once used as a recreational duck hunting club, consists of both architectural and archaeological components and is located at 37991 County Road 107. The resource comprises a residence, the remnants of an ancillary building, a small brick outbuilding, a modular metal storage unit, and several stored trucks and trailers.

The primary residence is a single-family residence constructed in 1955 and designed in the vernacular style. A one-story-over-basement building featuring a roughly rectangular footprint that measures approximately 62 feet long by 24 feet wide. The residence is of wood-frame construction and supported by a concrete foundation on a raised concrete basement. The dwelling unit above the basement features a slightly smaller footprint, measuring approximately 47 feet long by 24 feet wide. It is clad in vertical wood board siding and capped with a front-gable roof covered with corrugated metal.

The primary (north) façade of the primary residence features a patio measuring approximately 15 feet long and 24 feet wide and enclosed by metal railing. The façade lacks fenestration and features a wood panel door attached with metal hinges. A pair of louvered vents are beneath the gable. A metal access door is located at the basement level. The east façade features two metal access doors at the basement level and one vinyl, one-over-one, single-hung window and two vinyl-sash sliding windows. An exterior metal staircase on a T-beam frame supported by steel posts provides access to the porch and primary entrance at the north façade. The west façade features a metal access door at the basement level and two vinyl, one-over-one, single-hung windows with attached wood covers at the dwelling level. The rear façade lacks fenestration or egress and features a pair of louvered vents beneath the gable.

Located approximately 50 feet south of the primary residence is the archaeological component of the resource, consisting of the remnants of an ancillary building. It features 12 rebar-reinforced brick pillars measuring 11.5 feet tall and partially covered in the remnants of green paint. The pillars are situated in

four rows of three on a concrete foundation measuring approximately 32 feet long by 26 feet wide. The northwest pillar features a partially exposed metal cylinder enclosed by masoned brick. Portions of brick walls are present along the north and south façades.

Significance

According to Yolo County Assessor records, the resource was used for recreational duck hunting club before its sale to the current property owner in 2019 (Yolo County Assessor 2019). The resource is west of the Sacramento River and the Sacramento DWSC and is surrounded by properties developed primarily for agricultural purposes. Archival review of assessor records and historic newspapers failed to identify previous owners dating to the extant buildings' original construction.

Assessor records indicate that the primary residence at 37991 County Road 107 was constructed in 1955. A historic aerial photograph indicates that the residence was in its current location on the southwest corner of Yolo County Tax Assessor's Parcel Number 033-220-054 by January 1957 (Cartwright and Company 1957). The same aerial photograph shows that the vicinity had been partially cleared and that the resource was bounded by unpaved roads to the east and south. Boundary demarcations of the property northeast of the primary residence indicate that it had been developed for agricultural purposes.

Subsequent aerial photographs indicate that a smaller ancillary building was constructed southeast of the primary residence between 1961 and 1966. An informal conversation between ESA staff and Mr. Robert Leonard during the pedestrian survey for the proposed Project indicated that the ancillary building was used as a hunting clubhouse before it was destroyed in a fire at some point in the 1990s. According to aerial photographs, the "clubhouse" appears to have been partially destroyed or dismantled between 1993 and 2005.

No discernible structural changes to the original design or massing of the primary residence appear on aerial photographs captured after 1957.

Evaluation

The following section provides an evaluation of 37991 County Road 107 according to the CRHR criterion (see Section 3.8.3, "Regulatory Setting" for a full description of the criterion).

Criterion 1

The primary residence and former ancillary building at 37991 County Road 107 are associated with local patterns of recreational duck hunting in rural Yolo County during the mid-20th century, but not in an individually significant way. Archival review of historic newspapers and historic aerial photographs did not identify any significant associations between the building and important events or patterns in history.

Situated beneath the Pacific Flyway, the Yolo Basin and the Delta have been a popular destination for casual and professional hunting enthusiasts since the 19th century. Research indicates that the resource at 37991 County Road 107 is one of many private and public hunting clubs that flourished in the Yolo Basin during the mid–20th century. However, little is known about the hunting activities that may have taken place, and research does not suggest that any notable contributions to local recreational hunting or agricultural practice are associated with this resource. Therefore, the resource does not appear to be eligible for listing under CRHR Criterion 1.

Criterion 2

Archival review failed to identify any significant associations between the buildings at 37991 County Road 107 and the lives of people significant to the past. The resource appears to have functioned as a recreational duck hunting property during the mid–20th century. However, preliminary research did not identify any previous owner who served as a longtime steward of the property or was otherwise particularly noteworthy within the historical narrative for individual accomplishments. Likewise, research failed to reveal any occupant, hunter, or member of any hunting club associated with the resource that rises to the level of significance. Because the resource does not appear to be associated with the productive life of any individual, it does not appear to be eligible for listing under CRHR Criterion 2.

Criterion 3

The primary residence at 37991 County Road 107 is a common example of a vernacular residential property type that existed in rural Yolo County during the mid–20th century. While it appears to retain much of its original design and massing, the building is a common example of residential construction. It does not embody the distinct characteristics of a type or period, but rather reflects typical local vernacular construction methods, and was constructed of standard materials and with standard methodologies. It also does not represent the work of a master or possess high artistic value.

Likewise, the remnants of the ancillary "clubhouse" are a common example of a vernacular ancillary building that existed in rural Yolo County during the mid–20th century. Anecdotal evidence and historic aerial photographs indicate that the building was constructed between 1961 and 1966 and destroyed between 1993 and 2005. All that remains of the building is a concrete foundation and 12 brick pillars. These remnants do not embody the distinct characteristics of a type or period, but rather reflect typical local vernacular construction methods, and were constructed of standard materials and with standard methodologies. They also do not represent the work of a master or possess high artistic value. Therefore, the resource does not appear to be eligible for listing under CRHR Criterion 3.

Criterion 4

37991 County Road 107 is representative of a rural vernacular property type constructed during the mid–20th century. This resource reflects an important period of rural development in Yolo County, but the associated buildings were constructed of standard materials (wood, metal, and concrete) and with standard methodologies. Furthermore, the construction and manufacturing methodologies of rural residential buildings and hunting lodges are well documented. No evidence of any buried archaeological deposits was present at the resource and there is no evidence to suggest that 37991 County Road 107 would yield significant information that would expand current knowledge or theories of design, methods of construction, or other information that is not already known. Therefore, the resource does not appear to be eligible for listing under CRHR Criterion 4.

Summary

In summary, 37991 County Road 107 is not eligible for listing in the CRHR. Therefore, 37991 County Road 107 does not qualify as a historical resource for CEQA purposes.

P-57-001573 (Sacramento DWSC Toe Drain)

Description

P-57-001573 (CA-YOL-000276H) is the Sacramento DWSC Toe Drain, a previously recorded resource consisting of an earthen ditch measuring approximately 105 feet wide and 18.5 miles long that runs

parallel to (west of) the Sacramento DWSC. The only identified previously recorded portion of the resource appears to be a small segment approximately 1.25 miles south of the proposed Project area, recorded by Heffner (2020). The resource is an ancillary feature of the Sacramento DWSC, which is a large earthen channel measuring 43 miles long, 200 feet wide, and 35 feet deep, that extends from the Port of West Sacramento to the Sacramento River, which subsequently flows into the San Francisco Bay. A 3.52-mile segment of the Sacramento DWSC Toe Drain lies within and along the eastern edge of the proposed Project area.

Significance

In 2011, USACE completed an SEIR/environmental impact statement for the proposed deepening of the Sacramento DWSC (USACE and Port of West Sacramento 2011). USACE noted that the completion of the Sacramento DWSC played an important role in the movement of cargo and products from the agricultural and industrial sectors of the Sacramento Valley to the San Francisco Bay Area. USACE presumed that although the Sacramento DWSC was not 50 years of age at the time, it was a historic resource as an engineered navigation channel—eligible under Criteria 1 and 3 of the CRHR —because of its associations with significant events in regional maritime transportation and commerce, economics, and engineering. The Sacramento DWSC Toe Drain is an ancillary feature of the Sacramento DWSC and, as such, shares this presumption of eligibility. However, the Sacramento DWSC Toe Drain has not been evaluated for individual eligibility for listing in the CRHR; such an evaluation is provided below. Heffner (2020) did not provide an evaluation of CRHR eligibility in the original site record.

Evaluation

The following section provides an evaluation of P-57-001573 according to the CRHR criterion (see Section 3.8.3, “Regulatory Setting,” for a full description of the criterion).

Criterion 1

The Sacramento DWSC Toe Drain is an ancillary structure within the Sacramento DWSC system. Construction of the Toe Drain began in 1951 and construction of the entire Sacramento DWSC was completed in 1963. By providing a controlled path for the dissipation of incidental seepage and pore water pressure, the Toe Drain was an instrumental ancillary feature of the larger channel system. Collectively, the construction of the Sacramento DWSC system was a significant development in local water conveyance and an important event in regional maritime transportation. Therefore, USACE considers the Sacramento DWSC significant within the context of early-20th-century commerce, economics, and engineering in Yolo County.

Although the Sacramento DWSC appears significant for its association with early maritime transportation in California, the Sacramento DWSC Toe Drain does not appear to be individually significant for that association. While it provides a crucial ancillary feature for the larger channel system, the Toe Drain itself does not appear to be significant to local events or patterns. It is a standard component of water conveyance technology, and archival research did not indicate that its construction is significant to local or national trends within the historical narrative. Therefore, the Sacramento DWSC Toe Drain does not appear to be individually eligible for listing under CRHR Criterion 1.

Criterion 2

Preliminary archival research failed to identify any significant associations between the Sacramento DWSC Toe Drain and the lives of people significant in the past. Construction of the Sacramento DWSC

was important to regional maritime transportation; however, archival research did not indicate any specific individual of significance within USACE who gained prominence for their role in the construction of the Toe Drain, nor did research identify any individual who attained prominence through their association with the Toe Drain. For this reason, the Sacramento DWSC Toe Drain does not appear to be individually eligible for listing under CRHR Criterion 2.

Criterion 3

The completion of the Sacramento DWSC in 1963 was an important event in the maritime development in the Delta and Yolo Basin regions, and thus represents an important innovation in regional maritime engineering. The channel's depth accommodated an emergent and modern deep-draft vessel and substantially shortened the transportation route to the Port of Sacramento (now Port of West Sacramento), from 59 miles to approximately 44 miles. Therefore, USACE considers the Sacramento DWSC significant under CRHR Criterion 3 for its design and engineering.

The Sacramento DWSC Toe Drain, however, is a common example of canal construction in the Delta and Yolo Basin regions during the 20th century. The ancillary structure was originally designed and constructed by USACE and preliminary research did not indicate that any USACE architect or engineer may be considered a master of their profession. Therefore, the Sacramento DWSC Toe Drain does not appear to rise to the level of significance as the "work of a master" or to possess high artistic value. Preliminary research and a review of historic aerial photographs indicate that the structure retains much of its original design and features aside from routine maintenance and upgrades. Nevertheless, the Sacramento DWSC Toe Drain does not embody the distinct characteristics of a type or period, but rather reflects a standard construction method used throughout the region. Under Criterion 3, the structure lacks distinction as a common type of resource. Therefore, the Sacramento DWSC Toe Drain does not appear to be individually eligible for listing under CRHR Criterion 3.

Criterion 4

The Sacramento DWSC Toe Drain is representative of ancillary water conveyance features constructed by USACE during the mid–20th century. While it reflects an important period of maritime development and water conveyance in California more broadly, the Toe Drain was constructed of standard materials and with standard methodologies. Furthermore, the construction and manufacturing methodologies of earthen toe drains are well documented. No evidence exists to suggest that the Sacramento DWSC Toe Drain would yield significant information that would expand current knowledge or theories of design, methods of construction, or other information that is not already known. Therefore, the Sacramento DWSC Toe Drain does not appear to be individually eligible for listing under CRHR Criterion 4.

Summary

In summary, the Sacramento DWSC Toe Drain is not eligible for individual listing in the CRHR. Therefore, the Sacramento DWSC Toe Drain does not qualify as historical resource for CEQA purposes.

Ethnographic Literature Research Results for the Proposed Project Area

The review of ethnographic literature for the proposed Project did not identify any Native American villages or place names in or immediately adjacent to the proposed Project area, though it did identify two Native American villages within 5 miles of the proposed Project area. Both villages are associated with the Plains Miwok, with *Siusumne* and *Ylamne* documented approximately 2.5 miles southeast and

3.5 miles east of the proposed Project area, respectively (Bennyhoff 1977:Map 3). Bennyhoff (1977:68) explains that *Siusumne* "lived close by the Ylamne," that they were likely along or near Elkhorn Slough in the vicinity of Courtland and were still resisting missionization in 1836. Bennyhoff (1977:66) described the *Ylamne* as also likely along or near Elkhorn Slough, allied with the *Siusumne*, and that most survivors of the 1833 plague likely moved to Mission San José.

Archaeological Sensitivity Results for the Proposed Project Area

Pre-contact Deposits

The proposed Project area's theoretical potential for presence of surficial pre-contact archaeological resources is low because the underlying surficial geologic units and soils are of Holocene age and because the proposed Project area has been highly depositional in nature both historically and in the modern era. The potential for presence of buried indigenous archaeological sites is typically high in soils of Holocene to historic-era age, while areas with older surficial geology and soils typically have a low potential for buried deposits (archaeological remains would be found on the surface in these locations) (see Meyer and Rosenthal 2007:15). However, the following factors suggest a low potential for presence of buried indigenous archaeological resources in the proposed Project area:

- The Delta began to form about 6000 BP. After this formation, human occupation of the landscape in the proposed Project area and vicinity would have been restricted to relict, and partially drowned, sand dunes and natural levees that had formed during the Pleistocene and stood high enough to clear the rising waters. Such dunes and levees do not appear to be or to have been formerly present in the proposed Project area, and the proposed Project area appears to have been subjected to annual inundation for extended periods.
- As stated above, indigenous occupation did not likely occur in this area for the past 6,000 years. Rather, indigenous use of the area was probably restricted to hunting elk and waterfowl, fishing, and collecting tule and other flora resources for processing elsewhere. Archaeological evidence in the proposed Project area would likely be represented by isolated artifacts, which in and of themselves are typically not eligible for the CRHR, and none have been found in the proposed Project area.
- Before historic-era and modern modifications, the proposed Project area consisted of wet meadow/ seasonal wetland and freshwater emergent wetland, which would not have been suitable for permanent occupation.

Given the above evidence and the negative results of the Sacred Lands File search, the lack of sensitivity for potential indigenous archaeological resources as defined through Tribal consultation, and the cultural resources pedestrian survey, the proposed Project area has a low potential for presence of buried and surficial indigenous archaeological resources despite its Holocene alluvial landscape. Historic and modern use of the proposed Project area, specifically associated with agricultural activities (e.g., crop farming, water diversion/control), has resulted in significant ground disturbance throughout the proposed Project area. This disturbance may have disturbed any surficial or buried pre-contact archaeological deposits that may have been (previously) present in the proposed Project area, though to what degree is unknown.

Based on the preceding analysis, the proposed Project area has a low sensitivity for both surficial and buried pre-contact archaeological resources (low potential presence and moderate potential eligibility).

Note that any surficial pre-contact archaeological deposits would theoretically have been identified during the cultural resources field survey for the proposed Project.

Historic-Era Deposits

As with pre-contact archaeological resources, predicting the potential presence and significance of any historic-era archaeological resources in the proposed Project area, if present, is difficult. As noted previously, historic-era and modern development has resulted in substantial ground disturbance within virtually the entire proposed Project area. These activities (both agricultural and natural gas–related) could have resulted in the creation of archaeological deposits (e.g., small foundations and other infrastructure, refuse deposits, gas wells) that could qualify as archaeological deposits but not unique resources. Note that proposed Project–related ground-disturbing activities would be designed to avoid the mapped locations of the now-abandoned natural gas wells, including those that are more than 50 years old.

Background research of historic topographic maps and photographs did not indicate any clear avenues for significance for the CRHR for historic-era archaeological deposits in the proposed Project area, if present. Also, based on known historic-era archaeological resources previously recorded in similar settings in the proposed Project area's vicinity, the potential for significance of any intact historic-era archaeological resources (including abandoned natural gas wells) in the proposed Project area is low.

The historic map and photography review focused on the proposed Project area and vicinity. The proposed Project area has been subject to historic-era and modern development associated primarily with agricultural activities (farming, canal/ditch construction and use, road construction and use). Based on the preceding analysis, the proposed Project area has a low sensitivity for both surficial and buried historic-era archaeological resources (low potential presence and low potential eligibility). Note that any surficial historic-era archaeological deposits would theoretically have been identified during the cultural resources field survey for the proposed Project.

3.8.3 Regulatory Setting

Federal and State regulations discussed in Section 3.7.3, "Regulatory Setting," of Section 3.7, "Cultural Resources," of the Final SRGO Program EIR were reviewed for relevance to the proposed Project and are identified below as appropriate, along with any applicable new or updated policies since certification of the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.7.3, pp. 3.7-7 through 3.7-12). As a statewide, program-level document, the Final SRGO Program EIR did not discuss regional and local regulations; this Draft SEIR provides project-specific regional and local goals and policies to supplement the regulatory setting information provided in the Final SRGO Program EIR.

Federal

National Historic Preservation Act and National Register of Historic Places

Historic properties are considered through compliance with the National Historic Preservation Act (NHPA), as amended (United States Code [USC] Title 54, Section 307103 [54 USC Section 307103]) and its implementing regulations (54 USC Section 307103; Code of Federal Regulations [CFR] Title 36, Section 800, 36 CFR Section 60, and 36 CFR Section 63). The NHPA establishes the federal government's policy on historic preservation and the programs, including the National Register of Historic Places (NRHP), through which that policy is implemented. Under the NHPA, historic properties include

"any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the [NRHP]" (54 USC Section 300308).

When a project implemented under the Order requires a federal permit, compliance with Section 106 of the NHPA (Section 106) is also required. Under Section 106, generally, it is the responsibility of the lead federal agency—in this case, USACE—to consider the effects of a proposed undertaking on historic properties. The federal agency must consult with the State Historic Preservation Officer, federally recognized Indian Tribes, and other interested parties before granting a permit, funding, or other authorization. The agency must also afford the Advisory Council on Historic Preservation and the State Historic Preservation Officer a reasonable opportunity to comment on any undertaking that would adversely affect a property eligible for listing in the NRHP. Section 101(d)(6)(A) of the NHPA allows properties of traditional religious and cultural importance to an Indian Tribe or a Native Hawaiian organization to be determined eligible for inclusion in the NRHP.

Under the NHPA, a find is significant if it meets the NRHP listing criteria (36 CFR Section 60.4), as stated below:

> *The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:*
>
> *a) That are associated with events that have made a significant contribution to the broad patterns of our history, or*
>
> *b) That are associated with the lives of persons significant in our past, or*
>
> *c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction, or*
>
> *d) That have yielded, or may be likely to yield, information important in prehistory or history.*

In addition to meeting one of the above criteria, a resource must retain integrity to be considered a historic property. Integrity is measured by the degree to which the resource retains its historical attributes and conveys its historical character, the degree to which the original fabric has been retained, and the reversibility of changes to the resources.

Certain types of resources are usually excluded from consideration for listing in the NRHP but can be considered if they meet special requirements in addition to meeting one or more of the NRHP listing criteria. The following seven criteria considerations deal with resources usually excluded from listing in the NRHP:

- Religious resources.
- Moved resources.
- Birthplaces and graves.

- Cemeteries.
- Reconstructed resources.
- Commemorative resources.
- Resources that have achieved significance within the past 50 years.

American Indian Religious Freedom Act

The American Indian Religious Freedom Act of 1978 (42 USC Section 1996) protects and preserves the right of Native Americans to believe, express, and exercise traditional religious rights and cultural practices, including access to sites of religious importance to Native Americans.

State

The State of California oversees statewide comprehensive cultural resource surveys and preservation programs. The California Office of Historic Preservation also maintains the California Historical Resources Inventory. The State Historic Preservation Officer is an appointed official who implements historic preservation programs within the State's jurisdiction.

California Environmental Quality Act

CEQA (PRC Section 21000 et seq.) is the principal statute governing environmental review of projects occurring in California. CEQA requires lead agencies to determine whether a project would have a significant effect on historical resources and Tribal cultural resources, among other resource types.

The State of California implements provisions of CEQA through its statewide comprehensive cultural resources surveys and preservation programs. Typically, a resource must be more than 50 years old to be considered a potential historical resource. The California Office of Historic Preservation conservatively advises recording any resource 45 years or older, because there is commonly a 5-year lag between resource identification and the date that planning decisions are made.

Historical Resources

The CEQA Guidelines recognize that a historical resource includes all of the following:

- A resource in the CRHR (PRC Section 5024.1; California Code of Regulations [CCR] Title 14, Section 4850 et seq. [14 CCR Section 4850 et seq.]).
- A resource included in a local register of historical resources, as defined in PRC Section 5020.1(k), or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g).
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record (PRC Section 5024.1; 14 CCR Section 4850 et seq.).

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and PRC Section 15064.5 apply. If an archaeological site does not meet the criteria for a

historical resource contained in the CEQA Guidelines (CCR Section 15000), the site may be treated in accordance with the provisions of PRC Section 21083, pertaining to unique archaeological resources.

Unique Archaeological Resources

As defined in PRC Section 21083.2, a "unique archaeological resource" is an archaeological artifact, object, or site, about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

The CEQA Guidelines note that if an archaeological resource is not a unique archaeological, historical, or Tribal cultural resource, the effects of the project on those cultural resources shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064.5[c][4]).

California Register of Historical Resources

The CRHR is "an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for eligibility for the CRHR are based on the criteria for listing on the NRHP (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined eligible for, or listed in, the NRHP.

To be eligible for the CRHR, a cultural resource must be significant at the federal, State, and/or local level under one or more of the following four criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. Is associated with the lives of persons important in our past.
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. Has yielded, or may be likely to yield, information important in prehistory or history.

A resource eligible for the CRHR must be of sufficient age and retain enough of its historic character or appearance (integrity), to convey the reason for its significance. The CRHR consists of resources that are listed automatically and those that must be nominated through an application and public hearing. The CRHR automatically includes the following resources:

- California properties listed in the NRHP and those formally determined eligible for the NRHP.
- California Registered Historical Landmarks from No. 770 onward.

- California Points of Historical Interest that have been evaluated by the California Office of Historic Preservation and have been recommended to the State Historical Commission for inclusion in the CRHR.

The following other resources may be nominated to the CRHR:

- Historical resources with a significance rating of Category 3, 4, or 5 (properties identified as eligible for listing in the NRHP, the CRHR, and/or a local jurisdiction register).
- Individual historic resources.
- Historic resources contributing to historic districts.
- Historic resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

California Public Resources Code Section 5097

PRC Section 5097.99, as amended, prohibits obtaining or possessing Native American artifacts or human remains that are taken from a Native American grave or cairn. Knowingly or willfully obtaining or possessing Native American artifacts or human remains is a felony punishable by imprisonment. Similarly, unlawful removal of any such items with an intent to sell or dissect or with malice or wantonness is a felony punishable by imprisonment.

California Native American Historic Resource Protection Act

The California Native American Historic Resources Protection Act of 2002 imposes civil penalties, including imprisonment and fines up to $50,000 per violation, on persons who unlawfully and maliciously excavate upon, remove, destroy, injure, or deface a Native American historic, cultural, or sacred site that is listed or may be listed in the CRHR.

California Health and Safety Code Section 7050.5

Section 7050.5 of the California Health and Safety Code protects human remains by prohibiting the disinterment, disturbance, or removal of human remains from any location other than a dedicated cemetery. PRC Section 5097.98 (reiterated in CEQA Guidelines Section 15064.59[e]) also identifies steps to follow if human remains are accidentally discovered or recognized in any location other than a dedicated cemetery.

Regional and Local

The following regional and local policies relevant to the proposed Project based on location, project type, and/or environmental setting have been included for context; however, DWR, as a State agency, is not subject to local ordinances or policies. The Yolo County 2030 General Plan (Yolo County 2009) outlines goals and policies intended to protect cultural resources countywide. Relevant goals and policies from this planning document include the following:

Goal CO-4: Cultural Resources. Preserve and protect cultural resources within the County.

Policy CO-4.1: Identify and safeguard important cultural resources.

Policy CO-4.10: Encourage voluntary landowner efforts to protect cultural resources consistent with State law.

Policy CO-4.11: Honor and respect local tribal heritage.

Policy CO-4.12: Work with culturally affiliated tribes to identify and appropriately address cultural resources and tribal sacred sites through the development review process.

Policy CO-4.13: Avoid or mitigate to the maximum extent feasible the impacts of development on Native American archaeological and cultural resources.

Policy CO-4.14: Avoid or mitigate to the maximum extent feasible the impacts of development on Native American archaeological and cultural resources.

3.8.4 Impact Analysis and Mitigation Measures

Significance Criteria

In accordance with Appendix G of the CEQA Guidelines, an impact related to cultural resources is considered significant if the proposed Project would do any of the following:

- Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.
- Disturb any human remains, including those interred outside of dedicated cemeteries.

Methodology and Assumptions

Cultural resource impacts of the proposed Project are evaluated in terms of how construction and operations of proposed Project components could affect existing historical resources, archaeological resources, and human remains. “Permanent impacts” are considered those that would continue through the life of the proposed Project because of the environmental conditions caused by the proposed Project. “Temporary impacts” are considered those that would be temporary (e.g., construction-related activities).

As discussed in Chapter 1, the proposed Project is a “restoration project” as defined in Section V of the SRGO (State Water Board 2022a: Section V, p. 2); therefore, this Draft SEIR supplements and incorporates by reference the Final SRGO Program EIR, including its appendices (State Water Board 2022b). As provided by CEQA Guidelines Section 15163(b), a supplement to an EIR need contain only the information necessary to make the previous EIR adequate for the project as revised. This means that only those project-specific, and in this case, site-specific, activities that would introduce new significant environmental effects or cause a substantial increase in the severity of significant effects identified in the SRGO Program EIR need to be evaluated. Where existing information and analysis in the SRGO Program EIR is considered sufficient to evaluate the impacts of the proposed Project, no additional environmental review is provided.

As further outlined in Chapter 1, this Draft SEIR incorporates by reference the general protection measures and species protection measures outlined in the Final SRGO Program EIR Appendices E and F, which are intended to avoid and minimize impacts on sensitive resources. Consistent with the Final SRGO Program EIR, the impact analysis for each resource area assumes that applicable general protection measures and species protection measures would be implemented and enforced in the same

way as mitigation measures, consistent with Section 15126.4 of the CEQA Guidelines, and that the proposed Project would be constructed and operated in compliance with relevant federal and State laws and regulations. As such, if the analysis has determined that incorporating one or more general protection measures and/or species protection measures into the proposed Project would reasonably mitigate an impact, then the impact conclusion is less than significant. If the analysis has determined that an impact would remain significant after the incorporation of appropriate general protection measures and species protection measures, then mitigation measures from the Final SRGO Program EIR and/or project-specific mitigation measures have been recommended to further reduce the magnitude of the impact. All mitigation measures are from the Final SRGO Program EIR unless specifically stated otherwise.

The following impact analysis considers the potential impacts related to cultural resources associated with implementation of the proposed Project. The impact analysis evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities.

Historical Resources

Impacts on historical resources are assessed by identifying any activities that would affect them, such as new construction, demolition, or substantial alteration. Individual properties and districts identified as historical resources under CEQA include those that are significant because of their association with important events, people, or architectural styles or master architects, or for their informational value (CRHR Criteria 1, 2, 3, and 4) and that retain sufficient historic integrity to convey their significance. Criterion 4 is typically applied to the evaluation of archaeological resources and not to architectural resources. Historical resources may include architectural resources and archaeological resources.

Once a resource has been identified as significant, it must be determined whether the impacts of the project would "cause a substantial adverse change in the significance" of the resource (CEQA Guidelines Section 15064.5[b]). A "substantial adverse change in the significance" of a historical resource means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of [the] historical resource would be materially impaired" (CEQA Guidelines Section 15064.5[b][1]). A historical resource is materially impaired through the demolition or alteration of the resource's physical characteristics that convey its historical significance and that justify its inclusion in (or eligibility for inclusion in) the CRHR or a qualified local register (CEQA Guidelines Section 15064.5[b][2]). Therefore, material impairment of historical resources constitutes a significant impact.

Archaeological Resources

The significance of most pre-contact and historic-era archaeological sites is typically assessed relative to CRHR Criterion 4 (has yielded, or may be likely to yield, information important in prehistory or history). This criterion stresses the importance of the information potential contained within an archaeological site, rather than the significance of the site as a surviving example of a type or its association with an important person or event. Archaeological resources may qualify as historical resources under the definition provided in CEQA Guidelines Section 15064.5(a). Alternatively, they may be assessed under CEQA as unique archaeological resources. "Unique archaeological resources" are defined as archaeological artifacts, objects, or sites that contain information needed to answer important scientific research questions (PRC Section 21083.2).

A substantial adverse change in the significance of an archaeological resource is assessed similarly to such changes to other historical resources; that is, a "substantial adverse change in significance" means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of [the] historical resource would be materially impaired" (CEQA Guidelines Section 15064.5[b][1]). As stated previously, a historical resource is materially impaired when a project demolishes or materially alters the resource's physical characteristics that convey its historical significance and that justify its inclusion (or eligibility for inclusion) in the CRHR or a qualified local register (CEQA Guidelines Section 15064.5[b][2]). Therefore, material impairment of archaeological resources that are considered historical resources or unique archaeological resources would be a significant impact.

Human Remains

Human remains, including those buried outside of formal cemeteries, are protected under several State laws, including PRC Section 5097.98 and Health and Safety Code Section 7050.5. For the purposes of this analysis, intentional disturbance, mutilation, or removal of interred human remains without following the notification and consultation procedures outlined in PRC Section 5097.89 and Health and Safety Code Section 7050.5 would be a significant impact.

Impacts and Mitigation Measures

Table 3.8-1 summarizes the impact conclusions presented in this section for reference. The following analysis describes archaeological resources both as historical resources according to CEQA Guidelines Section 15064.5 and as unique archaeological resources as defined in PRC Section 21083.2(g), under Impact 3.8-2.

TABLE 3.8-1
SUMMARY OF IMPACT CONCLUSIONS—CULTURAL RESOURCES

Impact Statement	Construction Activities	Constructed Restoration Elements	Operations, Monitoring, and Maintenance Activities
3.8-1: Implementation of the proposed Project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.	NI	NI	NI
3.8-2: Implementation of the proposed Project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	LTSM	LTSM	LTSM
3.8-3: Implementation of the proposed Project could disturb human remains, including those interred outside of dedicated cemeteries.	LTSM	LTSM	LTSM

Notes: NI = no impact; LTSM = less than significant with implementation of mitigation measures

Impact 3.8-1: Implementation of the proposed Project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.

Effects of Construction Activities

Section 3.7, "Cultural Resources," of the Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities for restoration projects on historical resources (Final

SRGO Program EIR Impact 3.7-1, pp. 3.7-15 through 3.7-18). Related to the proposed Project, the Final SRGO Program EIR evaluated the following construction activities: installation of infrastructure such as culverts, fish screens, and other water control structures to improve water management capabilities; removal of legacy structures; creation of depressions, berms, and drainage features; and installation of cofferdams during construction. Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials. The Final SRGO Program EIR found that these activities could result in potentially significant impacts on historical resources.

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Resources Control Board (State Water Board) or a regional water board's issuance of a notice of applicability (NOA) for a restoration project under the Order, compliance with *Mitigation Measure CUL-1: Conduct Inventory and Significance Evaluation of Architectural Resources* would be required when applicable to a given project. Implementation of this mitigation measure would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

Consistent with the types of construction activities evaluated by the Final SRGO Program EIR, construction of the proposed Project would require the following: site preparation and mobilization/demobilization; use of staging areas, access routes, and haul routes; grading and excavation; the installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; removal and salvage and/or disposal of existing pumps, pipes, and other water control structures and utility lines that are no longer needed under proposed Project conditions; reconfiguration and modification of irrigation and drainage features, such as irrigation canals, ditches, and berms; and installation of temporary cofferdams.

Through a records search, background research, and field survey, only two architectural resources older than 50 years have been identified in the proposed Project area: 37991 County Road 107 and P-57-001573 (Sacramento DWSC Toe Drain). Both resources have been evaluated as not eligible for the CRHR and therefore do not qualify as historical resources according to CEQA Guidelines Section 15064.5.

Therefore, construction of the proposed Project would not cause a substantial adverse change in the significance of a historical resource and ***no impact*** on historical resources would occur. Because there would be no impact, Mitigation Measure CUL-1 is not required. As a result, construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR and the Final SRGO Program EIR adequately addresses construction impacts of the proposed Project on historical resources.

Effects of Constructed Restoration Elements

Section 3.7, "Cultural Resources," of the Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of constructed facilities for restoration projects on historical resources (Final SRGO Program EIR Impact 3.7-1, pp. 3.7-15 through 3.7-18). Related to the proposed Project, the Final SRGO Program EIR evaluated the constructed facilities of new infrastructure or modifications to existing infrastructure (e.g., bridges, culverts, fishways and screens, dams, levees, water conveyance features).

The Final SRGO Program EIR found that these activities could result in potentially significant impacts on historical resources.

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Board or a regional water board's issuance of a NOA for a restoration project under the Order, compliance with *Mitigation Measure CUL-1: Conduct Inventory and Significance Evaluation of Architectural Resources* would be required when applicable to a given project. Implementation of this mitigation measure would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

Consistent with the types of constructed restoration elements evaluated by the Final SRGO Program EIR, constructed restoration elements of the proposed Project would include use of the following: fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; and reconfigured and modified irrigation and drainage features, such as irrigation canals, ditches, and berms.

Through a records search, background research, and field survey, only two architectural resources older than 50 years have been identified in the proposed Project area: 37991 County Road 107 and P-57-001573 (Sacramento DWSC Toe Drain). Both resources have been evaluated as not eligible for the CRHR and therefore do not qualify as historical resources according to CEQA Guidelines Section 15064.5. No mitigation measures are required for the proposed Project's constructed restoration elements.

Therefore, constructed restoration elements would not cause a substantial adverse change in the significance of a historical resource and ***no impact*** on historical resources would occur. Because there would be no impact, Mitigation Measure CUL-1 is not required. As a result, constructed restoration elements associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR and the Final SRGO Program EIR adequately addresses constructed restoration elements impacts of the proposed Project on historical resources.

Effects of Operations, Monitoring, and Maintenance Activities

Section 3.7, "Cultural Resources," of the Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of operations, monitoring, and maintenance activities on historical resources (Final SRGO Program EIR Impact 3.7-1, pp. 3.7-15 through 3.7-18). Related to the proposed Project, the Final SRGO Program EIR evaluated operations, monitoring, and maintenance activities necessary to support the successful establishment of natural conditions and the functionality of artificial/constructed infrastructure. These activities include conducting mechanical and chemical weed control; installing fencing and signage; adjusting grading or soils composition; and installing and operating monitoring equipment such as groundwater wells, flow gages, depth gages, cameras, and stakes. The Final SRGO Program EIR found that these activities could result in potentially significant impacts on historical resources.

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Board or a regional water board's issuance of a NOA for a restoration project under the Order, compliance with *Mitigation Measure CUL-1: Conduct Inventory and Significance*

Evaluation of Architectural Resources would be required when applicable to a given project. Implementation of this mitigation measure would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

Consistent with the types of operations, monitoring, and maintenance activities evaluated by the Final SRGO Program EIR, operations, monitoring, and maintenance activities of the proposed Project would include those associated with the following: fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; and reconfigured and modified irrigation and drainage features, such as irrigation canals, ditches, and berms.

Through a records search, background research, and field survey, only two architectural resources older than 50 years have been identified in the proposed Project area: 37991 County Road 107 and P-57-001573 (Sacramento DWSC Toe Drain). Both resources have been evaluated as not eligible for the CRHR and therefore do not qualify as historical resources according to CEQA Guidelines Section 15064.5. No mitigation measures are required for proposed Project operations, monitoring, and maintenance.

Therefore, operations, monitoring, and maintenance activities would not cause a substantial adverse change in the significance of a historical resource and the proposed Project would result in ***no impact*** on historical resources. Because there would be no impact, Mitigation Measure CUL-1 is not required. As a result, operations, monitoring, and maintenance activities for the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR and the Final SRGO Program EIR adequately addresses impacts of the proposed Project's operations, monitoring, and maintenance activities on historical resources.

Impact 3.8-2: Implementation of the proposed Project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.

Effects of Construction Activities

Section 3.7, "Cultural Resources," of the Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities for restoration projects on archaeological resources (Final SRGO Program EIR Impact 3.7-2, pp. 3.7-18 through 3.7-22). Related to the proposed Project, the Final SRGO Program EIR evaluated the following construction activities: installation of infrastructure such as culverts, fish screens, and other water control structures to improve water management capabilities; removal of legacy structures; creation of depressions, berms, and drainage features; and installation of cofferdams during construction. Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials. The Final SRGO Program EIR found that these activities could result in potentially significant impacts on archaeological resources.

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Board or a regional water board's issuance of a NOA for a restoration project under the Order, compliance with *Mitigation Measures CUL-2: Conduct Inventory and Significance Evaluation of Archaeological Resources* and *CUL-3: Implement Measures to Protect*

Archaeological Resources during Project Construction or Operations would be required when applicable to a given project. Implementation of these mitigation measures would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

Consistent with the types of construction activities evaluated by the Final SRGO Program EIR, construction of the proposed Project would require the following: site preparation and mobilization/demobilization; use of staging areas, access routes, and haul routes; grading and excavation; the installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; removal and salvage and/or disposal of existing pumps, pipes, and other water control structures and utility lines that are no longer needed under proposed Project conditions; reconfiguration and modification of irrigation and drainage features, such as irrigation canals, ditches, and berms; and installation of temporary cofferdams.

Through a records search, background research, field survey, and Native American outreach, no archaeological resources—including any that may qualify as historical resources as defined in CEQA Guidelines Section 15064.5, or as unique archaeological resources as defined in PRC Section 21083.2(g)—were identified in or adjacent to the proposed Project area. Therefore, the proposed Project is not anticipated to affect any archaeological resources. Although no substantial evidence exists that any archaeological resources are present in the proposed Project area, construction of the proposed Project would involve ground-disturbing activities that may extend into undisturbed soil. Such activities could unearth, expose, or disturb subsurface archaeological resources that have not been identified on the surface. If such resources were found to qualify as archaeological resources pursuant to CEQA Guidelines Section 15064, impacts of the proposed Project on archaeological resources could be potentially significant.

The proposed Project would apply Mitigation Measure CUL-3, consistent with the Final SRGO Program EIR; however, Mitigation Measure CUL-2 is not applicable to the proposed Project because a records search, background research, field survey, and Native American outreach have been conducted for the proposed Project. Mitigation Measure CUL-3 would protect archaeological resources during construction and operations and maintenance activities.

> **Mitigation Measure CUL-3: Implement Measures to Protect Archaeological Resources during Project Construction or Operations.**
>
> If archaeological resources are encountered during project construction or operations of any project permitted under the Order, all activity within 100 feet of the find shall cease and the find shall be flagged for avoidance. The lead agency and a qualified archaeologist, defined as one meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology, shall be immediately informed of the discovery. The qualified archaeologist shall inspect the discovery and notify the lead agency of their initial assessment. If the qualified archaeologist determines that the resource is or is potentially indigenous in origin, the lead agency shall consult with culturally affiliated California Native American Tribes to assess the find and determine whether it is potentially a tribal cultural resource.
>
> If the lead agency determines, based on recommendations from the qualified archaeologist and culturally affiliated California Native American Tribes, that the resource is indigenous, that the resource may qualify as a historical resource (per CEQA Guidelines Section 15064.5), unique archaeological resource (per PRC Section 21083.2), or tribal cultural resource (per PRC Section 21074), then the resource shall be avoided if feasible. If avoidance of an identified indigenous

resource is not feasible, the lead agency shall consult with a qualified archaeologist, culturally affiliated California Native American Tribes, and other appropriate interested parties to determine treatment measures to minimize or mitigate any potential impacts on the resource pursuant to PRC Section 21083.2 and CEQA Guidelines Section 15126.4. If any such resources are on or in the tide and submerged lands of California, this process shall also include coordination with the California State Lands Commission. Once treatment measures have been determined, the lead agency shall prepare and implement an archaeological (and/or tribal cultural) resources management plan that outlines the treatment measures for the resource. Treatment measures typically consist of the following steps:

- Determine whether the resource qualifies as a historical resource (per CEQA Guidelines Section 15064.5), unique archaeological resource (per PRC Section 21083.2), or tribal cultural resource (per PRC Section 21074) through analysis that could include additional historical or ethnographic research, evaluative testing (excavation), or laboratory analysis.
- If it qualifies as a historical resource (per CEQA Guidelines Section 15064.5) and/or unique archaeological resource (per PRC Section 21083.2), implement measures for avoiding or reducing impacts such as the following:
    - Modify the project to avoid impacts on resources.
    - Plan parks, green space, or other open space to incorporate resources.
    - Recover the scientifically consequential information from the archaeological resource before any excavation at the resource's location. This typically consists of (but is not necessarily limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the resource to be affected by the project.
    - Develop and implement interpretive programs or displays.
- If it qualifies as a tribal cultural resource (per PRC Section 21074) implement measures for avoiding or reducing impacts such as the following:
    - Avoid and preserve the resource in place through measures that include but are not limited to the following:
        - Plan and construct the project to avoid the resource and protect the cultural and natural context.
        - Plan greenspace, parks, or other open space to incorporate the resources with culturally appropriate protection and management criteria.
    - Treat the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, through measures that include but are not limited to the following:
        - Protect the cultural character and integrity of the resource.
        - Protect the traditional use of the resource.
        - Protect the confidentiality of the resource.
    - Implement permanent conservation easements or other interests in real property, with cultural appropriate management criteria for the purposes of preserving or using the resource or place.

With implementation of Mitigation Measure CUL-3 this impact would be ***less than significant with implementation of mitigation measures***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR and the Final SRGO Program EIR adequately addresses construction impacts of the proposed Project on archaeological resources.

Effects of Constructed Restoration Elements

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of constructed facilities for restoration projects on archaeological resources (Final SRGO Program EIR Impact 3.7-2, pp. 3.7-18 through 3.7-22). Related to the proposed Project, the Final SRGO Program EIR evaluated the constructed facilities of new infrastructure or modifications to existing infrastructure (e.g., bridges, culverts, fishways and screens, dams, levees, water conveyance features). The Final SRGO Program EIR found that these activities could result in potentially significant impacts on archaeological resources.

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Board or a regional water board's issuance of a NOA for a restoration project under the Order, compliance with *Mitigation Measures CUL-2: Conduct Inventory and Significance Evaluation of Archaeological Resources* and *CUL-3: Implement Measures to Protect Archaeological Resources during Project Construction or Operations* would be required when applicable to a given project. Implementation of these mitigation measures would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

Consistent with the types of constructed restoration elements evaluated by the Final SRGO Program EIR, constructed restoration elements of the proposed Project would include use of the following: fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; and reconfigured and modified irrigation and drainage features, such as irrigation canals, ditches, and berms.

Through a records search, background research, field survey, and Native American outreach, no archaeological resources, including any that may qualify as historical resources as defined in CEQA Guidelines Section 15064.5, or as unique archaeological resources as defined in PRC Section 21083.2(g), were identified in or adjacent to the proposed Project area. Therefore, the proposed Project is not anticipated to affect any archaeological resources.

Although no substantial evidence exists that any archaeological resources are present in the proposed Project area, the proposed constructed restoration elements would involve ground-disturbing activities that may extend into undisturbed soil. Such activities could unearth, expose, or disturb subsurface archaeological resources that have not been identified on the surface. If such resources were found to qualify as archaeological resources pursuant to CEQA Guidelines Section 15064, impacts of the proposed Project on archaeological resources could be potentially significant.

The proposed Project would apply Mitigation Measure CUL-3, consistent with the Final SRGO Program EIR; however, Mitigation Measure CUL-2 is not applicable to the proposed Project because a records

search, background research, field survey, and Native American outreach have been conducted for the proposed Project. With implementation of Mitigation Measure CUL-3, impacts on archaeological resources from constructed restoration elements of the proposed Project would be ***less than significant with implementation of mitigation measures***.

Constructed restoration elements associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR. The Final SRGO Program EIR adequately addresses constructed restoration elements impacts of the proposed Project on archaeological resources.

Effects of Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of operations, monitoring, and maintenance activities on archaeological resources (Final SRGO Program EIR Impact 3.7-2, pp. 3.7-18 through 3.7-22). Related to the proposed Project, the Final SRGO Program EIR evaluated operations, monitoring, and maintenance activities necessary to support the successful establishment of natural conditions and the functionality of artificial/constructed infrastructure. These measures include conducting mechanical and chemical weed control; installing fencing and signage; adjusting grading or soils composition; and installing and operating monitoring equipment such as groundwater wells, flow gages, depth gages, cameras, and stakes. The Final SRGO Program EIR found that these activities could result in potentially significant impacts on archaeological resources.

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Board or a regional water board's issuance of a NOA for a restoration project under the Order, compliance with *Mitigation Measures CUL-2: Conduct Inventory and Significance Evaluation of Archaeological Resources* and *CUL-3: Implement Measures to Protect Archaeological Resources during Project Construction or Operations* would be required when applicable to a given project. Implementation of these mitigation measures would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

Consistent with the types of operations, monitoring, and maintenance activities evaluated by the Final SRGO Program EIR, operations, monitoring, and maintenance activities of the proposed Project would include those associated with the following: fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; and reconfigured and modified irrigation and drainage features, such as irrigation canals, ditches, and berms.

Through a records search, background research, field survey, and Native American outreach, no archaeological resources, including any that may qualify as historical resources as defined in CEQA Guidelines Section 15064.5 or as unique archaeological resources as defined in PRC Section 21083.2(g), were identified in or adjacent to the proposed Project area. Therefore, the proposed Project is not anticipated to affect any archaeological resources.

Although no substantial evidence exists that any archaeological resources are present in the proposed Project area, the operations, monitoring, and maintenance activities for the proposed Project could involve

ground-disturbing activities that may extend into undisturbed soil. Such activities could unearth, expose, or disturb subsurface archaeological resources that have not been identified on the surface. If such resources were found to qualify as archaeological resources pursuant to CEQA Guidelines Section 15064, impacts of the proposed Project on archaeological resources could be potentially significant.

The proposed Project would apply Mitigation Measure CUL-3, consistent with the Final SRGO Program EIR; however, Mitigation Measure CUL-2 is not applicable to the proposed Project because a records search, background research, field survey, and Native American outreach have been conducted for the proposed Project. With implementation of Mitigation Measure CUL-3, impacts on archaeological resources during operations, monitoring, and maintenance activities of the proposed Project would be ***less than significant with implementation of mitigation measures***. Operations, monitoring, and maintenance activities of the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR. The Final SRGO Program EIR adequately addresses impacts of the proposed Project's operations, monitoring, and maintenance activities on archaeological resources.

Impact 3.8-3: Implementation of the proposed Project could disturb human remains, including those interred outside of dedicated cemeteries.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities for restoration projects on human remains (Final SRGO Program EIR Impact 3.7-3, pp. 3.7-22 through 3.7-25). Related to the proposed Project, the Final SRGO Program EIR evaluated the following construction activities: installation of infrastructure such as culverts, fish screens, and other water control structures to improve water management capabilities; removal of legacy structures; creation of depressions, berms, and drainage features; and installation of cofferdams during construction. Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials. The Final SRGO Program EIR found that these activities could result in potentially significant impacts on human remains.

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Board or a regional water board's issuance of a NOA for a restoration project under the Order, compliance with *Mitigation Measure CUL-4: Implement Measures to Protect Human Remains during Project Construction or Operations* would be required when applicable to a given project. Implementation of this mitigation measure would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

Consistent with the types of construction activities evaluated by the Final SRGO Program EIR, construction of the proposed Project would require the following: site preparation and mobilization/ demobilization; use of staging areas, access routes, and haul routes; grading and excavation; the installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; removal and salvage and/or disposal of existing pumps, pipes, and other water control structures

and utility lines that are no longer needed under proposed Project conditions; reconfiguration and modification of irrigation and drainage features, such as irrigation canals, ditches, and berms; and installation of temporary cofferdams.

No human remains have been identified in the proposed Project area through archival research, field surveys, or Native American outreach. Also, the land use designations for the proposed Project area do not include cemetery uses, and no known human remains exist within the proposed Project area. Therefore, the proposed Project is not anticipated to disturb any human remains.

Although no substantial evidence exists that human remains are present in the proposed Project area, proposed Project construction would involve ground-disturbing activities that may extend into undisturbed soil. Such activities could unearth, expose, or disturb subsurface previously unknown human remains. In the event that human remains were discovered during proposed Project construction activities, impacts on the human remains resulting from the proposed Project would be potentially significant if those remains were disturbed or damaged.

Mitigation Measure CUL-4 would mitigate potential impacts on human remains during construction and operations and maintenance activities.

> **Mitigation Measure CUL-4: Implement Measures to Protect Human Remains during Project Construction or Operations**
>
> If human remains are encountered during construction or operations and maintenance of any project permitted under the Order, all work shall immediately halt within 100 feet of the find and the lead agency shall contact the appropriate county coroner to evaluate the remains and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.5(e)(1). If human remains encountered are on or in the tide and submerged lands of California, the lead agency shall also contact the California State Lands Commission. If the coroner determines that the remains are Native American in origin, the appropriate county shall contact the California Native American Heritage Commission, in accordance with California Health and Safety Code Section 7050.5(c) and PRC Section 5097.98. Per PRC Section 5097.98, the project's lead agency shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the lead agency has discussed and conferred, as prescribed PRC Section 5097.98, with the most likely descendants and the property owner regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.

With implementation of Mitigation Measure CUL-4 this impact would be ***less than significant with implementation of mitigation measures***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR, The Final SRGO Program EIR adequately addresses construction impacts of the proposed Project on human remains.

Effects of Constructed Restoration Elements

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of constructed facilities for restoration projects on human remains (Final SRGO Program EIR Impact 3.7-3, pp. 3.7-22 through 3.7-25). Related to the proposed Project, the Final SRGO Program EIR evaluated the constructed facilities of new infrastructure or modifications to existing infrastructure (e.g., bridges, culverts, fishways and screens, dams, levees, water conveyance features). The Final SRGO Program EIR found that these activities could result in potentially significant impacts on human remains.

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Board or a regional water board's issuance of a NOA for a restoration project under the Order, compliance with *Mitigation Measure CUL-4: Implement Measures to Protect Human Remains during Project Construction or Operations* would be required when applicable to a given project. Implementation of this mitigation measure would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

Consistent with the types of constructed restoration elements evaluated by the Final SRGO Program EIR, constructed restoration elements of the proposed Project would include the following: use of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; and reconfigured and modified irrigation and drainage features, such as irrigation canals, ditches, and berms.

No human remains have been identified in the proposed Project area through archival research, field surveys, or Native American outreach. Also, the land use designations for the proposed Project area do not include cemetery uses, and no known human remains exist within the proposed Project area. Therefore, the proposed Project is not anticipated to disturb any human remains.

Although no substantial evidence exists that human remains are present in the proposed Project area, the constructed restoration elements of the proposed Project would involve ground-disturbing activities that may extend into undisturbed soil. Such activities could unearth, expose, or disturb subsurface previously unknown human remains. In the event that human remains were discovered during the constructed restoration elements of the proposed Project, impacts on the human remains resulting from the proposed Project would be potentially significant if those remains were disturbed or damaged.

To mitigate potential impacts on human remains, implementation of Mitigation Measure CUL-4 would be required for the proposed Project. With implementation of Mitigation Measure CUL-4, impacts on human remains from constructed restoration elements of the proposed Project would be ***less than significant with implementation of mitigation measures***.

Constructed restoration elements associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR. The Final SRGO Program EIR adequately addresses constructed project element impacts of the proposed Project on human remains.

Effects of Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of operations, monitoring, and maintenance activities on human remains (Final SRGO Program EIR Impact 3.7-3, pp. 3.7-22 through 3.7-25). Related to the proposed Project, the Final SRGO Program EIR evaluated the operations, monitoring, and maintenance activities associated with new infrastructure or modifications to existing infrastructure (e.g., bridges, culverts, fishways and screens, dams, levees, water conveyance features). The Final SRGO Program EIR found that these activities could result in potentially significant impacts on human remains.

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Board or a regional water board's issuance of a NOA for a restoration project under the Order, compliance with *Mitigation Measure CUL-4: Implement Measures to Protect Human Remains during Project Construction or Operations* would be required when applicable to a given project. Implementation of this mitigation measure would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

Consistent with the types of operations, monitoring, and maintenance activities evaluated by the Final SRGO Program EIR, operations, monitoring, and maintenance activities of the proposed Project would include those associated with the following: fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; and reconfigured and modified irrigation and drainage features, such as irrigation canals, ditches, and berms.

No human remains have been identified in the proposed Project area through archival research, field surveys, or Native American outreach. Also, the land use designations for the proposed Project area do not include cemetery uses, and no known human remains exist within the proposed Project area. Therefore, the proposed Project is not anticipated to disturb any human remains.

Although no substantial evidence exists that human remains are present in the proposed Project area, the proposed operations, monitoring, and maintenance activities would involve ground-disturbing activities that may extend into undisturbed soil. Such activities could unearth, expose, or disturb subsurface previously unknown human remains. In the event that human remains were discovered during operations, monitoring, and maintenance activities, impacts on the human remains resulting from the proposed Project would be potentially significant if those remains were disturbed or damaged.

To mitigate potential impacts on human remains, implementation of Mitigation Measure CUL-4 would be required for the proposed Project. With implementation of Mitigation Measure CUL-4, impacts on human remains during operations, monitoring, and maintenance activities of the proposed Project would be ***less than significant with implementation of mitigation measures***.

Operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR. The Final SRGO Program EIR adequately addresses impacts of the proposed Project's operations, monitoring, and maintenance activities on human remains.

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3.9 Hazards and Hazardous Materials

3.9.1 Introduction

This Draft SEIR supplements the previously certified Final SRGO Program EIR and addresses proposed modifications, changed circumstances, and new information not described in that prior environmental document. This section of the Draft SEIR discusses the potential for the proposed Project to result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR related to hazards and hazardous materials (see Final SRGO Program EIR: Section 3.10.2, pp. 3.10-9 through 3.10-21). The environmental setting and evaluation of potential impacts related to hazards and hazardous materials are based on a review of site-specific analyses and publicly available literature and data.

Potential flooding hazards are addressed in Section 3.10, "Hydrology and Water Quality." Effects on emergency services in the proposed Project area are discussed in Section 3.3.9, "Public Services," within Section 3.3, "Environmental Issues Not Requiring Further Analysis."

Comments were received in response to the NOP regarding hazards and hazardous materials. See Appendix B to this Draft SEIR, "Tide's End Multibenefit Restoration Project Notice of Preparation and Comment Letters," for NOP comment letters.

The impact analysis in this section evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities related to hazards and hazardous materials in the proposed Project area. This impact analysis concludes that implementation of the proposed Project would not result in any significant impacts related to hazards and hazardous materials in the proposed Project area that could not be mitigated to a less-than-significant level.

3.9.2 Environmental Setting

Definition of Hazardous Materials

A "hazardous material" is defined as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment (California Health & Safety Code Chapter 6.95, Section 25501[n]). The term "hazardous materials" refers to both hazardous substances and hazardous wastes. Under federal and State laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such or if it is toxic (causes adverse human health effects; Code of Federal Regulations [CFR] Title 40, Section 261.24), ignitable (has the ability to burn; 40 CFR Section 261.21), corrosive (causes severe burns or damage to materials; 40 CFR Section 261.22), or reactive (causes explosions or generates toxic gases 40 CFR Section 261.23).

"Hazardous wastes" are hazardous substances that no longer have practical use, such as materials that have been spent, discarded, discharged, spilled, contaminated, or are being stored until they can be disposed of properly (California Code of Regulations Title 22, Section 66261.10). Soil that is excavated from a site containing hazardous materials is a hazardous waste if it exceeds specific criteria established in Sections 66261.20 through 66261.24 of California Code of Regulations Title 22. Hazardous substances

are regulated by multiple agencies, as described below in Section 3.9.3, "Regulatory Setting," and cleanup requirements of hazardous material releases are determined on a case-by-case basis according to the regulatory agency (e.g., California Department of Toxic Substances Control [DTSC] or a regional water board) with lead jurisdiction over a contaminated site.

Existing Potential Hazardous Materials in the Proposed Project Area

To identify potential existing hazardous materials in the proposed Project area, a Phase I environmental site assessment and Phase II soil sampling investigation were conducted. Appendix F to this Draft SEIR, "Tide's End Multibenefit Restoration Project Phase I Environmental Site Assessment (Phase I Environmental Site Assessment) and the Tide's End Multibenefit Restoration Project Phase II Soil Sampling Investigation (Phase II Soil Sampling Investigation)," includes both the Phase I Environmental Site Assessment and the Phase II Soil Sampling Investigation. The findings of these reports are summarized below.

Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment was conducted to review available databases and records and inspect site conditions to identify potential hazardous materials based on historic and current uses in the proposed Project area. The results are summarized below, and the detailed results are presented in Appendix F to this Draft SEIR, "Tide's End Multibenefit Restoration Project Phase I Environmental Site Assessment (Phase I Environmental Site Assessment) and the Tide's End Multibenefit Restoration Project Phase II Soil Sampling Investigation (Phase II Soil Sampling Investigation)".

Results of Hazardous Material Database Review

In California, federal, State, and local agencies' regulatory databases that list hazardous materials sites are consolidated in the "Cortese List" pursuant to Government Code Section 65962.5, which has been in effect since 1992. However, subsequent changes to the availability of web-based information have eliminated the necessity for this consolidated list, and various responsible agencies maintain the following lists and databases:

- DTSC:
  - EnviroStor database of hazardous waste and substances sites (DTSC 2025).
  - List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health & Safety Code, as included in EnviroStor.
- State Water Resources Control Board (State Water Board):
  - GeoTracker database of leaking underground storage tank sites by county and fiscal year (State Water Board 2025).
  - List of solid waste disposal sites with waste constituents exceeding hazardous waste levels outside the waste management unit.
  - List of "active" cease and desist orders and cleanup and abatement orders.

These databases identify sites with suspected and confirmed releases of hazardous materials to subsurface soil and/or groundwater. The State Water Board's GeoTracker database includes leaking underground

storage tanks, permitted underground storage tanks, U.S. Department of Defense sites, and Cleanup Program sites. DTSC's EnviroStor database includes federal and State response sites; voluntary, school, and military cleanups and corrective actions; and permitted sites. The reporting and statuses of these sites change as hazardous materials sites are identified, monitored, and remediated. Typically, a listed site is considered to no longer be of concern once it has been demonstrated that existing site uses combined with the levels of identified contamination present no substantial risk to human health or the environment and the case is closed by the overseeing agency. No listed hazardous material sites or Cortese List hazardous materials sites were recorded as being located in or within 0.5 mile of the proposed Project area.

Results of Historic and Current Site Uses Review

Historic uses in the proposed Project area include farming, natural gas extraction, and a former restaurant. Current uses include a clubhouse for a duck hunting club. Portions of the proposed Project area have been farmed for rice, corn, or other general field crops. Hazardous materials associated with agricultural production activities may include pesticides and/or herbicides; leaking aboveground fuel storage tanks; leaking or abandoned pesticide storage containers; and drainage water that contains pesticides and herbicides. Rice farming continues on the Capitol Oil property. While pesticides, herbicides, and/or fertilizers may have been used historically, there are no records of use. The Yolo County Agricultural Commissioner maintains pesticide use records back to 2014; none of the six properties in the proposed Project area have any recorded use of pesticides or herbicides. Even though the use of dichlorodiphenyl-trichloroethane (DDT) was banned in 1972 and chlordane use on food crops was banned in 1978, on-site soil may have residual levels of legacy pesticides (e.g., DDT, chlordane) from past use. Modern (post-1970s) pesticides and herbicides generally have a short life span of 1 year or less and do not leave residual toxic compounds (National Pesticide Information Center 2015; Sarker et al. 2024). As discussed below under "Phase II Soil Sampling Investigation," proposed Project area soils were tested for pesticides and herbicides, along with metals that may be associated with pesticides and herbicides.

A septic tank and leach field were identified in the southwest corner of the Laurel G property just west of the clubhouse (see Figure 2-5 in Chapter 2, "Project Description") which would not be disturbed by proposed Project uses because the clubhouse and parking lot would remain. The Phase I Environmental Site Assessment also noted the dilapidated remains of a former restaurant present just south of the clubhouse, consisting of the remains of the foundation, some brick pillars, and scattered debris consisting of pieces of the roof, walls, and restaurant contents (e.g., a stove, a bathtub, a toilet, and other debris). The remains of a foundation, that may have previously been a residence, is present at the northwestern border of the Capitol Oil. It is unknown whether the former restaurant and possible residence had separate septic systems and leach fields. The site inspections conducted for the Phase I Environmental Site Assessment did not note chemical spills, underground or aboveground storage tanks, waste pits or ponds, stained soil, unusual odors, or stressed vegetation.

Natural Gas Wells

A total of 25 plugged and abandoned natural gas wells are present in the proposed Project area. A plugged natural gas well has the potential to release methane gas into the environment if the plug is dislodged. Methane gas, if inhaled, can be hazardous to humans. In addition, under the right conditions, methane gas can accumulate in confined spaces and act as an asphyxiant or become flammable. Natural gas wells are abandoned by plugging the well with a cement grout from the bottom of the well to the ground surface. The top portion of the grout plug and well casing is typically removed, and the ground area is covered

with soil, leaving no surface indication of the former gas well. The locations of the plugged wells are shown in Chapter 2, "Project Description," on Figure 2-5. Ten of the 25 wells produced economically viable volumes of natural gas between December 1978 and December 2010 before the available natural gas was depleted and the wells ceased production. Records indicate that these 10 natural gas wells were abandoned and plugged before the end of 2012. It is unclear when or whether the other 15 wells ever produced gas before being plugged (see Appendix F to this Draft SEIR, "Tide's End Multibenefit Restoration Project Phase I Environmental Site Assessment"); these wells may have been "dry" wells. Well abandonment records indicate that 20 of the natural gas wells in the proposed Project area had at least the top 5 feet of well casing and grout plug cut off. The abandonment records for four natural gas wells are unclear as to cutoff depths. One other well is recorded as cut off to 4 feet below grade. No visible evidence of any of the wells documented was observed at any of the reported well locations during the site inspections (see Appendix F to this Draft SEIR, "Tide's End Multibenefit Restoration Project Phase I Environmental Site Assessment"). Soil samples were collected and analyzed for chemicals historically and currently used for agriculture, including organochlorine pesticides, organophosphorus pesticides, chlorinated herbicides, and metals.

Phase II Soil Sampling Investigation

To test for the potential presence of legacy pesticides and herbicides at concentrations above regulatory screening levels, a Phase II Soil Sampling Investigation was conducted. The results are summarized below, and the details are included in Appendix F to this Draft SEIR, "Tide's End Multibenefit Restoration Project Phase Phase II Soil Sampling Investigation." Proposed Project area soil was sampled and analyzed for pesticides,[1] herbicides,[2] and metals.[3] Soil sampling results indicate that chemical concentrations of pesticides and herbicides are either not detected above reporting limits or are present at concentrations below screening criteria. In addition, the results of the pesticides and herbicides analyses indicate that the application of pesticides and herbicides in the past, if any, would not have significantly contributed pesticide- and herbicide-associated metals to the soils in the proposed Project area.

The tests for metals indicated that antimony, barium, beryllium, cadmium, chromium, iron, lead, mercury, molybdenum, silver, thallium, vanadium, and zinc were all within background levels and below regulatory agency screening levels. Test results indicated concentrations of arsenic, cobalt, copper, manganese, nickel, and selenium in some samples that exceeded regional background levels. Of these metals, arsenic, copper, nickel, and selenium in some samples exceeded some regulatory agency screening levels. However, as previously noted, the results of the pesticides and herbicides tests indicate that the use of pesticides and herbicides, if any, did not contribute to the detected levels of metals in proposed Project area soil. Instead, this indicates that the naturally occurring concentrations of some metals in proposed Project area soil and in the local area are higher than regional background levels. This is likely due to the proposed Project area being located west of the Sacramento River. Sediment at the proposed Project area is derived more from the Coast Ranges located to the west. The rocks of the Coast Ranges are known to include serpentinite, which can contain metals such as arsenic, chromium, cobalt, nickel, and zinc. Consequently, and as indicated by the sampling results, the naturally occurring local

[1] Organochlorine and organophosphorus pesticides.

[2] Chlorinated herbicides.

[3] Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, zinc.

background concentrations of some metals in the proposed Project area soil have levels of some metals that are higher than the regional background levels.

Finally, some soil samples were analyzed for total organic carbon and acid soluble sulfide in the event that elevated concentrations of metals are present. The results indicated that proposed Project area soil does not appear to be susceptible to becoming acidic and is less susceptible to the dissolution of metals from soil into water. In addition, soils at the Project area were observed to be clayey and include organic materials, which would promote the retention of metals. Potential impacts to water quality associated with implementation of the proposed Project are evaluated in Section 3.10, "Hydrology and Water Quality."

Other Potential Hazards from the Proposed Project Area

Proximity to Schools

The use, storage, handling, or disposal of hazardous materials could result in accidental releases of small quantities that could expose people and the environment to hazardous materials. In addition, if activities using hazardous materials were to occur within 0.25 mile of an existing or proposed school, school occupants and school site users could be exposed to the effects of accidental hazardous material spills. No schools are located within 0.25 mile of the proposed Project area.

Proximity to Airports

The main issues related to airport hazards are overflight safety, airspace protection, flight patterns, and land use compatibility. No airports or airport influence areas are located within 2 miles of the proposed Project area.

Wildfire Hazards

The Fire Hazard Severity Zone maps are developed using a science-based and field-tested model that assigns a hazard score based on the factors that influence fire likelihood and fire behavior. Many factors are considered such as fire history, existing and potential fuels (natural vegetation), predicted flame length, blowing embers, terrain, and typical fire weather for the area. There are three levels of hazard in the State responsibility areas: moderate, high, and very high. The proposed Project area is not located in a Fire Hazard Severity Zone (CAL FIRE 2023); therefore, wildfire risks are low. Wildfire are discussed further in Section 3.3.11, "Wildfire."

Disease Vectors

A "disease vector" is a carrier of disease organisms. The vector may be purely mechanical, as when houseflies spread enteric organisms; or it may be biological, wherein the disease organism multiplies or undergoes change within the vector, as when viruses develop in mosquitoes.

In California, the West Nile virus, St. Louis encephalitis, and western equine encephalomyelitis are the three most important viral mosquito-borne diseases. The viruses that cause these diseases are maintained in nature through a mosquito-bird-mosquito cycle. Typically, water bodies with poor circulation, continually slow-changing water levels, higher temperatures, and higher organic content produce greater numbers of mosquitoes. Most adult mosquitoes remain close to their point of origin, and their ability to travel is heavily dependent on physical phenomena such as wind. Some mosquitoes feed on mammals and other animal hosts and others feed on fruits and plant nectars. In the proposed Project area, mosquitoes

could breed in existing agricultural irrigation and drainage ditches as well as managed wetlands. County vector control districts provide mosquito and other vector control. The Sacramento-Yolo Mosquito and Vector Control District (SYMVCD) provides and manages mosquito and other vector control in the proposed Project area. SYMVCD has not identified any confirmed positive samples of West Nile virus activity in the proposed Project area (SYMVCD 2025).

3.9.3 Regulatory Setting

Federal and State regulations discussed in Section 3.10.3, "Regulatory Setting," of Section 3.10, "Hazards and Hazardous Materials," of the Final SRGO Program EIR were reviewed for relevance to the proposed Project and are identified below as appropriate, along with any applicable new or updated policies since certification of the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.10.1, pp. 3.10-3 through 3.10-9). As a statewide, program-level document, the Final SRGO Program EIR did not discuss regional and local regulations; this Draft SEIR provides project-specific regional and local goals and policies to supplement the regulatory setting information provided in the Final SRGO Program EIR.

Federal

The federal agencies with primary responsibility for hazards and hazardous materials management are the U.S. Environmental Protection Agency, the U.S. Occupational Safety and Health Administration, and the U.S. Department of Transportation. **Table 3.9-1** summarizes federal laws, regulations, and responsible agencies related to hazardous materials management.

TABLE 3.9-1
FEDERAL LAWS AND REGULATIONS RELATED TO HAZARDOUS MATERIALS MANAGEMENT

Classification	Federal Law or Responsible Federal Agency	Description
Hazardous Waste Handling and Management	Resource Conservation and Recovery Act of 1976	Under the RCRA, EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous waste from "cradle to grave."
	Hazardous and Solid Waste Act	This law amended the RCRA in 1984, affirming and extending the "cradle-to-grave" system of regulating hazardous wastes. The amendments prohibit the use of certain techniques for disposal of some hazardous wastes.
	Community Right-to-Know Act of 1986 (also known as Title III of the Superfund Amendments and Reauthorization Act)	This law imposes requirements to ensure that hazardous materials are properly handled, used, stored, and disposed of and to prevent or mitigate injury to human health or the environment in the event that such materials are accidentally released.
	Federal Insecticide, Fungicide, and Rodenticide Act	All pesticides distributed or sold in the United States must be registered (licensed) by EPA. FIFRA imposes pesticide labeling requirements; controls when and under what conditions pesticides can be applied, mixed, stored, loaded, or used; specifies when fields can be reentered after application; and identifies when crops can be harvested. Under FIFRA, registrations and product labeling may restrict uses of pesticides.
Hazardous Materials Transportation	U.S. Department of Transportation	DOT has regulatory responsibility for the safe transportation of hazardous materials. DOT regulations govern all means of transportation except packages shipped by mail.
	U.S. Postal Service	U.S. Postal Service regulations govern the transportation of hazardous materials shipped by mail.

Classification	Federal Law or Responsible Federal Agency	Description
Occupational Safety	Occupational Safety and Health Act of 1970	OSHA sets standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries.
Structural and Building Components (Hazardous Building Materials)	Toxic Substances Control Act	This law regulates the use and management of hazardous building materials and sets forth detailed safeguards to be followed during the disposal of such items.

Notes: DOT = U.S. Department of Transportation; EPA = U.S. Environmental Protection Agency; FIFRA = Federal Insecticide, Fungicide, and Rodenticide Act; OSHA = U.S. Occupational Safety and Health Administration; RCRA = Resource Conservation and Recovery Act

Source: Data compiled by Environmental Science Associates in 2025.

State

Several State agencies have primary responsibility for hazardous materials management in the region: DTSC and the Central Valley Regional Water Quality Control Board (both part of the California Environmental Protection Agency), the California Occupational Safety and Health Administration, California Department of Public Health, California Highway Patrol, California Geologic Energy Management Division, and the California Department of Transportation. **Table 3.9-2** summarizes State laws, regulations, and responsible agencies related to hazardous materials management.

TABLE 3.9-2
STATE LAWS AND REGULATIONS RELATED TO HAZARDOUS MATERIALS MANAGEMENT

Classification	Law or Responsible State Agency	Description
Hazardous Materials Management	Unified Hazardous Waste and Hazardous Materials Management Regulatory Program; Certified Unified Program Agency (Health & Safety Code Section 25404 et seq.)	The California Environmental Protection Agency adopted regulations in January 1996 that implemented the Unified Program at the local level. The agency responsible for implementation of the Unified Program is called the CUPA. The CUPA for Yolo County is the Yolo County Environmental Health Division.
	California Fire Code, California Code of Regulations Title 24, Chapter 9, and California Building Code, Part 2	The California Fire Code regulates the storage and handling of hazardous materials, including the requirement for secondary containment, separation of incompatible materials, and preparation of spill response procedures.
Hazardous Waste Handling	California Hazardous Materials Release Response Plan and Inventory Law of 1985; CUPA	The California Hazardous Materials Release Response Plan and Inventory Law of 1985, also known as the Business Plan Act, requires that any business that stores hazardous materials on-site prepare a Hazardous Materials Business Plan and submit it to the local CUPA, which in this case is Yolo County's HazMat Compliance Program.
	California Hazardous Waste Control Act; California Health & Safety Code Section 25100 et seq; DTSC	Under the California Hazardous Waste Control Act, DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste in California. The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; dictate the management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills. DTSC is also the administering agency for the California Hazardous Substance Account Act (California Health & Safety Code Section 25300 et seq.), also known as the State Superfund Law, which provides for the investigation and remediation of hazardous substances pursuant to State law.

Classification	Law or Responsible State Agency	Description
	Health & Safety Code Sections 25500 and 25531	Section 25500 of the Health & Safety Code regulates business and area plans related to the inventory, handling, and release or threatened release of hazardous materials. Section 25531 implements the federal regulations under the Clean Air Act for the prevention of accidental releases of regulated substances, with certain State-specific amendments.
Hazardous Materials Transportation	California Code of Regulations Titles 13, 22, and 26	These regulations governing the transportation of hazardous waste that originates in and passes through the state include requirements for shipping, containers, and labeling.
	CHP and Caltrans; California Vehicle Code Sections 31303–31309	These two State agencies have primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies.
Disposal of Hazardous Waste	California Code of Regulations, Title 22, Division 4.5	California Code of Regulations Title 22 contains an array of standards and requirements for the identification, collection, transport, disposal, and recycling of hazardous and universal wastes. “Universal wastes” are defined as those wastes identified in California Code of Regulations Title 22, Section 66273.9, including batteries, electronic devices, mercury-containing equipment, lamps, cathode ray tubes, and aerosol cans. Requirements include recycling, recovery, the return of spent items to the manufacturer, or disposal at an appropriately permitted facility. Title 22, Division 4.5 also provides restrictions and standards relevant to waste destination facilities and provides authorization requirements for various waste handlers. Title 22 includes California’s Universal Waste Rule and other additional waste handling and disposal requirements.
Occupational Safety	Cal/OSHA regulations (California Code of Regulations Title 8)	Cal/OSHA has primary responsibility for developing and enforcing workplace safety regulations in California. Because California has a federally approved OSHA program, it is required to adopt regulations that are at least as stringent as those found in Title 29 of the Code of Federal Regulations. Cal/OSHA standards are generally more stringent than federal regulations. They require employee safety training, safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and preparation of emergency action and fire prevention plans.
Construction General Permit (Order 2022-0057-DWQ, NPDES No. CAS000002)	Regional Water Boards	A discharger whose project disturbs 1 acre or more of soil, or disturbs less than 1 acre but is part of a larger common plan of development that in total disturbs 1 acre or more, must obtain coverage under the NPDES Construction General Permit (Order 2022-00547-DWQ). Construction activity subject to this permit includes clearing, grading, grubbing, and other disturbances to the ground such as excavation and stockpiling but does not include regular maintenance activities performed to restore the original line, grade, or capacity of a facility. The Construction General Permit requires the development and implementation of a SWPPP that includes specific BMPs designed to prevent sediment and pollutants from contacting stormwater from moving off-site into receiving waters. The BMPs fall into several categories—erosion control, sediment control, waste management and good housekeeping—and are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area.

Classification	Law or Responsible State Agency	Description
Control of Pesticides	Sections 11401–14155 of the Food and Agriculture Code	Similar to EPA's FIFRA program, the California Legislature enacted the Food and Agriculture Code to promote and protect the agricultural industry, and to protect public health, safety, and welfare. Sections 11401–14155 of the Food and Agriculture Code regulate pest control operations, application of pesticides, and applicators, and restrict the use of some pesticides.
	California Code of Regulations Title 3, Division 6	The California Department of Pesticide Regulation is responsible for regulating the use of pesticides in California; it evaluates and registers pesticides, monitors their sale and use, and enforces regulations to protect human health and the environment.
Mosquito and Vector Control	Health & Safety Code Sections 2002(j), 2085(a), and 2061; Sacramento-Yolo Mosquito and Vector Control District	Under the California Health & Safety Code, mosquito and vector control districts may legally abate a public nuisance, defined as "Any water that is a breeding place for vectors" and "Any activity that supports the development, attraction, or harborage of vectors, or that facilitates the introduction or spread of vectors." (Health & Safety Code Section 2002[j]). Abatement can result in civil penalties of up to $1,000 per day (Health & Safety Code Sections 2085[a] and 2061).
Oil and Natural Gas Wells	Public Resources Code Section 3208, 3208.1, and Section 3224, 3255; California Geologic Energy Management Division	For hazardous wells or as necessary to prevent damage to life, health, and property, these sections of the Public Resources Code authorize CalGEM to order or implement the re-abandonment of any oil and gas well (Section 3255), order the re-abandonment of wells that are otherwise not accessible or visible (Section 3208.1), or perform tests and remedial work (Section 3224). These sections also stipulate that if construction occurs over an abandoned well or impedes access to an abandoned well, the property owner, developer, or local agency permitting the construction would be responsible for any re-abandonment efforts, if required. If the integrity of an abandoned or plugged well is disturbed during development of a property, the developer may also be responsible for any re-abandonment efforts under Section 3208 and 3208.1.

Notes: BMP = best management practice; Cal/OSHA = California Occupational Safety and Health Administration; CalGEM = California Geologic Energy Management Division; Caltrans = California Department of Transportation; CHP = California Highway Patrol; Construction General Permit = General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities; CUPA = Certified Unified Program Agency; DTSC = California Department of Toxic Substances Control; EPA = U.S. Environmental Protection Agency; FIFRA = Federal Insecticide, Fungicide, and Rodenticide Act; NPDES = National Pollutant Discharge Elimination System; OSHA = U.S. Occupational Safety and Health Administration; Regional Water Board = Regional Water Quality Control Board; SWPPP = stormwater pollution prevention plan

Source: Data compiled by Environmental Science Associates in 2025.

Regional and Local

The following regional and local policies relevant to the proposed Project based on location, project type, and/or environmental setting have been included for context; however, DWR, as a State agency, is not subject to local ordinances and policies.

Yolo County 2030 General Plan

The Yolo County 2030 General Plan (Yolo County 2009) outlines goals and policies intended to manage the risks of both natural and human-made hazards. Relevant goals and policies from this planning document include the following:

Goal HS-3: Wildland Fires. Protect the public and reduce damage to property from wildfire hazard.

Policy HS-3.1: Manage the development review process to protect people, structures, and personal property from unreasonable risk from wildland fires.

Policy HS-3.2: Encourage well-organized and efficient coordination between fire agencies and the County.

Policy HS-3.3: Clearly communicate the risks, requirements, and options available to those who own land and live in wildfire hazard areas.

Goal HS-4: Hazardous Materials. Protect the community and the environment from hazardous materials and waste.

Policy HS-4: Minimize exposure to the harmful effects of hazardous materials and waste.

Policy HS-4.2: Inspect businesses regularly for compliance with their Hazardous Materials Inventory and Hazardous Materials Business Emergency Response Plan.

Policy HS-4.3: Encourage the reduction of solid and hazardous wastes generated in the county.

Sacramento-Yolo Mosquito and Vector Control District Mosquito Reduction Best Management Practices

SYMVCD developed an integrated pest management and best management practices manual for landowners in Sacramento and Yolo counties. The mosquito reduction best management practices referred to in the manual are the recommended land management practices for identified significant mosquito sources that can reduce mosquito populations by various means: reducing or eliminating breeding areas, increasing the efficacy of biological controls, increasing the efficacy of chemical controls, and improving access for control operations. SYMVCD encourages those responsible for significant mosquito sources on their property to develop and implement a cooperative mosquito reduction best management practices plan with SYMVCD (SYMVCD 2008).

3.9.4 Impact Analysis and Mitigation Measures

Significance Criteria

In accordance with Appendix G of the CEQA Guidelines, an impact related to hazards and hazardous materials is considered significant if the proposed Project would do any of the following:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.

- For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan (including those located in or near State responsibility areas or land classified as very high Fire Hazard Severity Zones) or result in inadequate emergency access.
- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

In addition, a significant impact would occur if the types of restoration projects that would be permitted under the Order would:

- Create vector habitat that would pose a significant public health hazard.

The following potential impacts of future restoration projects permitted under the Order are evaluated elsewhere in this Draft SEIR:

- Potential for increased flood risk and flood hazards (see Section 3.10, "Hydrology and Water Quality").

Issues Not Analyzed Further in this Draft SEIR

Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

As discussed in Section 3.9.2, "Environmental Setting," the proposed Project area is not located within 0.25 mile of an existing or proposed school. Therefore, there is no risk of exposing school occupants and school site users to the effects of accidental hazardous material spills. No impact would occur with implementation of the proposed Project and this impact is not evaluated further in this Draft SEIR.

For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area.

As discussed in Section 3.9.2, "Environmental Setting," the proposed Project area is not located within 2 miles of a public airport or public use airport; therefore, implementation of the proposed Project would not result in a safety hazard or excessive noise for people residing or working in the proposed Project area. This impact is not evaluated further in this Draft SEIR.

Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

As discussed in Section 3.9.2, "Environmental Setting," the proposed Project area is not located in an area susceptible to wildland fires. Therefore, impact related to wildland fires would occur and this impact is not evaluated further in this Draft SEIR.

Methodology and Assumptions

As discussed in Chapter 1, "Introduction," the proposed Project is a "restoration project" as defined in Section V of the SRGO (State Water Board 2022a: Section V, p. 2); therefore, this Draft SEIR supplements and incorporates by reference the Final SRGO Program EIR, including its appendices (State Water Board 2022b). As provided by CEQA Guidelines Section 15163(b), a supplement to an EIR need contain only the information necessary to make the previous EIR adequate for the project as revised. This means that only those project-specific activities that would introduce new significant environmental effects or cause a substantial increase in the severity of significant effects identified in the Final SRGO Program EIR need to be evaluated. Where existing information and analysis in the Final SRGO Program EIR is considered sufficient to evaluate the impacts of the proposed Project, no additional environmental review is provided.

As outlined further in Chapter 1, this Draft SEIR incorporates by reference the general protection measures and species protection measures outlined in Final SRGO Program EIR Appendices E and F, which are intended to avoid and minimize impacts on sensitive resources. Consistent with the Final SRGO Program EIR, the impact analysis for each resource area assumes that applicable general protection measures and species protection measures would be implemented and enforced in the same way as mitigation measures, consistent with Section 15126.4 of the CEQA Guidelines, and that the proposed Project would be constructed and operated in compliance with relevant federal and State regulations and ordinances. Therefore, if the analysis has determined that incorporating one or more general protection measures and/or species protection measures into the proposed Project would reasonably mitigate an impact, then the impact conclusion is less than significant. If the analysis has determined that an impact would remain significant after the incorporation of appropriate general protection measures and species protection measures, then mitigation measures from the Final SRGO Program EIR and/or project-specific mitigation measures have been recommended to further reduce the magnitude of the impact. All mitigation measures are from the Final SRGO Program EIR unless specifically stated otherwise.

The following impact analysis considers the potential impacts related to hazards and hazardous materials associated with implementation of the proposed Project. The impact analysis evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities. The analysis is based on a review of relevant literature and occurrences databases, such as the State Water Board's GeoTracker and DTSC EnviroStor websites.

Impacts and Mitigation Measures

Table 3.9-3 summarizes the impact conclusions presented in this section for reference.

TABLE 3.9-3
SUMMARY OF IMPACT CONCLUSIONS—HAZARDS AND HAZARDOUS MATERIALS

Impact Statement	Construction Activities	Constructed Restoration Elements	Operations, Monitoring, and Maintenance Activities
3.9-1: Implementation of the proposed Project could involve the routine transport, use, or disposal of hazardous materials that, if accidentally released, could create a hazard to the public or the environment.	LTSG	LTSG	LTSG
3.9-2: Ground-disturbing activities for construction of the proposed Project could encounter previously unidentified contaminated soil and/or groundwater, potentially exposing construction workers, the public, and the environment to risks associated with hazardous materials.	LTSM	LTS	LTS
3.9-3: Implementation of the proposed Project could interfere with emergency response access or with an adopted emergency response or evacuation plan (including those located in or near State responsibility areas or land classified as very high Fire Hazard Severity Zone) or result in inadequate emergency access.	LTS	LTS	LTS
3.9-4: Implementation of the proposed Project could create vector habitat that would pose a significant public health hazard.	LTS	LTS	LTS

Notes: LTS = less than significant; LTSG = less than significant with implementation of general protection measures; LTSM = less than significant with implementation of mitigation measures

Source: Data compiled by Environmental Science Associates in 2025.

Impact 3.9-1: Implementation of the proposed Project could involve the routine transport, use, or disposal of hazardous materials that, if accidentally released, could create a hazard to the public or the environment.

Effects of Construction Activities and Constructed Restoration Elements

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities for restoration projects that could involve the routine transport, use, or disposal of hazardous materials that, if accidentally released, could create a hazard to the public or the environment (see Final SRGO Program EIR: Section 4.6.9, pp. 4-25 through 4-27). Related to the proposed Project, the Final SRGO Program EIR evaluated the use of limited quantities of hazardous materials commonly used during construction activities (e.g., fuels for equipment, oils, hydraulic fluids, solvents, cleaners, sealants, lubricants, and herbicides). The Final SRGO Program EIR found during the construction of projects requiring equipment that would use fuel, oil, and/or coolant, accidental spills could occur while equipment is refueled, or equipment could be upset, resulting in the release of fuel, oil, and/or coolant into the surrounding environment that could result in potentially significant impacts (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-12).

To reduce impacts on the public or the environment due to an accidental release of hazardous materials impacts of construction activities, the Final SRGO Program EIR included the following general protection measures when applicable to a given project: GPM-6: Work Areas and Speed Limits, GPM-7: Environmentally Sensitive Areas, GPM-10: Equipment Maintenance and Materials Storage, GPM-11: Material disposal, GPM-12: Fugitive Dust Reduction, GPM-14: Project Cleanup after Completion, WQHM-1: Staging Areas and Stockpiling of Materials and Equipment, WQHM-2: Storm Water Pollution Prevention Plan, WQHM-4: Hazardous Materials Management and Spill Response Plan, WQHM-5:

In-Water Concrete Use, WQHM-6: Accidental Discharge of Hazardous Materials, IWW-1: Appropriate In-Water Materials, IWW-2: In-Water Vehicle Selection and Work Access, IWW-3: In-Water Placement of Materials, Structures, and Operation of Equipment, IWW-6: Dewatering/Diversion, and IWW-13: Dredging Operations and Dredging Materials Reuse Plan, and VHDR-6: General Herbicide Use (see SRGO Final Program EIR: Section 3.10.2, pp. 3.10-12 and 3.10-13).

Similar to the restoration projects covered in the Final SRGO Program EIR, construction of the proposed Project would require limited quantities of hazardous materials commonly used during construction activities. If improperly used, stored, handled, transported, or disposed of, hazardous materials could be accidentally released, which could expose construction workers, the public, and the environment (including soil, groundwater, or surface water) to contamination. To address the use of hazardous materials during construction activities and constructed restoration elements, the above-referenced general protection measures proposed in the Final SRGO Program EIR would apply to the proposed Project. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection and species protection measure. In addition, as discussed previously, the Phase I Environmental Site Assessment determined that all 25 natural gas wells were abandoned and plugged before the end of 2012 (see Appendix F to this Draft SEIR, "Tide's End Multibenefit Restoration Project Phase I Environmental Site Assessment"). No existing signs of well heads or leakage were noted. Furthermore, the proposed Project would avoid construction directly over any of the abandoned wells located in the proposed Project area and would avoid construction within 25 feet of the natural gas wells. Therefore, even after Project completion, the wells would remain fully accessible to address any potential issues. There would be no potential risk of the exposure of the public or the environment related to the accidental release of natural gas due to Project construction and the constructed restoration elements of the proposed Project. This impact would therefore be ***less than significant with implementation of general protection measures***.

The proposed Project's construction activities and constructed restoration are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.10.2, pp. 3.10-12 and 3.10-13). The Final SRGO Program EIR adequately addresses construction impacts of the proposed Project related to an accidental release of hazardous materials resulting in a hazard to the public or the environment.

Effects of Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO, including the potential impacts of operations and maintenance activities of constructed facilities on accidental release of hazardous materials (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-13). The Final SRGO Program EIR evaluated operations, monitoring, and maintenance activities necessary to support the successful establishment of natural conditions and support the functionality of artificial/constructed infrastructure, including conducting mechanical and chemical weed control; installing fencing and signage; adjusting grading or soils composition; and installing and operating monitoring equipment such as groundwater wells, flow gages, depth gages, cameras, and stakes (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-13). The Final SRGO Program EIR found that potential impacts would be reduced in scope because equipment use for maintenance activities would be expected to be smaller in scale and more spread out over time than during project construction. Therefore, operational impacts would be less than significant. The Final

SRGO Program EIR stated that the general protection measures listed above for construction activities would still be implemented once a facility is constructed (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-13).

Similar to the restoration projects evaluated in Final SRGO Program EIR, the proposed Project would require operations, monitoring, and maintenance. As described in Chapter 2, "Project Description," once construction is complete, the restored tidal wetland habitats are expected to be largely self-maintaining after the initial period of vegetation establishment. Post-construction monitoring for the proposed Project would lead to minor maintenance activities consistent with the types of activities evaluated in the Final SRGO Program EIR. These maintenance activities would include the following: manual removal (with hand equipment) of any obstructions that may be blocking tidal channels (e.g., debris), if needed; periodic dredging of sediment to maintain the tidal channels and irrigation and drainage canals; additional manual vegetation management beyond the initial establishment period, including weed control and replanting, and/or extended temporary watering, as needed; and filling for maintenance or repair of agricultural berms. Operational activities would also include ongoing water management practices similar to existing conditions to support waterfowl in the managed wetland areas and support rice production in the managed floodplain agriculture areas. The potential effects of these activities would be reduced in scope compared to the effects of construction activities because equipment use for maintenance activities would be expected to be smaller in scale and more spread out over time than during project construction.

Consistent with the Final SRGO Program EIR, once construction is completed, the proposed Project would continue to implement the above general protection measures. Should highly invasive species become present at the site, the use of localized herbicides may be required. The general protection measures required in the Final SRGO Program EIR related to herbicide use and application would also be implemented: VHDR-7: Herbicide Application Planning, VHDR-8: Herbicide Application Reporting, and PLANT-6: Herbicide Application, Cleaning, and Ground Disturbance. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection and species protection measure.

Implementation of these general protection measures and adherence to all applicable regulations outlined in Section 3.9.2, "Regulatory Setting," would ensure that all hazardous materials on-site are used, stored, and managed on-site properly. Therefore, this impact would be ***less than significant with the implementation of general protection and species protection measures***.

Operations, monitoring, and maintenance activities for the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-13). The Final SRGO Program EIR adequately addresses operations, monitoring, and maintenance impacts of the proposed Project related to an accidental release of a hazardous material resulting in a hazard to the public or the environment.

Impact 3.9-2: Ground-disturbing activities for construction of the proposed Project could encounter previously unidentified contaminated soil and/or groundwater, potentially exposing construction workers, the public, and the environment to risks associated with hazardous materials.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote. These include potential impacts of construction activities for restoration projects that would involve ground-disturbing activities that could cause a release of previously unidentified contaminated soil and/or groundwater that could expose construction workers, the public, and the environment to hazardous materials (see Final SRGO Program EIR: Section 3.10.2, pp. 3.10-13 through 3.10-16). Ground-disturbing construction activities could include stream crossing and fish passage improvements; removal of small dams, tide gates, flood gates, and legacy structures; bioengineered bank stabilization; and restoration and enhancement of off-channel/side-channel habitat. If the DTSC Hazardous Waste and Substances Sites (Cortese List) identifies hazardous materials release sites in the proposed Project area, then depending on the activities that could disturb known sites, impacts could be potentially significant.

The Final SRGO Program EIR stated that the general protection measures listed for Impact 3.9-1 would be followed to reduce the impacts of ground-disturbing activities related to the release or exposure to previously unidentified contaminated soil and/or groundwater that could expose construction workers, the public, and the environment to risks from hazardous materials. In addition, as part of the State Water Board or a regional water board's issuance of a notice of applicability for a restoration project under the Order, compliance with *Mitigation Measures HAZ-1: Prepare and Implement a Health and Safety Plan and Provide Qualified Oversight of Fill Removal Related to Earthmoving Activities*, *HAZ-2: Notify Appropriate Federal, State, and Local Agencies If Contaminated Soils Are Identified, and Complete Recommended Remediation Activities*, and *HAZ-3: Notify Appropriate Federal, State, and Local Agencies If Accidental Discharges of Hazardous Materials* would be required when applicable to a given project. Implementation of these mitigation measures would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency (see Final SRGO Program EIR: Section 3.10.2, pp. 3.10-14 and 3.10-15).

The Final SRGO Program EIR found this impact to be less than significant with implementation of the general protection and mitigation measures (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-16).

Similar to the types of restoration projects evaluated in the Final SRGO Program EIR, the proposed Project would include ground-disturbing activities to construct the restoration elements, such as tidal wetlands. Proposed earthwork for tidal wetland areas includes excavating and shaping tidal channels, lowering ground elevations, creating habitat mounds, lowering and/or opening the Toe Drain berm, and creating a new berm on the west side of the Kleary and Williams properties. Development of adjacent transition zone habitats in the proposed Project area would require earthwork to fill in holes, smooth grades, remove existing berms, and otherwise shape the landform for appropriate drainage to adjacent tidal wetland habitats. Earthwork may also be required to maintain proper drainage and flow during construction of floodplain habitat. Perimeter berms for managed floodplains would be constructed using excess material generated from nearby excavation.

These ground-disturbing activities could cause the release of previously unidentified contaminated soil and/or groundwater that could expose construction workers, the public, and the environment to hazardous materials. In addition, sediments excavated during dredging activities may contain hazardous materials, which could expose construction workers to health and safety risks. As discussed in Section 3.9.2, "Environmental Setting," the only reported historic and current activity that could introduce hazardous materials has been farming. However, the soil sampling investigation reported concentrations of pesticides and herbicides are either not detected above reporting limits or are present at concentrations below screening criteria. The reported chemical concentrations of metals in soil were either within the naturally occurring background levels for the local project site, were not detected at concentrations above reporting limits, or were determined to reflect naturally occurring concentrations in the local area that are higher than regional background levels. Therefore, the residual chemicals in soil are not expected to adversely affect the proposed wetland and floodplain habitat.

Although the proposed Project area is not located in an area of known soil or groundwater contamination, there are potentially hazardous conditions on-site. As discussed in Section 3.9.2, "Environmental Setting," the Phase I Environmental Site Assessment identified a septic tank and leach field just west of the clubhouse; the proposed Project would not encounter this septic system because the clubhouse and its parking lot would remain and no soil disturbance is proposed in the immediate area (see Appendix F to this Draft SEIR, "Tide's End Multibenefit Restoration Project Phase I Environmental Site"). However, a restaurant was previously present in the northwest corner of the Yolo Basin property, and the foundation and dilapidated remains are still present; it is unknown whether the former restaurant routed sanitary waste to the clubhouse septic tank or whether it had its own septic tank and leach field. In addition, a former set of structures that may have been a residence is present in the northwestern border of the Capitol Oil property; this location presumably also had a septic tank and leach field, but the location and status are unknown. Given that the locations of these septic tanks and leach fields are unknown, construction of the proposed Project would have the potential to encounter these sanitary waste systems, which could expose workers to hazards associated with such systems. No contaminated soil or groundwater has been identified on-site, but construction activities may have potentially significant impacts related to the potential exposure of construction workers, the public, and the environment to existing on-site hazardous materials. Therefore, this impact would be potentially significant.

The general protection measures included for Impact 3.9-1 would be followed to reduce the impacts of ground-disturbing activities related to the release or exposure to previously unidentified contaminated soil and/or groundwater that could expose construction workers, the public, and the environment to risks from hazardous materials. In addition, compliance with ***Mitigation Measures HAZ-1*, *HAZ-2*, and *HAZ-3*** would be required for the proposed Project. Although there are no known areas of soil or groundwater contamination in the proposed Project area, implementation of Mitigation Measures HAZ-1, HAZ-2, and HAZ-3 would be applicable to the possible on-site septic tanks and leach fields and would identify and mitigate any potential hazardous conditions related to such infrastructure. Note that the references to "underground storage tanks" cited in the mitigation measures below shall also apply to underground septic tanks and the associated leach fields.

Implementing the general protection measures included for Impact 3.9-1 and Mitigation Measures HAZ-1, HAZ-2, and HAZ-3 and would reduce the impact related to potential discovery of previously unidentified contaminated soil and/or groundwater, including the septic tanks and leach fields.

Mitigation Measure HAZ-1: Prepare and Implement a Health and Safety Plan and Provide Qualified Oversight of Fill Removal Related to Earthmoving Activities.

The following measures shall be implemented before and during construction of the proposed Project:

- A health and safety plan for the project shall be developed and implemented. This plan shall clearly notify all workers of the potential to encounter hazardous materials during ground-disturbing work and other construction activities. The plan shall identify proper handling and disposal procedures for contaminants expected to be on-site and shall provide maps and phone numbers for local hospitals and other emergency contacts. Construction workers shall comply with all protocols outlined in the health and safety plan throughout project implementation.
- Any hazardous materials being stored in the project area and not needed for construction activities shall be removed and disposed of at appropriately permitted locations before construction. A qualified professional (e.g., geologist or engineer) shall oversee fill excavation activities and work in potential project areas that contain abandoned underground storage tanks requiring removal, to properly identify any contaminated soils that may be present. Excavation of underground storage tanks must comply with county ordinances and policies. If contaminated soils are found, Mitigation Measure HAZ-2 shall be implemented.
- Removal of underground storage tanks associated with the restoration project shall include measures to ensure their safe transport and disposal. Remediation actions, if necessary, shall be defined in consultation with the local regional water board and implemented during construction.

Mitigation Measure HAZ-2: Notify Appropriate Federal, State, and Local Agencies If Contaminated Soils Are Identified, and Complete Recommended Remediation Activities.

The following measures shall be implemented before construction of the proposed Project if contaminated soils are found in the proposed Project area:

- The appropriate federal, State, and local agencies shall be notified if evidence of previously undiscovered soil or groundwater contamination (e.g., stained soil, odorous groundwater) is encountered during construction activities. Any contaminated areas shall be cleaned up in accordance with the recommendations of the regional water board, DTSC, or other appropriate federal, State, or local regulatory agencies.
- A site plan shall be prepared for the remediation activities appropriate for the proposed land uses, including excavation and removal of on-site contaminated soils, and needed redistributions of clean fill material in the study area. The plan shall include measures to ensure the safe transport, use, and disposal of contaminated soil and building debris removed from the site. If ground-disturbing activities encounter contaminated groundwater, the construction contractor shall report the contamination to the appropriate agencies, dewater the area, and treat the groundwater to remove the contaminants before discharge into the sanitary sewer system. The construction contractor shall comply with the plan and applicable federal, State, and local laws. The plan shall outline specific procedures for handling and reporting of hazardous materials, and for disposing of hazardous materials removed from the site at an appropriate off-site facility.

Mitigation Measure HAZ-3: Notify Appropriate Federal, State, and Local Agencies If Accidental Discharges of Hazardous Materials.

Following an accidental discharge of a reportable quantity of a hazardous material or an unknown material, the appropriate federal, State, and local agencies shall be notified. Any contaminated areas shall be cleaned up in accordance with the recommendations of a regional water board, DTSC, or other appropriate federal, State, or local regulatory agencies.

With implementation of general protection measures included for Impact 3.9-1 and Mitigation Measures HAZ-1, HAZ-2, and HAZ-3, this impact would be ***less than significant with implementation of mitigation measures***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.10.2, pp. 3.10-13 through 3.10-16). The Final SRGO Program EIR adequately addresses construction impacts of the proposed Project's ground-disturbing activities related to the potential to cause the release of previously unidentified contaminated soil and/or groundwater that could expose construction workers, the public, and the environment to hazardous materials (see Final SRGO Program EIR Section 3.10.2, pp. 3.10-13 through 3.10-16).

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO. These include the potential impacts of constructed facilities (natural and artificial infrastructure) and operations and maintenance of those facilities to cause the release of previously unidentified contaminated soil and/or groundwater that could expose construction workers, the public, and the environment to hazardous materials due to ground disturbance (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-16). Operational activities could involve ground-disturbing activities to install monitoring equipment (e.g., groundwater wells, flow gages, depth gages, cameras, stakes, and similar equipment). The Final SRGO Program EIR states that although ground-disturbing activities could occur after restoration projects have been constructed, these activities would be limited and would occur in the same areas as when the facilities were constructed. The Final SRGO Program EIR found impacts to be less than significant (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-16). The Final SRGO Program EIR does not include any general protection measures applicable to this impact.

Once construction is completed, the restored tidal wetland habitats are expected to be largely self-maintaining after the initial period of vegetation establishment. Post-construction monitoring for the proposed Project would lead to minor maintenance activities consistent with the types of activities evaluated in the Final SRGO Program EIR. These maintenance activities would include the following: manual removal (with hand equipment) of any obstructions that may be blocking tidal channels (e.g., debris), if needed; periodic dredging of sediment to maintain the tidal channels and irrigation and drainage canals; additional manual vegetation management beyond the initial establishment period, including weed control and replanting, and/or extended temporary watering, as needed; and filling for maintenance or repair of agricultural berms. Operational activities would also include ongoing water management practices similar to existing conditions to support waterfowl in the managed wetland areas and rice production in the managed floodplain agriculture areas. Ground-disturbing activities associated with operations, monitoring, and maintenance of the proposed Project would be limited and would occur

in the same areas as where the facilities were constructed. Therefore, operational activities associated with the proposed Project would not be expected to encounter previously unidentified contaminated soil and/or groundwater that could expose construction workers, the public, and the environment to risks associated with hazardous materials. Therefore, this impact would be ***less than significant***.

The effects of the proposed Project's constructed restoration elements and operations, monitoring, and maintenance activities are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-16). The Final SRGO Program EIR adequately addresses post-construction impacts related to the potential of the proposed Project's ground-disturbing activities to cause the release of previously unidentified contaminated soil and/or groundwater that could expose construction workers, the public, and the environment to hazardous materials.

Impact 3.9-3: Implementation of the proposed Project could interfere with emergency response access or with an adopted emergency response or evacuation plan or result in inadequate emergency access.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential for construction activities for restoration projects to physically interfere with emergency response access, interfere with an adopted emergency response plan or evacuation plan, or result in inadequate emergency access. The Final SRGO Program EIR determined that impacts related to emergency response or evacuation plans or to inadequate emergency access would be potentially significant (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-18).

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Board or a regional water board's issuance of a notice of applicability for a project, compliance with *Mitigation Measure HAZ-5: Coordinate with Applicable Federal, State, and Local Agencies and Districts* would be required when applicable to a given project. The Final SRGO Program EIR found this impact to be less than significant with implementation of mitigation measures (see Final SRGO Program EIR: Section 3.10.2, pp. 3.10-18 and 3.10-19).

As discussed in Section 2.3.2, "Construction Access," the proposed Project area would be accessed via County Roads 155 and 107. Both roads are public county roads that terminate at the boundary of the proposed Project area. During construction activities, some work may require crossing County Road 107 to reinstall or reconfigure water control structures, canals, or other irrigation and drainage supply infrastructure, but both roads would remain accessible to the public throughout construction. Heavy equipment entering and exiting the proposed Project area could temporarily disrupt traffic. However, as described in Chapter 2, "Project Description" Section 2.3.2, "Construction Access," while some work may cross CR 107 to reinstall or reconfigure water control structures, canals, or other irrigation and drainage supply infrastructure; roads would remain accessible to the public throughout construction. In addition, the proposed Project area is not located along an emergency response access or evacuation route. Therefore, the proposed Project would not change emergency response times, interfere with adopted emergency response or evacuation plans, or result in inadequate emergency access, and this impact would be ***less than significant***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.10.2, pp. 3.10-17 through 3.10-19). The Final SRGO Program EIR adequately addresses construction impacts of the proposed Project related to interference with emergency response access or with an adopted emergency response or evacuation plan, or to the potential to result in inadequate emergency access.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO. These include impacts related to the potential of constructed facilities (natural and artificial infrastructure) and operations and maintenance of those facilities to interfere with emergency response access or with an adopted emergency response or evacuation plan, or to result in inadequate emergency access. The Final SRGO Program EIR found that routine operations and maintenance of constructed facilities would not be anticipated to interfere with emergency response access or adopted emergency response or evacuation plans. Therefore, impacts were determined to be less than significant (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-19).

Once construction is completed, the restored tidal wetland habitats are expected to be largely self-maintaining after the initial period of vegetation establishment. Post-construction monitoring for the proposed Project would lead to minor maintenance activities. Operational activities would also include ongoing water management practices similar to existing conditions to support waterfowl in the managed wetland areas and rice production in the managed floodplain agriculture areas. Furthermore, the project proponents would comply with all federal, State, and local regulations and policies to help reduce impacts related to emergency response access and adopted emergency response or evacuation plans. This impact would be ***less than significant***.

The effects of the proposed Project's constructed restoration elements and operations, monitoring, and maintenance activities are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-19). The Final SRGO Program EIR adequately addresses post-construction impacts of the proposed Project related to interference with emergency response access or with an adopted emergency response or evacuation plan or to the potential to result in inadequate emergency access.

Impact 3.9-4: Implementation of the proposed Project could create vector habitat that would pose a significant public health hazard.

Effects of Construction Activities, Constructed Restoration Elements, and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO, including potential impacts of construction activities, constructed facilities (natural and artificial infrastructure), and operations and maintenance of those facilities on the creation of vector habitat. Mosquitoes require standing water to complete their growth cycles; any body of standing water that remains undisturbed for multiple days represents a potential mosquito breeding site. Similar to restoration projects analyzed under the Order, the potential for vector-related public health hazards related to mosquitoes could continue during ongoing operations that result in

new areas of standing water for the proposed Project. This impact would be potentially significant (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-20).

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. The Final SRGO Program EIR included *Mitigation Measure HAZ-6: Prepare and Implement a Vector Management Plan* to mitigate any impacts related to vector minimization. The Final SRGO Program EIR found this impact to be less than significant with implementation of the mitigation measure (see Final SRGO Program EIR: Section 3.10.2, p. 3.10-21).

Similar to restoration projects evaluated in the Final SRGO Program EIR, implementation of the proposed Project would alter the hydrology and drainage of the proposed Project area. Although major construction activities would typically be implemented during the dry season (May–October), some construction activities might be required during the wet season (November–April). Construction of the proposed Project would use best management practices to control the stormwater leaving a site (see Impact 3.10-1 in Section 3.10, "Hydrology and Water Quality"). Stagnant water could temporarily occur in construction areas, creating potential mosquito habitat; however, ponded water would likely be infrequent and would be present too temporarily to create mosquito habitat. Furthermore, the proposed Project area is not located adjacent to a populated area.

Constructed restoration elements would occur in the new tidal wetland areas of the proposed Project area. Once the freshwater tidal connectivity is established, freshwater would circulate through the new tidal wetland areas, preventing the formation of areas of stagnant water that could breed mosquitoes. Environmental Science Associates (ESA) has conducted hydraulic analysis to confirm that the new tidal wetland areas would experience tidal exchange similar to the existing tide range in the Toe Drain channel (ESA 2025). This tidal exchange is expected to maintain aerobic conditions within the tidal wetland areas of the site. In addition, as noted above, the proposed Project area is not located adjacent to a populated area. Therefore, the proposed Project would not increase vector habitat compared to baseline conditions on-site, and this impact would be ***less than significant***.

Furthermore, although it is unlikely that SYMVCD would identify the proposed Project as a significant source of mosquitoes, if the district were to identify the proposed Project as such, the project proponent would coordinate with SYMVCD to identify appropriate land management practices for managed wetlands to reduce mosquito populations (SYMVCD 2008).

Because the impact would be less than significant, Mitigation Measure HAZ-6: Prepare and Implement a Vector Management Plan is not applicable to the proposed Project.

Implementation of the proposed Project is consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.10.2, pp. 3.10-20 and 3.10-21). The Final SRGO Program EIR adequately addresses impacts of the proposed Project related to the creation of vector habitat that would pose a significant public health hazard.

3.10 Hydrology and Water Quality

3.10.1 Introduction

This Draft SEIR supplements the previously certified Final SRGO Program EIR and addresses proposed modifications, changed circumstances, and new information not described in that prior environmental document. This section of the Draft SEIR discusses the potential for the proposed Project to result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR related to hydrology and water quality (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-28 through 3.11-40). The environmental setting and evaluation of impacts on hydrology and water quality are based on a review of existing, publicly available literature and data, along with information contained in Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulics Impact Assessment," and Appendix I to this Draft SEIR, "Tide's End Multibenefit Restoration Project Modeling Evaluation of Stage and Water Quality Impacts." Additional information was incorporated that was contained in Appendix F to this Draft SEIR, "Tide's End Multibenefit Restoration Project Phase I Environmental Site Assessment (Phase I Environmental Site Assessment) and the Tide's End Multibenefit Restoration Project Phase II Soil Sampling Investigation (Phase II Soil Sampling Investigation)."

Comments were received in response to the NOP addressing hydrology and water quality. See Appendix B, "Tide's End Multibenefit Project Notice of Preparation and Comment Letters," for NOP comment letters. These comments were considered during preparation of this Draft SEIR.

The impact analysis in this section evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities on hydrology and water quality across the study area. The "study area" for the analysis of proposed Project effects on hydrology and water quality is defined as the San Francisco Bay/Sacramento–San Joaquin Delta (Bay-Delta), the Yolo Bypass, and the proposed Project area. The Bay-Delta is defined as the Sacramento–San Joaquin Delta (Delta) (the "legal boundary" of the Delta) and San Francisco Bay itself, including northern sub-embayments like San Pablo Bay and Suisun Bay. This impact analysis concludes that impacts of the proposed Project on hydrology and water quality in the proposed Project area would be less than significant or less than significant with implementation of general protection measures.

3.10.2 Environmental Setting

This section describes the physical environment related to hydrology and water quality in the study area. The study area for hydrology and water quality is defined by the water bodies that could be affected by implementation of the proposed Project; as mentioned above, these areas consist of the Bay-Delta, the Yolo Bypass, and the proposed Project area. The following sections describe surface hydraulics and hydrology, groundwater hydrology, and water quality in each of these areas.

Surface Hydraulics and Hydrology

The proposed Project area is located in the Sacramento Valley, at the southern end of the Yolo Bypass, which runs parallel to the Sacramento River and drains into the Delta. **Figure 3.10-1** illustrates the existing hydraulic setting that surrounds the proposed Project area. The following sections describe surface hydraulics and hydrology in the Bay-Delta, the Yolo Bypass, and the proposed Project area.

Regional Existing Conditions for Surface Hydraulics and Hydrology—Bay-Delta

The Bay-Delta watershed covers more than 75,000 square miles and extends nearly 500 miles from the Cascade Range in the north to the Tehachapi Mountains in the south and is bounded by the Sierra Nevada to the east and the Coast Ranges to the west. The Bay-Delta watershed consists of several major waterways, including the Sacramento and San Joaquin rivers and their tributaries. These two rivers meet near Sacramento and form an inland delta where the river waters collect. Besides major rivers and the legal Delta, the watershed includes Suisun Bay, San Pablo Bay, San Francisco Bay, and the Golden Gate strait where the entire watershed drains into the Pacific Ocean (EPA 2025a). The proposed Project area is located near the upstream limit of the tidal influence exerted by the Pacific Ocean on the San Francisco Estuary (discussed in more detail below).

The Bay-Delta watershed is characterized by a Mediterranean climate with dry, hot summers and temperate, wet winters. The climate varies across this large area, with precipitation falling mainly between November and April as rain in the lower elevations and snow in the higher elevations.

Existing Conditions for Surface Hydraulics and Hydrology in the Yolo Bypass

The Yolo Bypass is located in the lower Sacramento River basin, within the northern portion of the Delta (see Figure 3.10-1). Virtually all precipitation falls as rain in this area, typically between November and April. Annual rainfall averages 17 inches. During the summer months, daytime temperatures can sometimes exceed 100 degrees Fahrenheit (°F); winter temperatures are milder and rarely drop below 20°F. Average daily maximum temperature is 75.2°F and minimum temperature is 61.8°F (USACE 1992).

The Yolo Bypass was established as the primary flood control mechanism in the Sacramento River Basin and acts as a relief valve for floodwaters in the Sacramento River. Additional land uses within the Yolo Bypass provide multiple benefits including flood protection, agricultural production, and fish and wildlife habitat.

Yolo Bypass hydrology during the winter months[1] is dominated by flood discharges from the Sacramento River at the Fremont Weir and Sacramento Weir, and by inputs from the Knights Landing Outfall Gates and the Westside Tributaries stream group (Cache Creek, Willow Slough, and Putah Creek).

The following subsections describe the existing Sources of surface water that contribute to floodplain inundation, the tidal exchange, the Toe Drain, and Yolo Bypass operations.

[1] Operationally, the "flood season" is defined as the period from November 1 through April 15 (California Code of Regulations Title 23, Section 112, Table 8.1).



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TIDE'S END

DEPARTMENT OF WATER RESOURCES · STATE OF CALIFORNIA

Tide's End Multibenefit Restoration Project

Figure 3.10-1
Hydraulic Setting

Prepared by: ESA

SOURCE: NAIP 2022, Esri, 2025, EIP 2025, ESA 2025

Sources of Surface Water in the Yolo Bypass

The Sources of surface water that contribute to floodplain inundation to the Yolo Bypass are located north and west of the bypass: Fremont Weir, the Knights Landing Outfall Gates, and the Sacramento Weir to the north; and Cache Creek, Willow Slough and the Willow Slough Bypass, and Putah Creek (the "Westside Tributaries") to the west. The Sources of surface water are detailed below, along with the differences in contributions during the winter flood season (November 1–April 15) and outside the flood season.

Fremont Weir

During the winter months, the Fremont Weir (shown on Figure 3.10-1) often provides the most substantial flow input to the Yolo Bypass. To protect downstream urban areas from flooding, the weir diverts up to 80 percent of the combined flow from the Sacramento River, the Sutter Bypass, and the Feather River into the Yolo Bypass (CDFW et al. 2008) when the Sacramento River stage at the Fremont Weir exceeds elevation 32 feet North American Vertical Datum of 1988 (NAVD88) (DWR and Reclamation 2017). The authorized design flow rate of the Fremont Weir is 343,000 cubic feet per second (cfs) (USACE 1957). The weir typically overtops during the winter months but can continue to spill later into the spring, as late as early June (DWR 2010a).

The Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project added operable gates to the Fremont Weir. Once in operation, the gates will enable up to 6,000 cfs of water to flow into a portion of the Yolo Bypass when water surface elevations in the Sacramento River are high enough to allow for fish passage, from late fall to late spring for fish rearing habitat and fish passage purposes.

Knights Landing Outfall Gates

Runoff from the Colusa Basin north of Knights Landing, California, also drains to the Sacramento River, through the Knights Landing Outfall Gates structure north of the Fremont Weir (see Figure 3.10-1). The Knights Landing Outfall Gates are operated to control flows between the Colusa Drainage Area and the Sacramento River, with a design flood conveyance capacity of 20,000 cfs (USACE 1957). During the winter months, the gates are closed to protect agricultural lands from backwater flooding from the Sacramento River. During these winter operations, runoff from the Coast Ranges into the Colusa Drainage Area is routed through the Knights Landing Ridge Cut into the Yolo Bypass. During the irrigation season, the gates are operated to control water levels in the Colusa Basin to support agricultural operations and drainage.

Sacramento Weir

The Sacramento Weir (shown on Figure 3.10-1) also contributes flow to the Yolo Bypass during flood periods. During periods of high flow in the Sacramento and American rivers, DWR may open the Sacramento Weir to divert water away from urban areas and into the Yolo Bypass through the Sacramento Bypass north of the city of West Sacramento. The design capacity of the Sacramento Weir and Sacramento Bypass is 112,000 cfs (USACE 1957).

The U.S. Army Corps of Engineers (USACE) and its non-federal partners, the Central Valley Flood Protection Board (CVFPB) and Sacramento Area Flood Control Agency, are in the process of widening the Sacramento Weir and Bypass by constructing a new passive weir structure extending approximately 1,500 feet upstream from the existing weir (GEI Consultants 2021). The weir widening project is under

construction and is anticipated to be completed in 2027 (USACE 2025). Once completed, flow will be diverted from the Sacramento River when the stage at the expanded weir exceeds elevation 26 feet (NAVD88), increasing the frequency of flows entering the Sacramento Bypass. DWR will continue to operate the gates of original Sacramento Weir based on the existing schedule of operations.

The Sacramento Weir generally is active only during a subset of the periods when the Fremont Weir is active; in contrast with the gravity- and stage-driven Fremont Weir, the Sacramento Weir is active during lower magnitude, shorter duration flow events on the American River and/or Sacramento River (CDFW et al. 2008). Thus, Sacramento Weir inputs into the Yolo Bypass are generally substantial only during periods when the Yolo Bypass is already flooded from other Sources (GEI Consultants 2021). The Sacramento Weir remains closed outside of flood operations periods and does not contribute flow to the Yolo Bypass outside of flood season.

Westside Tributaries

The Yolo Bypass also receives runoff from Cache Creek, Willow Slough, and Putah Creek, which as mentioned previously are referred to collectively as the "Westside Tributaries" (shown on Figure 3.10-1). These three basins collectively drain approximately 2,060 square miles of land west of the Yolo Bypass, with varying authorized design flows (**Table 3.10-1**). Although flow contributions from these tributaries during the flood season can be significant, reservoirs do regulate flood control operations. For example, 90 percent of the Putah Creek watershed is regulated by Monticello Dam, which was completed in 1957 (USACE 1995). Monticello Dam reduces the 100-year peak flow in Putah Creek by more than 70 percent. Outside of the flood season, discharge in the Yolo Bypass is strongly dependent on the relatively low baseflows originating from the Westside Tributaries and agricultural return flows. Inflows from these western basins are generally smaller than overflows received from the Sacramento River, but they are often the greatest source of fresh water to the bypass during dry years in the Sacramento River watershed and during the fall months (Schemel et al. 2002).

TABLE 3.10-1
FLOOD-CARRYING CAPACITY OF THE WESTSIDE TRIBUTARIES

Westside Tributary Name	Drainage Area (square miles)	Authorized Design Flow (cfs)
Cache Creek	1,150	30,000
Willow Slough	200	6,000
Putah Creek	710	62,000

Note: cfs = cubic feet per second
Sources: USACE 1957, 1994

Sedimentation in the Yolo Bypass

Historically, the Yolo Bypass has experienced sedimentation. Sediment budgets previously developed by USACE have estimated that over the long term, approximately 580,000 tons and 150,000 tons of sediment per year are discharged over the Fremont Weir and Sacramento Weir, respectively (USACE 1981). Of the approximately 730,000 tons of sediment discharged over the two weirs annually, approximately 429,000 tons are deposited in the Yolo Bypass (USACE 1992). Historically, both Cache Creek and Putah Creek contributed large volumes of sediment to the Yolo Basin. However, sediment

delivery to the Yolo Bypass from these watersheds has been substantially reduced as a result of regulation by upstream reservoirs and the Cache Creek Settling Basin.

Several dams in the Sacramento River Basin were constructed during the period of record that the USACE reports covered and may be decreasing the sedimentation into the Yolo Bypass. DWR is responsible for removing sediment downstream of the Fremont Weir in the Yolo Bypass to ensure that the flood conveyance capacity of the Yolo Bypass is not impeded and has conducted several sediment removal projects since the weir and bypass were constructed. DWR's maintenance records indicate that a total of 3,881,372 cubic yards were removed from the area just downstream of the Fremont Weir between 1986 and 2006 (G. Qualley, pers. comm., 2025), indicating that sediment deposition in the Yolo Bypass has decreased through time.

Tidal Exchange in the Yolo Bypass

Outside of the flood season, the hydrology in the lower part of the Yolo Bypass is governed primarily by tidal exchange, owing to its connection to the Cache Slough Complex to the south via the Toe Drain (shown on Figure 3.10-1). During the winter and spring months, flood flows often diminish or eliminate tidal influence on water levels in this part of the Yolo Bypass.

Toe Drain in the Yolo Bypass

The tidally influenced Toe Drain is the primary conveyance facility for drainage and irrigation water in the lower Yolo Bypass (see Figure 3.10-1). The Toe Drain is the southern continuation of the Tule Canal. The Toe Drain receives water from the Westside Tributaries and agricultural diversions (Reclamation and DWR 2019) and wastewater effluent discharges from the University of California, Davis, campus and the cities of Davis and Woodland (City of Woodland 2005). The Toe Drain is connected to the Delta and the estuary downstream via Prospect Slough and Cache Slough, the latter of which is the source of tidal influence within the Toe Drain. When the Toe Drain's conveyance capacity reached, water spills out of the Toe Drain, inundating lands to the west.

Yolo Bypass Operations

The frequency, timing, extent, and duration of flood inundation within the Yolo Bypass depend on regional weather and climate, along with upstream reservoir storage and operations. Flood inundation in the Yolo Bypass can last for as short a period as 5 days and as long as 4 months (Opperman et al. 2017; Yolo Bypass Working Group et al. 2001). Between 1939 and 2011, a high-flow event in the Yolo Bypass (i.e., inflows greater than 6,000 cfs and lasting for at least 1–2 days) occurred in about 70 percent of years (Reclamation and DWR 2019). During these high-flow events, flows in the Toe Drain exceeded its capacity, causing it to spill out of bank and onto the adjacent floodplain. Once flows in the Yolo Bypass begin to recede, floodwaters flow back to the Toe Drain through a system of local agricultural drains. When the Yolo Bypass floods, many of the agricultural fields and managed wetlands flood. These surfaces drain overland by gravity through agricultural checks and water control structures before reaching the agricultural drainage network that flows to the Toe Drain.

Outside the flood season, discharge within the Yolo Bypass is strongly dependent on the relatively low baseflows originating from the Knights Landing Ridge Cut, the Westside Tributaries, local agricultural return flows, and effluent discharge from urbanized communities upstream. During this time, irrigation water is managed using ditches, canals, check dams/structures, culverts, and pumps.

Existing Conditions for Surface Hydraulics and Hydrology in the Proposed Project Area

As described in Chapter 2, "Project Description", the proposed Project area is defined by a 2,212-acre property within the Yolo Bypass that is currently operated as agricultural lands (floodplain and annual grassland) and recreational waterfowl hunting (managed wetlands, floodplain habitat, and annual grassland). The proposed Project area consists of all or portions of the following six properties: Capitol Oil, Laurel G, Yolo Basin, Lucky Five South, Kleary, and Williams (see Figure 2-2 in Chapter 2). Annual total precipitation for the city of Davis, the nearest city to the proposed Project area, is 18.7 inches, with most precipitation falling as rain between November and April (NOAA 2025).

The primary features that receive and deliver water to the proposed Project area include the Toe Drain, which forms the eastern boundary of the proposed Project area (see Figure 3.10-1), and the irrigation and drainage system that is used to manage water across the proposed Project area. The Toe Drain is tidally influenced in the proposed Project area, with average tidal fluctuations ranging from 2.4 feet Mean Lower Low Water (MLLW) to 6.2 feet Mean Higher High Water (MHHW) NAVD88.

Currently, water in the proposed Project area is managed for both agriculture and managed wetlands for waterfowl (i.e., constructed wetlands operated for a duck club) via an irrigation and drainage system that includes ditches, canals, check dams/structures, culverts, and pumps. The agricultural activities and wetlands are contained within berms that are able to retain water and impede rapid runoff during high-flow events. A series of pumps diverts water directly from the Toe Drain to irrigation ditches or diverts water from the intake canals connected to the Toe Drain. The intake canals are managed with open and gated channels and culverts to receive and hold water from the Toe Drain.

The proposed Project area also receives and routes drainage from properties to the west and north, which combines with agricultural runoff from the proposed Project area and ultimately flows back to the Toe Drain through culverts and drainage swales. Depending on the season, the irrigation and drainage system may be operated to drain the site or to supply irrigation water. Neighboring agricultural drains and canals and drains and canals within the proposed Project area are disconnected from the tidal exchange of the Toe Drain in the Yolo Bypass. Flap gates are used to manage tidal water for use on the site, essentially allowing the irrigation system to fill on high tide, while retaining water on the low tide. Portions of the current irrigation and drainage system effectively act as a series of blind channels during periods when tidal water levels prevent the system's flap gates from opening and draining the proposed Project area, such as during high tides or during flood events. These blind channels are therefore vulnerable to sediment deposition. As a result, the capacity of these agricultural channels has been reduced over time, necessitating ongoing periodic maintenance (e.g., excavation).

See Appendix D, "Tide's End Multibenefit Restoration Project Land Use Constraints Analysis," and Appendix K, "Tide's End Multibenefit Restoration Project Inventory of Existing Water Conveyance and Distribution Infrastructure Report," for additional information regarding baseline conditions.

Managed wetlands are typically flooded in the fall until drawdown occurs during the spring. Once the wetlands have been drained, vegetation management and other maintenance activities are performed. After the winter flood season, and as early as March, agricultural fields are leveled and prepped with

fertilizer. The fields are then planted and flooded before planting, preferably in April. In late August, the fields are drained and dried, and by September they are ready for harvest.

As discussed previously under "Yolo Bypass Operations," during high-flow events, the Toe Drain spills out of bank and onto adjacent floodplains both upstream of the proposed Project area and in the proposed Project area itself. Once flows recede, floodwaters in the proposed Project area flow back to the Toe Drain through the irrigation and drainage system.

Table 3.10-2 summarizes peak-flow events by return period at the latitude of the proposed Project area, as previously determined for the neighboring Lookout Slough Tidal Habitat Restoration and Flood Improvement Project (Lookout Slough) (ESA 2020), as well as the 1957 authorized design flow for this reach of the Yolo Bypass (USACE 1957). The information shown in this table is based on the methods, data, and tools originally developed for the Central Valley Hydrology Study completed in 2013 by USACE and DWR, which uses historic storm patterns, scaled to correspond to statistically determined return period flows.

TABLE 3.10-2
FLOOD FLOWS IN THE YOLO BYPASS AT THE LATITUDE OF THE TIDE'S END MULTIBENEFIT RESTORATION PROJECT AREA

ACE	Frequency	Flow (cfs)[1]
16%	6-year	209,286
1%	100-year	495,726
0.5%	200-year	549,137
Authorized Design Flow		490,000

Notes: ACE = annual chance of exceedance; cfs = cubic feet per second

1. Location is the west side of the Yolo Bypass downstream of Interstate 80; for additional details, see the *Hydrologic and Hydraulic System Analysis—Lookout Slough Tidal Habitat Restoration and Flood Improvement Project* (ESA 2020).

Sources: ESA 2020; USACE 1957

Groundwater Hydrology

This section describes groundwater hydrology in the study area. **Figure 3.10-2** illustrates the groundwater basins underlying the proposed Project area and vicinity. The descriptions of groundwater hydrology for the Bay-Delta and the Yolo Bypass are intentionally general to provide context for the more focused discussion of groundwater hydrology in the proposed Project area.



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TIDE'S END

Tide's End Multibenefit Restoration Project

Figure 3.10-2
Groundwater Setting

Prepared by: ESA

SOURCE: NAIP 2022, Esri, 2025, EIP 2025, ESA 2025

Regional Existing Conditions for Groundwater Hydrology—Bay-Delta

Numerous groundwater basins underlie the Bay-Delta watershed, including the Sacramento Valley (DWR Basin 5-021) and San Joaquin Valley (DWR Basin 5-022) groundwater basins(DWR 2010b). Throughout the Bay-Delta, extensive hydraulic interaction occurs between surface water and groundwater systems. Spring runoff generated by melting snow in the Sierra Nevada increases flows in the Sacramento and San Joaquin rivers and tributaries and causes shallow groundwater levels near the rivers to rise. Because this area is a large floodplain, changes in river stages affect groundwater levels and vice versa. This hydraulic connection is also evident when the tide is high and ocean water flows into the Bay-Delta, thereby increasing groundwater levels nearby. Groundwater quality can be degraded by saltwater intrusion in the underlying aquifer from the ocean tidal flows (DWR 2010b).

Existing Conditions for Groundwater Hydrology in the Yolo Bypass

The Yolo Bypass lies within the Sacramento Valley Groundwater Basin, specifically the Yolo Subbasin (DWR Basin 5.21-67) (DWR 2004a) and Solano Subbasin (DWR Basin 5.21-66) (DWR 2004b) (Figure 3.10-2). The Sacramento Valley Groundwater Basin is a north-northwest–trending asymmetrical trough filled with both marine and continental rocks and sediment. On the eastern side, the basin overlies basement rock that rises relatively gently to the Sierra Nevada, while on the western side, the underlying basement rock rises more steeply to form the Coast Ranges. Overlying the basement rock are marine sandstone, shale, and conglomerate rocks, which generally contain brackish or saline water (DWR 1978). The freshwater-bearing formation in the valley consists of sedimentary and volcanic rocks that can absorb, transmit, and yield fresh water. The depth below ground surface to the base of fresh water is approximately 1,600 feet in the southern portion of the Sacramento Valley (DWR 1978) but shallower toward the edges of the valley. The Yolo and Solano subbasins are in the western portion of the Sacramento Valley Groundwater Basin (DWR 2020a, 2020b).

Groundwater in the Yolo Bypass is recharged by percolation from rainfall infiltration, connectivity of shallow groundwater with perennial and ephemeral streambeds, lateral inflow along the basin boundaries, and other surface processes such as irrigation and managed aquifer recharge. Discharges from groundwater consist primarily of evapotranspiration, discharge to streams, pumping, or other surface features such as marshes. Depending on groundwater and stream levels, portions of the same stream system may be gaining while other portions are losing.[2] The gaining/losing condition can also change at different times of the year based on changes in the groundwater level, the surface water level, or both.

When the Yolo Bypass is in flood operations, water levels in the Sacramento River and the bypass are higher than the groundwater level under and adjacent to the bypass, contributing to a “losing” condition. Under a “losing” condition, the water that exits the surface water feature (i.e., river, bypass) will recharge the shallow groundwater system, potentially resulting in an increase in shallow groundwater levels. Under the reverse condition, a “gaining” condition, the shallow groundwater level may be reduced, or at least may not increase as much, as water drains from the shallow groundwater to the surface water feature.

[2] In a “losing” stream condition, the stream’s water elevation is higher than the groundwater elevation under and adjacent to the stream. In this condition, water flows through the riverbed, out of the stream, and into the groundwater system (i.e., the water is “lost” from the surface water). In a “gaining” system, the water elevation in the surface water is lower than the adjacent groundwater elevation. Under this condition, water flows from the groundwater into the surface water system (i.e., the water is “gained” by the stream).

Existing Conditions for Groundwater Hydrology in the Vicinity of the Proposed Project Area

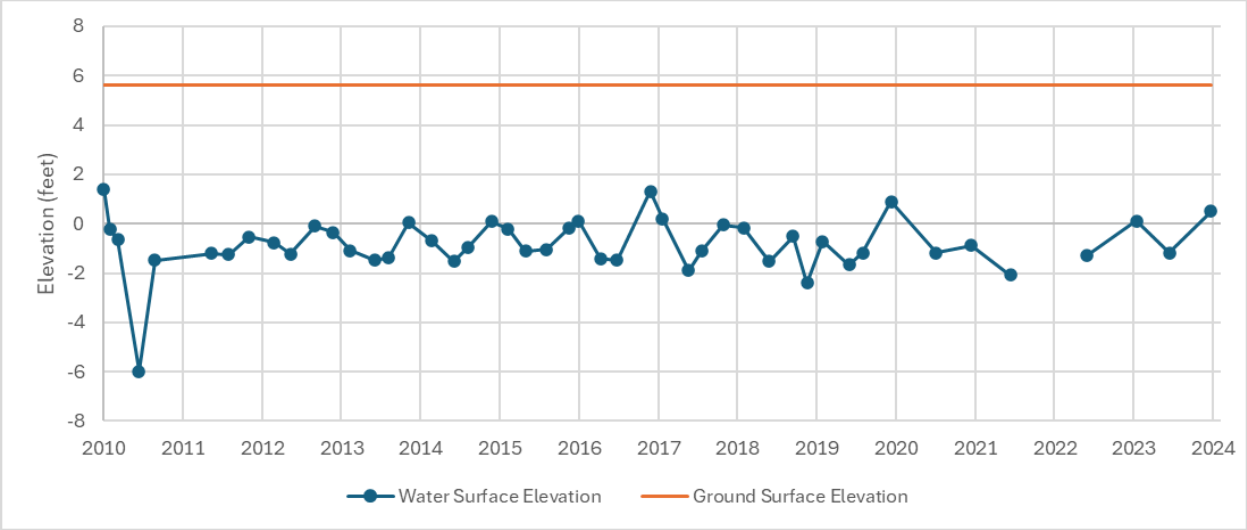
The proposed Project area is located in the Yolo Subbasin (DWR Basin 5.21-67) (DWR 2004a), in the southern portion of the Sacramento Valley. The Yolo Subbasin is bounded on the east by the Sacramento River, on the west by the Coast Ranges, on the north by Cache Creek, and on the south by Putah Creek (DWR 2004a).

Land use designations within the Yolo Subbasin are primarily agriculture and native vegetation, accounting for approximately 60 percent and 31 percent, respectively. Approximately 6 percent of the Yolo Subbasin contains managed wetlands, which provide migratory bird habitat and other ecosystem services. The source of water for agricultural lands is a combination of surface water and groundwater. Urban and incorporated land use areas are scattered throughout the subbasin and account for approximately 5 percent of the subbasin (GEI Consultants 2022). The existing duck clubhouse in the proposed Project area is served by a groundwater well that provides water for domestic water (potable) uses.

Groundwater levels in the proposed Project area vary annually as a result of rainfall, river levels, temperature, and irrigation practices (groundwater pumping in the area). Depths to groundwater also fluctuate seasonally due to recharge by precipitation (higher levels) during the late fall, winter, and early spring (the wet months), and groundwater elevations decrease during the late spring, summer, and early fall (the dry months) because of the paucity of recharge and the use of groundwater during the irrigation season (GEI Consultants 2022). Depths to groundwater also fluctuate as a result of variations between water year types (GEI Consultants 2022).

Groundwater has not been measured within the proposed Project area. However, groundwater observations have been made in the vicinity and serve as an indication of seasonal and interannual groundwater conditions in the vicinity of the proposed Project. **Figure 3.10-3** illustrates groundwater levels in a nearby observation well (well depth is approximately 26 feet below groundwater surface) managed by the Water Resources Association of Yolo County, located approximately 3 miles southeast of the proposed Project area (DWR 2025). The location of the well is included in Figure 3.10-2. According to these data, groundwater depth generally ranges from approximately 6 to 8 feet below ground surface.

The Yolo Subbasin was designated by DWR as high priority under the Sustainable Groundwater Management Act (SGMA), discussed further in Section 3.10.3, “Regulatory Setting.” Briefly, the SGMA requires local agencies to form groundwater sustainability agencies (GSAs) for high- and medium-priority basins and for those GSAs to develop and implement groundwater sustainability plans (GSPs) to avoid undesirable results and mitigate overdraft within 20 years. The Yolo Subbasin Groundwater Authority is recognized as the GSA for the Yolo Subbasin and is responsible for implementing the Yolo Subbasin GSP, which was adopted January 24, 2022 (GEI Consultants 2022).



State Well Number: 06N03E12G500M; Site Code: 383821N1215928W002
Source: DWR 2025

Figure 3.10-3
Groundwater Well Levels at an Observation Well near the Proposed Project Area

Water Quality

Water quality in the proposed Project area is best understood within the context and relative influences of the Yolo Bypass and the Delta. The proposed Project area's water quality is also affected by land and water management activities performed on-site, and by activities occurring on adjacent and upstream properties. Therefore, this section describes existing water quality conditions collectively for the Bay-Delta, the Yolo Bypass, and the proposed Project area, which together are defined as the "Water Quality Study Area." When appropriate, existing water quality conditions in the Bay-Delta, Yolo Bypass, and the proposed Project area are described separately. "Delta" as used in this section refers to the Sacramento–San Joaquin Delta portion of the Bay-Delta.

Existing Conditions for Surface Water Quality in the Water Quality Study Area

Surface water quality in water bodies within the Water Quality Study Area is influenced by precipitation, discharge of human-made constituents, and several naturally occurring constituents, such as salinity and nutrients (including organic carbon) that are necessary components of the ecosystem and can vary with natural hydrology and tidal cycles. Human-made constituents of concern, such as pathogens and contaminants, result from point-source and nonpoint-source discharges and legacy contamination in the Water Quality Study Area. The magnitude of the effect of each factor on water quality in the water bodies within the Water Quality Study Area can differ for different constituents and conditions (e.g., hydrologic and climatic) during different times of a given year and across years. Examples of point and nonpoint Sources of pollutants to surface waters in the Water Quality Study Area are described below.

- *Drainage discharged from inactive and abandoned mines* can contribute metals, such as mercury, cadmium, copper, and zinc.
- *Stormwater runoff* can contribute metals, sediment, pathogens, organic carbon, nutrients, pesticides, dissolved solids (i.e., salts), petroleum products, oil and grease, and other chemical residues.

- *Discharges from wastewater treatment plants* can contribute salts, metals, trace elements, nutrients, pathogens, organic carbon, and pesticides.
- *Agricultural irrigation return flows and nonpoint-source discharges* can contribute salts, organic carbon, methylmercury, nutrients, pesticides, pathogens, and sediment.
- *Direct application of herbicides and insecticides* for aquatic plants and mosquito control can contribute organic chemicals.
- *Water-based recreational activities (e.g., boating)* can contribute hydrocarbon compounds, nutrients, and pathogens.
- *Atmospheric deposition* can contribute metals, pesticides, and synthetic organic chemicals and may lower pH via precipitation.

Surface water quality in the Water Quality Study Area is principally influenced by inputs from the Yolo Bypass and Delta; each region differs in terms of its water quality conditions and constituents of concern. Yolo Bypass water quality itself is influenced by the various water Sources that collectively make up the bypass's hydrologic regime and the temporally and spatially varying chemistry and hydrodynamics of these Sources. Water quality from the Sources described in the "Surface Hydraulics and Hydrology" section above that contribute to the Yolo Bypass's hydrologic regime is influenced by land use patterns and management and other seasonal activities in the Sources' watersheds. Such activities include farming, grazing, managing wetlands for wildlife habitat and duck hunting, and preserves. Broadly, these land uses contribute organic materials that play a role with biological and chemical oxygen demand, and they contribute to several of the water quality contaminants known to commonly be found in the Yolo Bypass such as herbicides, insecticides, fungicides, nutrients, bacteria, sediment, and metals (CDFG 2008).

Water quality in the Bay-Delta is highly variable and heavily influenced by inflows from rivers and by seawater intrusion into the western and central portions of the Delta during periods of low outflow. Delta water quality parameters can show considerable geographic and seasonal variation. Salinity, bromide concentrations, total organic carbon (TOC), and temperature conditions are directly influenced by Delta inflows and outflows (State Water Board 2006).

Storage and instream flow releases from Central Valley Project (CVP) and State Water Project (SWP) reservoirs (e.g., Folsom, Shasta, Trinity, Oroville) are an important component of Delta water quality management, particularly for salinity control in the late summer and fall when natural runoff and Delta inflow have decreased. Reduced Delta inflows can increase the amount of seawater intrusion and increase the water quality influence of organic-rich agricultural runoff in Delta channels. Water quality constituents of particular concern in the Delta include salt intrusion, turbidity, temperature, nutrients, and mercury (Regional Water Board 2019; State Water Board 2018). The concentrations of these materials in the Delta are affected by river inflows, tidal flows, agricultural diversions, drainage flows, wastewater discharges, water exports, cooling water intakes and discharges, and groundwater connectivity.

Similar to the Bay-Delta and Yolo Bypass, water quality in the proposed Project area varies seasonally with the relative influence of source water from the surrounding Yolo Bypass, Toe Drain, and Delta via the Cache Slough Complex to the south. The Toe Drain is the primary source of water that is directly applied within the proposed Project area and is the source of water that most frequently inundates the proposed Project area during activation of the Yolo Bypass. (Less frequent Yolo Bypass flooding

contributes greater volumes of water to the proposed Project area than more frequent, lower volume flood inundation from the Toe Drain.)

Although the Toe Drain is tidally influenced, it is currently disconnected from the proposed Project area except during periods when the Toe Drain's conveyance capacity is exceeded, and mixtures of tidal and Yolo Bypass flows influence the proposed Project area's water quality. Notably, tidal influence is diminished or eliminated during the winter and spring months when the bypass is flooded. Outside of the non-flood season, existing water management and land use practices influence biogeochemical processes that also affect the proposed Project area's water quality.

No site-specific water quality data are available; however, shallowly flooded, vegetated, low-velocity systems like managed wetlands and rice fields, common to the Yolo Bypass, have been known to result in increased water temperatures, lower levels of dissolved oxygen (DO), higher dissolved organic carbon (DOC)/TOC levels, and potentially higher concentrations of methylmercury (discussed in detail below) (Bachand et al. 2011). During flood periods, however, the site is inundated by water moving down the Yolo Bypass, which consists of water from many Sources, thus changing the water chemistry within the proposed Project area.

The rest of this section provides greater detail on the Water Quality Study Area, focusing on water bodies and water quality constituents that could be affected by implementation of the proposed Project. Water quality conditions are initially described relative to criteria established by federal and State laws and regulations that protect identified beneficial uses; subsequent sections describe existing water quality conditions within the Water Quality Study Area, including the primary factors that affect existing water quality, beneficial uses, and water quality impairments. Where available, data describing general water quality parameters are presented.

Beneficial Uses

From a water quality perspective, Delta waterways, including the Yolo Bypass and the proposed Project area, fall under the jurisdiction of the State Water Board, the Central Valley Regional Water Board, and the San Francisco Bay Regional Water Board (see Section 3.10.3, "Regulatory Setting," for more details). The primary water quality control plan for the proposed Project area is *The Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region: the Sacramento River Basin and the San Joaquin River Basin* (Basin Plan) (Regional Water Board 2019). In 2018, the State Water Board approved an update to the *Water Quality Control Plan for the San Francisco Bay/ Sacramento–San Joaquin Delta Estuary* (Bay-Delta Basin Plan) and flow objectives for priority tributaries to the Delta to protect beneficial uses in the Bay-Delta watershed. Both basin plans identify beneficial uses of water, adopt water quality objectives to protect the beneficial uses, and develop implementation programs for achieving the objectives.

Table 3.10-3 summarizes the beneficial uses for relevant water bodies in the Water Quality Study Area identified in these plans.

TABLE 3.10-3
BENEFICIAL USES OF WATER BODIES IN THE WATER QUALITY STUDY AREA

Designated Beneficial Use	Yolo Bypass	Sacramento–San Joaquín Delta[a]
Municipal and Domestic Supply (MUN)	–	X
Agricultural Supply Irrigation (AGR)	X	X
Agricultural Supply Stock Water (AGR)	X	X
Industrial Process Supply (PRO)	–	X
Industrial Service Supply (IND)	–	X
Hydropower Generation (POW)	–	–
Water Contact Recreation (REC-1)	X	X
Water Contact Recreation Canoeing and Rafting (REC-1)	–	–
Non-Contact Water Recreation (REC-2)	X	X
Warm Freshwater Habitat (WARM)	X	X
Cold Freshwater Habitat (COLD)	P	X
Warm Migration of Aquatic Organisms (MIGR-WARM)	X	X
Cold Migration of Aquatic Organisms (MIGR-COLD)	X	X
Warm Spawning, Reproduction, and/or Early Development (SPWN-WARM)	X	X
Cold Spawning, Reproduction, and/or Early Development (SPWN-COLD)	–	–
Wildlife Habitat (WILD)	X	X
Navigation (NAV)	–	X
Preservation of Biological Habitats of Special Significance (BIOL)	–	N/A
Rare, Threatened, or Endangered Species (RARE)	–	X
Commercial and Sport Fishing (COMM)	–	X
Estuarine Habitat (EST)	–	X
Freshwater Replenishment (FRSH)	–	–
Groundwater Recharge (GWR)	–	X
Marine Habitat (MAR)	–	X
Shellfish Harvesting (SHELL)	–	X

Notes: X = existing beneficial use; P = potential beneficial use; -- = not designated; N/A = not applicable.
a. Uses aggregated from the two relevant water quality control plans.
Sources: Regional Water Board 2019; State Water Board 2018

Impaired Water Bodies

In accordance with Section 303(d) of the Clean Water Act (CWA), the regional water boards periodically review water quality conditions and determine whether the conditions are impairing beneficial uses of each water body (see Section 3.10.3, "Regulatory Setting," for more details).

Several water bodies in the Water Quality Study Area are identified on the most recent Section 303(d) list of impaired water bodies (State Water Board 2021). **Table 3.10-4** identifies impaired water bodies in the Water Quality Study Area that are listed under CWA Section 303(d). The table also provides information

about the constituents that contribute to these water bodies' impaired water quality and the total maximum daily loads (TMDLs) that have been or are being developed to protect their beneficial uses.

TABLE 3.10-4
303(D) LIST OF IMPAIRED WATER BODIES IN THE WATER QUALITY STUDY AREA

Water Body	Constituent	Potential Source	Proposed TMDL Completion Year[a]	EPA TMDL Approved Year
Delta Waterways (northern portion)	Chlordane	Source Unknown	2029	
	Chlorpyrifos	Source Unknown		2007
	DDT	Source Unknown	2011	
	Diazinon	Source Unknown		2007
	Dieldrin	Source Unknown	2011	
	Group A Pesticides	Source Unknown	2011	
	Invasive Species	Source Unknown	2019	
	PCBs	Source Unknown	2019	
	Mercury	Agricultural Return Flows, Atmospheric Deposition, Highway/Road/Bridge Runoff, Industrial Point Sources, Municipal Point Sources, Natural Sources, Resource Extraction, Urban Runoff/Storm Sewers		2011
	Toxicity	Source Unknown	2027	
Delta Waterways (eastern portion)	Chlorpyrifos	Source Unknown		2007
	DDT	Source Unknown	2011	
	Diazinon	Source Unknown		2007
	Group A Pesticides	Source Unknown	2027	
	Invasive Species	Source Unknown	2019	
	Mercury	Agricultural Return Flows, Atmospheric Deposition, Highway/Road/Bridge Runoff, Industrial Point Sources, Municipal Point Sources, Natural Sources, Resource Extraction, Urban Runoff/Storm Sewers		2011
	Unknown toxicity	Source Unknown	2019	
Cache Creek, Lower	Boron	Source Unknown	2021	
	Mercury	Resource Extraction		2007
	Toxicity	Source Unknown	2019	
Knights Landing Ridge Cut (Yolo County)	Dissolved Oxygen	Source Unknown	2021	
	Salinity	Source Unknown	2021	
Putah Creek	Mercury	Resource Extraction/Source Unknown	2017	
Sacramento River (Knights Landing Ridge Cut to the Delta)	Chlordane	Source Unknown	2021	
	DDT	Source Unknown	2027	
	Dieldrin	Source Unknown	2022	
	Mercury	Source Unknown	2012	
	PCBs	Source Unknown	2021	
	Toxicity	Source Unknown	2027	

Water Body	Constituent	Potential Source	Proposed TMDL Completion Year[a]	EPA TMDL Approved Year
Tule Canal	Boron	Source Unknown	2021	
	Indicator Bacteria	Source Unknown	2021	
	Salinity	Source Unknown	2021	
Willow Slough	Boron	Source Unknown	2021	
	Toxicity	Source Unknown	2027	
Willow Slough Bypass	Boron	Source Unknown	2021	
	Chlorpyrifos	Agriculture		
	Diuron	Agriculture		
	Indicator Bacteria	Source Unknown	2027	
	Malathion	Agriculture		
	Selenium	Source Unknown	2027	
	Specific Conductivity	Source Unknown	2027	
	Toxicity	Source Unknown	2027	

Notes: DDT = dichlorodiphenyltrichloroethane; Delta = Sacramento–San Joaquin Delta; EPA = U.S. Environmental Protection Agency; PCB = polychlorinated biphenyl; TMDL = total maximum daily load

a. All proposed TMDLs are still pending even if the date has passed.

Source: State Water Board 2021

Primary Surface Water Quality Constituents

Based on regional water quality conditions, known water quality constituents of concern (as discussed in the sections above), and environmental review of similarly situated tidal wetland and floodplain restoration projects (DWR 2020b; State & Federal Contractors Water Agency 2013; Reclamation and DWR 2019), the water quality constituents most likely to be directly affected by the proposed Project in the Water Quality Study Area are salinity, bromide, turbidity, DOC, methylmercury, organic chemicals, boron, water temperature, DO, and harmful algal blooms (HABs).

The following sections are organized by water quality constituents (e.g., salinity, bromide). For each constituent, existing conditions for the Water Quality Study Area are described first for the Delta and Yolo Bypass individually, then for the proposed Project area.

Salinity

Existing Conditions for Salinity in the Delta and Yolo Bypass

The Delta is part of the San Francisco Estuary, a tidal system that is influenced by salt from the Pacific Ocean, which is conveyed through San Francisco Bay and into the Delta because of the continuous tidal exchange (CDFG 2008). As mentioned above, several major waterways, including the Sacramento and San Joaquin rivers and their tributaries, and the Yolo Bypass, flow into the Delta. Flows into the Delta are managed via upstream reservoir releases, export pumping, and built-channel control structures (e.g., the Delta Cross Channel), in part to meet various water quality objectives, including salinity. Diverters of water from the Delta—which include but is not limited to, the SWP, the CVP, Contra Costa Water District, and local agricultural users—depend on freshwater flows from the Sacramento River and San Joaquin River to control the extent of saltwater intrusion into the Delta. More broadly, Delta salinity

levels are important to various Delta users—municipal, industrial, and agricultural—and to fish and wildlife (CDFG 2008).

Regional salinity dynamics in the Yolo Bypass and Delta are influenced by proximity to the estuary and water-management activities of the reservoirs on Central Valley rivers. Seasonally, salinity increases during periods of low watershed runoff from Central Valley rivers, generally during late summer and fall when precipitation is scarce, and reservoir releases are managed to prioritize water storage. Thus, the highest levels of salinity in the ambient waters tend to occur during late summer and fall. On the annual timescale, during drier years, when less water is stored in reservoirs, there is also less water available for water managers to release from reservoirs as freshwater inflow to the Delta. Therefore, estuary-derived salinity extends farther upstream into the Yolo Bypass and Delta in the late summer and fall after drier winters (Delta Stewardship Council 2022a). Sources of salinity in Yolo Bypass include agricultural drainage water, wastewater discharge, and tidal mixing with estuary waters via the Toe Drain (Regional Water Board 2006).

Regional salinity dynamics are also affected by changes in the land area inundated by tides, which therein affect the volume of water entering and exiting an estuary during a tidal cycle (a volume termed the "tidal prism"). Modifications to the tidal prism of the Delta can modify the hydrodynamics and salinity dynamics of the system. For example, the Delta's aging levee system can fail and subsided lands to flood, as has happened at Franks Tract and Liberty Island. Once flooded, these areas increase the Delta's tidal prism, and depending on their location, they may mix saline water from down-estuary farther into the Delta (Delta Stewardship Council 2022a). Although a larger tidal prism can lead to better flushing of an estuary, potentially reducing salinity, reduced freshwater flow can cause increased salinity intrusion. Thus, the effects of tidal prism changes are not universal and depend on many dynamic local factors.

A major regulatory factor associated with Delta salinity management perspective was the State Water Board's adoption of Water Right Decision 1641 (D-1641). D-1641 includes water circulation controls and potential methods to meet salinity objectives in the Southern Delta. D-1641 considered activities from various stakeholders and an array of factors affecting salinity in the Southern Delta in identifying flow objectives and allocating responsibility for meeting water quality requirements. To protect beneficial uses, D-1641 contains flow and water quality objectives that must be measured at various compliance monitoring stations through the Delta (see Section 3.10.3, "Regulatory Setting," for more details).

Also of particular interest to Delta water quality is the location of the transition between saline waters and fresh water, frequently referred to as the "low-salinity zone" (LSZ). This zone is historically associated with higher primary productivity, zooplankton populations, and abundances of native estuarine species. Under high-outflow conditions, the LSZ overlaps the Suisun Region (located in the Delta southwest of the proposed Project area), but under low-outflow conditions it shifts upstream, overlapping the river confluence of the Sacramento and San Joaquin Rivers (south of the proposed Project area) (Reclamation 2012). In the western Delta, changes in the LSZ location are indexed by the position of "X2," which is defined as the distance upstream (in kilometers [km]) from the Golden Gate Bridge where tidally averaged salinity is equal to 2 parts per thousand (ppt), marking a transition to mostly fresh water (Jassby et al. 1995). Aquatic organisms have different salinity tolerances and preferences; therefore, changes in the position of the LSZ and X2 are commonly used to characterize potential changes in species distribution and other ecological responses (Delta Stewardship Council 2022b).

Between 1997 and 2023, the daily position of X2 averaged approximately 75 km inland from the Golden Gate (DWR 2023). However, when tides are stronger and/or downstream flows are weaker, X2 has historically extended as far inland as Rio Vista (Contra Costa Water District 2010). When X2 is farther inland, the LSZ is generally smaller as a result of the constriction at the confluence of the Sacramento and San Joaquin River channels. When X2 is more seaward, the LSZ is larger because it can spread out over more of the Suisun Bay and Marsh region. When X2 is lower in distance—hence, more seaward—the populations of many aquatic species, such as fish, typically increase in abundance (Brown et al. 2014). Because X2 is an indicator of the extent of saltwater intrusion, it is also used to indicate changes to salinity concentrations within the Delta (Jassby et al. 1995). D-1641 requires that the location of X2 be west of certain specific locations for a specified number of days each month (specifically, Collinsville, Chipps Island, and Port Chicago at 81 km, 75 km, and 64 km, respectively, from the Golden Gate) (see Section 3.10.3, "Regulatory Setting," for more information).

Existing Conditions for Salinity in the Vicinity of the Proposed Project Area

As discussed in the section above, the proposed Project area is currently disconnected from Delta tidal exchange except for periods when the Toe Drain's conveyance capacity is exceeded and mixtures of tidal flows and fresh water influence the proposed Project area's water quality. Any tidal exchange is further diminished or eliminated during the winter and spring months when the Yolo Bypass is flooded. Although no direct salinity observations are available for the proposed Project area, observations from a nearby site were reviewed to estimate existing salinity concentrations. Continuous monitoring by the U.S. Geological Survey (USGS) at the Toe Drain at Liberty Island near Courtland gage (#11455140), located approximately 1.7 miles downstream of the proposed Project area, found the average salinity concentration from 2017 to 2025 to be 0.2 ppt. Current land uses on the proposed Project area have the potential to contribute to the salt concentrations of on- and off-site water bodies through erosion of on-site salt-bearing soil and sediments, through interception or conveyance of off-site surface runoff with dissolved salts, and/or through conveyance of on- and off-site agricultural return flows with dissolved salts.

Bromide

Existing Conditions for Bromide in the Delta and Yolo Bypass

Bromide levels in the Delta and Yolo Bypass are directly related to salinity. Seawater is typically the primary source of bromide in the region and concentrations vary primarily because of changes in seawater fraction (e.g., bromide is typically less than 0.2 percent for ocean salinity [State Water Board 2023]). In the North Delta, seawater fractions are very small and salinity is from local Sources, which leads to relatively low background bromide concentrations. Other local Sources of bromide may include but are not limited to fossil fuel emissions, mining, and pesticides used in agriculture (VanBriesen 2014).

Bromide concentrations in the Sacramento River are typically low, often at or near the detection limit of 0.01 milligram per liter (mg/l). During the period 1997 to 2020, bromide concentrations in the American River were non-detectable (State Water Contractors 2022). Farther downstream toward the Delta, bromide concentrations tend to increase with increased seawater intrusion, with long-term median bromide concentrations often in the 0.12 to 0.26 mg/l range depending on location and water year type (State Water Contractors 2022). Bromide concentrations tend to be higher during dry years as a result of seawater intrusion during periods of low Delta outflow, and concentrations exhibit variable seasonal patterns between Delta locations.

No water quality standards are in effect for bromide, although it has been recognized as a constituent of concern that warrants additional study and evaluation because high bromide concentrations in intake drinking water can increase the prevalence of carcinogenic disinfection byproducts (DBPs), such as trihalomethanes, haloacetic acids, and bromate. For example, the CALFED Bay-Delta Program (CALFED) Drinking Water Quality Program recommended a goal of 0.05 mg/l bromide at drinking water intakes (CALFED Bay-Delta Program 2005). The U.S. Environmental Protection Agency (EPA) Stage 1 and Stage 2 Disinfectants and Disinfection Byproducts Rules limit the concentrations or provide maximum contaminant levels for certain DBPs in drinking water systems (State Water Contractors 2022; EPA 2025b).

The nearest drinking water intake to the proposed Project area is the North Bay Aqueduct (NBA), part of the SWP and managed by Solano County Water Agency (see Figure 3.10-1). The NBA, located approximately 15 river miles from the proposed Project area in Barker Slough, has a median long-term bromide concentration of 0.04 mg/l. From 2016 to 2020, average monthly bromide concentrations ranged from 0.01 to 0.27 mg/l. Unlike other Delta water bodies, the main Sources of bromide at the NBA are considered to be locally derived from groundwater or base flows from the Barker Slough watershed (State Water Contractors 2022).

As noted previously, the major source of bromide to the Delta is seawater intrusion and the potential source of bromide, which could be affected by the proposed Project, is seawater that mixes from San Francisco Bay into the Delta via tidal exchange.

Existing Conditions for Bromide in the Vicinity of the Proposed Project Area

No bromide observations are available in or in the immediate vicinity of the proposed Project area (i.e., USGS gage #11455140 does not track bromide). However, bromide concentrations in the proposed Project area's water bodies are assumed to be like those of their source waters (i.e., the Sacramento River and North Delta), which, as described above, have relatively low background bromide concentrations (e.g., 0.01 mg/l), and therefore, do not represent a substantial source of bromide.

Turbidity

Existing Conditions for Turbidity in the Delta and Yolo Bypass

Turbidity is a measure of the amount of suspended solids within the water column, often reported in nephelometric turbidity units (NTU). Turbidity is important for multiple physical and biological processes in the Sacramento Valley and Bay-Delta. For example, turbidity may have beneficial effects on fish (e.g., enhanced predator refuge for delta smelt and juvenile salmonids), but very high levels of suspended sediment can cause injury (e.g., gill damage) or result in adverse effects on spawning and rearing habitat (e.g., sedimentation of spawning gravel) (State Water Contractors 2022). For drinking water, suspended solids are removed through settling, flocculation, and/or filtration processes. During periods of higher turbidity, drinking water treatment plants may need to increase the dose of flocculants and increase backwashing of filter beds.

Turbidity concentrations in the Delta and Yolo Bypass are determined mostly by incoming material from tributaries and by submerged aquatic vegetation. Turbidity levels in the Sacramento River are related to flows, with higher turbidities associated with higher flows. Turbidity levels in the Delta are generally high as a result of sediment transport from the Sacramento River and San Joaquin River watersheds, especially during high-flow periods. Similar to other constituents, turbidity levels vary spatially and temporally. During wet years, increased erosion and watershed runoffs tend to increase turbidity levels compared to

dry years. Seasonal patterns also vary greatly; for example, the Sacramento River has high turbidity during the winter months and low turbidity during the summer. The San Joaquin River shows an opposite pattern, with high turbidity during the summer, possibly because of agricultural inputs or algal blooms (State Water Contractors 2022).

Turbidity is correlated to the input of nutrients and other constituents that are adsorbed to particles within the water column. These adsorbed constituents on suspended sediment can be residual pesticides, herbicides, and other contaminants from upstream agricultural, industrial, and municipal land uses. Turbidity is an important measure of the load of sediment within the Delta and is often used in combination with other measurements to indicate water quality relative to beneficial uses of water. For instance, the Sacramento–San Joaquin River Basin Plan's water quality objective for Delta waters specifies that "Except during periods of storm runoff, the turbidity of Delta waters shall not exceed 50 nephelometric turbidity units (NTUs) in the waters of the Central Delta and 150 NTUs in other Delta waters."

Turbidity in other regional surface waters, such as the Cache Slough Complex, is also known to fluctuate seasonally. The nearest continuous monitoring locations near the proposed Project area for turbidity are administered by USGS and include Toe Drain at Liberty Island near Courtland (#114551400), located approximately 1.7 miles downstream of the proposed Project area, and Shag Slough at Liberty Island Road (#11455276) and Cache Slough at South Liberty Island (#11455315), located farther downstream in the Cache Slough Complex. Based on available monitoring data from the downstream monitoring locations (Shag Slough and Cache Slough), since 2010 there have been at least 39 discrete events when observed turbidity has exceeded 150 NTU, with values as high as 396 NTU measured. Higher turbidity observations at these monitoring locations align with periods of increased flow.

Existing Conditions for Turbidity in the Vicinity of the Proposed Project Area

Although no direct turbidity observations are available for the proposed Project area, observations nearby were evaluated to assess existing conditions. Since 2018, turbidity at the Toe Drain at Liberty Island near Courtland site monitoring location has exceeded 150 NTU during at least 22 discrete events, many of which included periods (e.g., weeks) of continuously elevated turbidity. The highest value observed at this location was on the order of 996 NTU. Higher turbidity observations at this monitoring location align with periods of increased flow, which is consistent with observations that exogenous, regional factors likely play a greater role in elevated local turbidity concentrations (State Water Contractors 2022).

Current land uses in the proposed Project area have the potential to generate erosion during land-disturbing activities that may contribute to turbidity in on- and off-site water bodies.

Dissolved Organic Carbon

Existing Conditions for Dissolved Organic Carbon in the Delta and Yolo Bypass

DOC is a basic nutrient in ecosystems and is naturally occurring in the Yolo Bypass and the Delta (Lehman et al. 2008). DOC includes a broad class of carbon-based compounds, which react differently to biological and chemical processing, both within the Yolo Bypass and the Delta and in the drinking water treatment process. Specifically, DOC is defined as the fraction of organic carbon that can pass through a filter with a pore size of 0.22 to 0.70 micrometer (Bruckner 2007). The remaining fraction of organic carbon, associated with the larger particles that are caught by the filter, is called "particulate organic carbon" (i.e., organic carbon consists of dissolved and particulate forms). Organic carbon typically originates from

peat soils formed from plant detritus (including agricultural plant species) and is an essential component of the base of the food chain (CDFG 2008; Mathers et al. 2025).

Although it is considered essential to the food chain, DOC is a concern for drinking water sourced from Delta waters because high DOC concentrations in intake drinking water can increase the prevalence of disinfection byproducts, or DBPs (State Water Contractors 2022; State Water Board 2023). DBPs can be produced when chlorine and/or ozone are used to disinfect drinking water in the presence of natural organic materials in water, including DOC. DBPs are regulated constituents in drinking water (see the discussion of DBPs in the "Bromide" section above). The type and the amount of DBPs formed when DOC undergoes drinking water treatment are a function of the chemical composition of the DOC. At present, regional governing bodies have not identified DOC as a priority pollutant in the Delta, and thus there are no established numerical water quality criteria for DOC concentrations in Delta waters (CDFG 2008; State Water Board 2023).

The nearest drinking water intake to the proposed Project area, the NBA, has historically experienced elevated DOC levels relative to the rest of the Delta, which can influence water treatment operations and water availability (e.g., long-term median TOC[3] concentrations of 4.6 mg/l versus values that range from 1.9 to 3.5 mg/l at other Delta intakes). For example, during the wet season, Barker Slough can experience rapid increases in DOC concentrations that can dramatically affect the treatability of NBA water, often for several months. Many NBA water users have alternative water Sources that are used during the winter and spring months when DOC concentrations are highest at Barker Slough (State Water Contractors 2022). The Sacramento River is the primary source of water to the NBA, but the local Barker Slough watershed contributes a substantial amount of DOC, and higher winter and early-spring DOC values at the NBA intake are largely associated with periods when the local watershed is contributing runoff to Barker Slough (State Water Contractors 2022).

Existing Conditions for Dissolved Organic Carbon in the Vicinity of the Proposed Project Area

Although no DOC observations are available for the proposed Project area, observations nearby were evaluated to assess existing conditions. Analysis of six grab water samples taken between 2004 and 2005 in the Toe Drain (approximately 1.7 miles downstream of the proposed Project area[4]) showed DOC concentrations between 3.6 and 10 mg/l (CEDEN 2025). Analysis of 12 grab water samples taken between 2004 and 2005 in the Z-drain[5] (agricultural drainage channel) located approximately 1.5 miles west of the proposed Project area showed DOC concentrations between 3.1 and 14 mg/l (CEDEN 2025). No fingerprinting is available to partition the exact Sources of DOC in these samples. Current land uses in the proposed Project area have the potential to produce DOC that may contribute to DOC concentrations in on- and off-site water bodies.

Methylmercury

Existing Conditions for Methylmercury in the Delta and Yolo Bypass

Methylmercury, or MeHg, is the organic and biologically available form of the metal mercury, or Hg, and is produced through methylation, as explained below. Mercury naturally occurs in the mountains east and

[3] DOC is generally about 85 to 95 percent of TOC (State Water Contractors 2022).

[4] The California Environmental Data Exchange Network (CEDEN) site in the Toe Drain is referred to as "Toe Drain at NE corner of Little Holland" and has a station code 510TDNLHT).

[5] The CEDEN site in the Z-drain is referred to as "Z-Drain (Dixon RCD) and has a station code 511XZDDIX.

west of the Yolo Bypass and has a chemical affinity for sediments. Mercury was mined, processed, and released into inflowing rivers most intensively during the California Gold Rush. In the Sacramento River watershed, Sources include elemental mercury used in placer mining for gold in the Sierra Nevada. Mining in the Cache Creek watershed (e.g., Sulfur Bank and Turkey Run) created cinnabar (mercury ore) mines that are still releasing mercury to Cache Creek and eventually to the Yolo Bypass. Historic mining operations have resulted in large inputs of mercury to the Delta, primarily via mercury-laden sediment loading (Domagalski et al. 2004). Because these sediments exposed to historic mercury mining have not been flushed from the system, Yolo Bypass sediments still can have high levels of mercury, and the most significant source of mercury in the Yolo Bypass is Cache Creek (Domagalski et al. 2004).

Methylation of mercury, the process by which mercury becomes available for absorption and uptake by organisms, can occur in wetland environments and in freshly flooded areas that contain mercury in the sediments (Marvin-DiPasquale et al. 2022). Mercury bound to particulates in sediments can be transformed by microbes, particularly sulfur- and iron-reducing bacteria, into organic species, particularly methylmercury. This process is most efficient in anaerobic (reducing) conditions. Alternately, cinnabar (mercury ore) can be oxidized to ionic and elemental forms in aerobic conditions. These forms of mercury are available for methylation during periods of low oxygen concentrations. Thus, during drier seasons, mercury in surface sediments may be exposed to the atmosphere and oxidized. Subsequently, in periods of inundation, microbial decomposition of organic matter in sediments can create anaerobic conditions that favor methylation. If periods of inundation are accompanied by deposition of additional cinnabar, methylmercury production can continue seasonally for extended periods. Because all areas of the Yolo Bypass are currently subject to periodic flooding, soils throughout the Yolo Bypass contain mercury that can be methylated.

Through bioaccumulation in the food chain, mercury uptake by fish can also cause tissue concentrations to exceed national health guidelines for fish consumption. In response to the addition of the Delta to the CWA 303(d) list for elevated mercury concentrations in fish, the Central Valley Regional Water Board developed the Delta Methylmercury TMDL and the Sacramento–San Joaquin Delta Mercury Control Program (DMCP), both of which apply to the Yolo Bypass (see Section 3.10.3). Managing methylmercury in the Yolo Bypass involves understanding its Sources, effects, and controllable processes. Throughout the Delta, mercury concentrations in fish generally exceed recommended limits for human consumption and waters are considered impaired due to the presence of methylmercury.

Total mercury in bulk sediments from sampling sites taken from the Yolo Bypass area range from <0.10 microgram per gram (µg/g) (microgram of mercury per gram of soil or parts per million [ppm]) to 2.69 µg/g (Heim 2003), which are in the same range as concentrations found throughout the Delta (USGS 2005). Investigations of Delta methylmercury dynamics conclude that the overwhelmingly dominant source of mercury and methylmercury is upstream inputs; these investigations have found that the Yolo Bypass is a net source of methylmercury to the Delta (Delta Stewardship Council 2021). Stephenson et al. (2008) found that water exiting the southern end of the Yolo Bypass at Prospect Slough via the Toe Drain generally had the second highest methylmercury concentration of any channel in the Delta. When the Yolo Bypass is not flooded, the Sacramento and San Joaquin rivers are the largest Sources of methylmercury to the Delta, accounting for 60 percent of mercury entering the Delta estuary (Regional Water Board 2019). When the Yolo Bypass is flooded, it becomes the dominant source of methylmercury to the Delta, and mass balance studies show that 40 percent of all methylmercury exported from the

Sacramento River Basin is produced in the Yolo Bypass even though the bypass is typically flooded only 2 months of the year (Foe et al. 2008).

Ultimately numerous influences affect mercury life-cycle processes. Examples include land use/community type (e.g., wetlands/marsh, agriculture, open water), location in the region, and other physical or chemical factors (e.g., hydrology, salinity, pH, temperature, nutrients, sulfate, organic matter, and temporal-seasonal conditions). These processes can be affected by sediment methylmercury concentrations, mercury methylation and demethylation, uptake and bioaccumulation in the aquatic food web, and mass flux of methylmercury from the sediment to overlying water and direct uptake by aquatic biota. Despite ongoing efforts to better understand the chemistry and impacts of methylmercury production and subsequent uptake into the food web, accurately quantifying methylmercury concentrations and loads remains challenging (Delta Stewardship Council 2021; DWR 2020c, 2020d; Robbins et al. 2024).

Existing Conditions for Methylmercury in the Vicinity of the Proposed Project Area

Relatively high methylmercury production is intrinsic to legacy mining activities (i.e., cinnabar ore extraction in the Cache Creek watershed and gold extraction in the Sierra Nevada), and the land uses and land use practices common in the Yolo Bypass (e.g., seasonal flood inundation, irrigated pasture, agricultural wetlands including rice fields, managed wetland), which include shallow inundation, dense vegetation, and wetting/drying cycles on the order of days to weeks, all of which are conducive to methylmercury production (Robbins et al. 2024). For instance, sampling by Stephenson et al. (2008) within the Toe Drain between the Lisbon Weir and a location 12 miles downstream found that methylmercury concentrations increased substantially downstream. This indicates that discharges from constructed agricultural drains contribute to the increase in methylmercury concentrations in this stretch of the Toe Drain, which includes the proposed Project area. Methylmercury production within the proposed Project area is likely similar to that of other Yolo Bypass properties with comparable land uses, which have been found to be comparatively high.

Organic Chemicals

Existing Conditions for Organic Chemicals in the Delta and Yolo Bypass

Because of agricultural land uses, more than 100 types of toxic chemicals, including pesticides, are found throughout the waters and sediments of the Yolo Bypass that can be transported in runoff to Delta waters (CDFG 2008). Toxicity studies have frequently linked toxicity in the Delta to pesticides (Kuivila and Hladik 2008), and the Delta is listed as impaired because of diazinon and chlorpyrifos. A study by Smalling et al. (2007) to evaluate the potential Sources of pesticides to the Yolo Bypass found that 13 current-use pesticides were detected in water samples collected in 2004, with the highest concentrations observed at input sites during high flows. Additionally, 13 current-use pesticides, along with residual dichlorodiphenyltrichloroethane (DDT) and its metabolites, were detected in the bed and suspended sediments in the Yolo Bypass. Results indicate that soil samples were dominated by DDT and its degradation products but also contained a variety of current-use pesticides at lower concentrations.

There are defined seasonalities to the application and runoff of organic chemicals: winter runoff includes dormant sprays and herbicides, spring includes insecticides, and summer includes runoff of rice pesticides (Kuivila and Hladik 2008). The major pesticides associated with regional rice production are molinate, thiobencarb, and carbofuran. Molinate and thiobencarb are applied to control aquatic grasses and weeds on flooded rice fields, while carbofuran is applied to control insects. These chemicals have been shown in

the past to be acutely toxic to fish and were linked to objectionable taste issues in drinking water in the city of Sacramento (Domagalski et al. 2000).

Over the past 15 years, molinate use has declined by nearly half, while thiobencarb use has more than doubled; carbofuran has been eliminated and partially replaced by the pyrethroid pesticide lambda-cyhalothrin (Orlando and Kuivila 2004). Management programs currently in place require that rice-field water be retained on fields for 1 month after pesticide application to allow concentrations in water to be reduced through mechanisms such as volatilization, biological processes, or photo-degradation (Domagalski et al. 2000). The Sacramento–San Joaquin River Basin Plan contains the following rice pesticide performance goals applicable to all waters designated as freshwater habitat: carbofuran (0.4 microgram per liter [µg/l]), malathion (0.1 µg/l), methyl parathion (0.13 µg/l), molinate (10 µg/l), and thiobencarb (1.5 µg/l). The Basin Plan also contains a water quality objective of 1 µg/l for thiobencarb in waters designated for municipal and domestic uses (Regional Water Board 2019).

Existing pesticide TMDLs that apply to North Delta water bodies include diazinon and chlorpyrifos. The TMDL for the two pesticides applies to Miner Slough, the Sacramento River Deep Water Ship Channel, Prospect Slough, and Cache Slough. Because Prospect Slough and Cache Slough are downstream of the proposed Project area, agricultural actions in the proposed Project area can contribute constituents of concern to the areas covered by the TMDL.

Existing Conditions for Organic Chemicals in the Vicinity of the Proposed Project Area

As described in Section 3.9, "Hazards and Hazardous Materials," and in Appendix F, "Tide's End Multibenefit Restoration Project Phase I Environmental Site Assessment (Phase I Environmental Site Assessment) and the Tide's End Multibenefit Restoration Project Phase II Soil Sampling Investigation (Phase II Soil Sampling Investigation)," portions of the proposed Project area have been farmed for rice, corn, or other general field crops. Hazardous materials associated with agricultural production activities may include pesticides and/or herbicides; leaking aboveground fuel storage tanks; leaking or abandoned pesticide storage containers; and drainage water that contains pesticides and herbicides. While pesticides, herbicides, and/or fertilizers may have been used historically, there are no records of use. The Yolo County Agricultural Commissioner maintains pesticide use records back to 2014; none of the six properties in the proposed Project area have any recorded use of pesticides or herbicides. Even though the use of DDT was banned in 1972 and chlordane use on food crops was banned in 1978, on-site soil may have residual levels of legacy pesticides (e.g., DDT, chlordane) from past use. Modern (post-1970s) pesticides and herbicides generally have a short life span of 1 year or less and do not leave residual toxic compounds (National Pesticide Information Center 2015; Sarker et al. 2024).

As also described in Section 3.9, "Hazards and Hazardous Materials," and in Appendix F, "Tide's End Multibenefit Restoration Project Phase I Environmental Site Assessment (Phase I Environmental Site Assessment) and the Tide's End Multibenefit Restoration Project Phase II Soil Sampling Investigation (Phase II Soil Sampling Investigation)," to test for the potential presence of legacy pesticides and herbicides at concentrations above regulatory screening levels, a Phase II Soil Sampling Investigation was conducted. Soil in the proposed Project area was sampled and analyzed for pesticides[6] and herbicides.[7] Soil sampling results indicate that chemical concentrations of pesticides and herbicides either are not

[6] Organochlorine and organophosphorus pesticides.

[7] Chlorinated herbicides.

detected above reporting limits or are present at concentrations below screening criteria. In addition, the results of the pesticides and herbicides analyses indicate that the application of pesticides and herbicides in the past, if any, would not have significantly contributed pesticide- and herbicide-associated metals to the soils in the proposed Project area.

Boron

Existing Conditions for Boron in the Delta and Yolo Bypass

Boron is an inorganic compound that is naturally occurring and found in rocks, soil, and watershed sediments and can be transported in dissolved form in river inflows. Boron is an unregulated chemical without an established maximum contaminant level. Boron is an essential plant micronutrient, but high concentrations in irrigation water can affect crops sensitive to boron, including wheat, maize, tomato, carrot, and alfalfa (Brdar-Jokanović 2020). Boron has a narrow range between deficiency and toxicity for plants (Brdar-Jokanović 2020). Boron levels exceeding 0.5 ppm are potentially harmful to boron-sensitive crops, while levels greater than 2.0 ppm are potentially injurious to crops (DWR 1961).

The most prevalent Sources of boron in drinking water are derived from the leaching of rocks and soils, wastewater, and fertilizers/pesticides. However, boron does not typically affect drinking water quality and there are no established numerical water quality criteria regarding its concentration. The California State Notification Level[8] for boron is 1,000 µg/l.

Waters from the Cache Creek and Willow Slough watersheds have been shown to have elevated boron concentrations (YCFCWCD 2006). Observations of moderate to high levels of boron (1 ppm to more than 5 ppm [1,000–5,000 µg/l]) have been found to degrade the quality of water in Cache Creek (Water Resources Association of Yolo County 2007). Monitoring by the City of Woodland of source waters in the Yolo Bypass distributed throughout the Tule Canal/Toe Drain and in the Yolo Bypass Wildlife Area, conducted between November 2003 and October 2004, reported boron concentrations between 0.61 and 0.92 ppm [610–921 µg/l]) (City of Woodland 2005). Water quality monitoring at the NBA since 1998 has not identified boron as an issue at that location, as samples have never exceeded the monthly average objective of 600 µg/l (0.6 ppm) set by the State Water Contractors (2022).

Existing Conditions for Boron in the Vicinity of the Proposed Project Area

Although no boron observations are available for the proposed Project area, observations nearby were evaluated to assess existing conditions. Analysis of two grab water samples taken in 2004 and 2005 in the Toe Drain approximately 1.7 miles downstream of the proposed Project area showed total boron concentrations of 170 and 1,700 µg/l (0.17 and 1.7 ppm) (CEDEN 2025). Analysis of four grab water samples taken in 2006 in the Z-drain (agricultural drainage channel), located approximately 1.5 miles west of the proposed Project area, showed boron concentrations between 580 and 790 µg/l (0.58 and 0.79 ppm) (CEDEN 2025). No fingerprinting is available to partition the exact Sources of boron in these samples and it is likely that upstream Sources contribute to the observed concentrations. Given the absence of geologic Sources such as high boron yielding sediments, the proposed Project area does not represent a substantial source of boron (State Water Board 2017).

[8] "Notification levels" are non-regulatory health-based advisory levels established by the State Water Board for chemicals for which maximum contaminant levels have not been established.

Water Temperature

Existing Conditions for Water Temperature in the Delta and Yolo Bypass

Water temperature is an important parameter for many forms of life in an ecosystem, from phytoplankton to fish. Water temperature influences ecosystems in numerous ways. For example, water temperature affects DO levels by changing the amount of oxygen that can be dissolved (i.e., saturation concentration is affected by water temperature and the two are inversely related). Elevated water temperature is primarily a concern for coldwater fish and can create conditions for HABs (discussed in a separate section below). The beneficial uses most affected by increases in water temperature are those related to coldwater fish (e.g., COLD, EST, RARE, MIGR, SPWN, COMM).

The California Department of Fish and Wildlife uses three different temperature criteria in the Delta that use fish stress as a metric:

- Adult Chinook salmon: 21.1 degrees Celsius (°C) (Lindley et al. 2004).
- Delta smelt: 22°C (Bennett 2005).
- Juvenile Chinook salmon: 24°C (Poletto et al. 2017).

Increased water temperatures in the Yolo Bypass can be caused by increased human water consumption and associated reduction of water volume, as well as by climate change. Because of the dynamics of heat exchange, river temperatures also generally increase if river flow is reduced and decrease if river flow is increased. Alterations in flow can cause a corresponding change in the water temperature downstream (State Water Board 2023). Temperature as it relates to aquatic resources is discussed further in Section 3.7, “Biological Resources—Aquatic.”

Existing Conditions for Water Temperature in the Vicinity of the Proposed Project Area

Continuous monitoring of water temperature by USGS between 2017 and 2025 at the Toe Drain at Liberty Island near Courtland gage (#114551400), located approximately 1.7 miles downstream of the proposed Project area, found the average water temperature to be 17.7°C, with a maximum observed temperature of 29°C. Temperatures at this location exhibit strong seasonal patterns, with water temperatures typically above 21.1°C during the summer months (June through September) that recede rapidly in the late fall to winter (December through February) and lows consistently around 10°C that begin to increase in March. These values and seasonal patterns are consistent with temperature monitoring conducted in the Toe Drain immediately upstream and downstream of the proposed Project area between 2022 and 2024.

Dissolved Oxygen

Existing Conditions for Dissolved Oxygen in the Delta and Yolo Bypass

Dissolved oxygen is the amount of oxygen dissolved in water and is an essential indicator of water quality. The concentration of DO required by fish species varies; certain species (e.g., steelhead) can tolerate conditions of very low DO, but generally all species require relatively high levels of DO for optimal growth (e.g., Moyle 2002). As a general rule of thumb, most aquatic organisms, including fish and benthic/pelagic macroinvertebrates, require DO concentrations of 5.0 mg/l or greater for optimal performance and health. Most fish cannot tolerate DO concentrations below 2.0 mg/l for long periods (Nobriga 2008) and may die if they cannot escape these low-DO conditions (Siegel et al. 2011). DO

concentrations in water are dynamic and affected by physical, biological, and chemical factors in complex ways, described below.

- **Physical:** Water temperature is a major factor in the DO saturation concentration (i.e., the maximum amount of DO the water can hold) and the two are inversely related, meaning that colder waters have higher DO saturation concentrations. Levels of turbulence and mixing in a water body affect DO concentrations—waves and currents help mix oxygen from the atmosphere into the water. Faster-moving water has increased oxygen exchange. Stagnant water lacks mixing and can lead to lower DO concentrations under certain biological or chemical conditions.
- **Biological:** Plants, algae, and animals affect oxygen dynamics in a water body. Photosynthetic organisms living in the water, including aquatic plants and algae, produce oxygen at varying rates depending on factors such as diurnal cycles, growth rates, species assemblages, and nutrient concentrations. DO is consumed during respiration of aquatic organisms and the decomposition of organic matter by bacteria. Diurnal cycles include variations in daylight length and cloud cover. In the daytime, photosynthesis by aquatic plants and algae increases DO levels during daylight hours. At night, the absence of sunlight causes DO to decrease because of respiration by aquatic organisms that consume oxygen. On cloudy days, DO increases are smaller. The balance between photosynthesis and respiration greatly affects DO concentrations. When oxygen production is high, DO concentrations can exceed the DO saturation concentration (referred to as "super-saturated conditions"). When respiration is high, DO concentrations can become very low for prolonged periods.
- **Chemical:** DO reacts with other substances in water and chemical reactions can alter DO concentrations. Organic and inorganic substances can consume oxygen during chemical reactions such as redox. Human impacts such as pollution, nutrient runoff, and industrial discharges affect DO by modifying algae nutrient concentrations.

The dynamic interplay of the factors described above makes DO concentrations highly variable over space and time. Considering the broader Yolo Bypass, a conceptual model of how DO varies over a year is as follows: During winter, when the Yolo Bypass is inundated due to rainfall and river flow with colder water, DO levels tend to be higher. As floodwaters recede and temperatures rise in the spring and summer, DO decreases. Decomposition of organic matter and increased microbial activity contribute to this decline. In the fall months, DO levels may stabilize or slightly increase as temperatures cool and organic matter decomposition slows. Because DO is highly influenced by biological activity, algal blooms are discussed further below.

Existing Conditions for Dissolved Oxygen in the Vicinity of the Proposed Project Area

Continuous monitoring of DO by USGS between 2017 and 2025 at the Toe Drain at Liberty Island near Courtland gage (#114551400), located approximately 1.7 miles downstream of the proposed Project area, found the average DO concentration to be 8.6 mg/l, with a minimum of 0.1 mg/l. The DO values and seasonal patterns are consistent with DO monitoring conducted between 2022 and 2024 in the Toe Drain immediately upstream and downstream of the proposed Project area. Based on the USGS monitoring, there have been 11 discrete events with DO below 5.0 mg/l, three of which had DO concentrations below 2.0 mg/l. There is not a clear linear relationship between these periods of low DO and changes in flow or temperature at the location. These values and seasonal patterns are consistent with DO monitoring conducted in the Toe Drain immediately upstream and downstream of the proposed Project area between 2022 and 2024.

Harmful Algal Blooms

Existing Conditions for Harmful Algal Blooms in the Delta and Yolo Bypass

"Algal blooms" are the rapid, widespread growth of algae in a water body often in response to a sudden influx of nutrients such as nitrogen compounds (N) and phosphorus (P) needed by a particular species of plant or algae. Primary Sources of nutrients are erosion, agricultural runoff, urban runoff, and treated effluent. For example, agricultural runoff can contain pesticides and fertilizers that contain a limiting nutrient that leads to rapid growth rates. Algal blooms tend to be short-lived events, with rapid growth followed by rapid decay. However, while they are alive, this increase in aquatic plants and algae can produce large amounts of DO. Once these photosynthetic organisms complete their life cycle, they can die off in large quantities, causing their remaining organic matter to be consumed by aerobic bacteria that deplete DO. This depletion of DO can lead to fish kills and harm other aquatic organisms.

Some algal blooms are considered harmful if the algae produce toxic substances as part of their life cycle. These can cause additional harm to the ecosystem or humans; these events are called "harmful algal blooms" or HABs. The cyanobacterium *Microcystis aeruginosa*, or "blue-green algae," can behave in similar ways and produce cyanotoxins; such events are called cyanobacterial HABs (CHABs). Microcystins typically have a half-life of 4–14 days in surface waters or may persist longer, depending on factors such as photodegradation, bacteria, and the presence of organic matter (EPA 2019). Microcystins can persist even after a toxigenic cyanobacterial bloom is no longer visible.

Currently, there are no mandatory federal or State standards for cyanotoxins in drinking water or recreational waters. Two agencies[9] have developed and are further refining recommended guidelines for addressing health concerns for cyanotoxins in recreational waters (State Water Contractors 2022).

The cause and the duration of HABs and CHABs depend on sunlight, water temperature, water clarity, pH, precipitation events, water flow (whether water is calm or fast-flowing), water column mixing, nutrient levels, and salinity, all of which affect growth rates and metabolism. Warm, slow-moving waters that are rich in nutrients lead to algal growth. HABs and CHABs are expected to become more prevalent in the Delta as the climate changes. Decreased watershed runoff and increased water temperatures can lead to stagnant, warm waters that promote HABs and CHABs (Preece et al. 2024a).

It is important to note that experiencing a cyanobacteria bloom does not always result in a cyanotoxin problem in the water source. This is because multiple species of cyanobacteria can exist in a single bloom, and not all species are capable of producing cyanotoxins. Furthermore, even when toxin-producing cyanobacteria are present, they may not produce toxins (Preece et al. 2024a).

Although the 303(d) list does not have any listing for HABs in the Central Valley, CHABs have been a major nuisance in the Delta for decades, and HABs and CHABs remain an emerging concern in the Delta (e.g., Lehman et al. 2022; Preece et al. 2024b). Voluntary reporting of potential HABs since 2017, managed by the State Water Board, includes reporting of 10 potential HABs in the North Delta (e.g., the Cache Slough Complex). Of these, none were officially confirmed as harmful based on production of

[9] The California Office of Environmental Health Hazard Assessment and State Water Board. Statewide voluntary guidance on cyanobacteria blooms in recreational waters was developed in January 2016 as a collaborative effort within the California Cyanobacteria Harmful Algal Bloom network.

cyanobacteria; however, blooms in Lindsey Slough and Shag Slough had visual indicators of being HABs (State Water Board 2025).

Existing Conditions for Harmful Algal Blooms in the Vicinity of the Proposed Project Area

No direct observations of HABs or CHABs have been made in or in the immediate vicinity of the proposed Project area. Current land uses and land use practices in the proposed Project area have the potential to contribute nutrients to on- and off-site water bodies through erosion of on-site nutrient-bearing soil and sediments, through interception or conveyance of off-site surface runoff with dissolved nutrients, and/or through conveyance of on- and off-site agricultural return flows with dissolved nutrients, resulting in contributions to HABs or CHABs.

Existing Conditions for Groundwater Quality in the Water Quality Study Area

Water quality constituents that have the potential to affect groundwater quality in the Yolo Subbasin include arsenic, hexavalent chromium, nitrate, chloride, sodium, boron, selenium, conductivity, and total dissolved solids (GEI Consultants 2022). In the Yolo Subbasin, arsenic, hexavalent chromium, boron, and selenium are predominantly naturally occurring. Constituents related to salinity—chloride, conductivity, sodium, and total dissolved solids—are also naturally occurring but are concentrated by surface activities. Nitrate is predominantly anthropogenic (GEI Consultants 2022). Past agricultural uses of the proposed Project area could indicate the potential presence of residual pesticides, herbicides, and petroleum products used for agricultural operations. Modern (post-1970s) pesticides and herbicides tend to have a shorter environmental life span and leave less residual toxic compounds (National Pesticide Information Center 2015; Sarker et al. 2024).

As presented in Section 3.9, “Hazards and Hazardous Materials,” and detailed in Appendix F, “Tide’s End Multibenefit Restoration Project Phase I Environmental Site Assessment (Phase I Environmental Site Assessment) and the Tide’s End Multibenefit Restoration Project Phase II Soil Sampling Investigation (Phase II Soil Sampling Investigation),” the tests for metals indicated that antimony, barium, beryllium, cadmium, chromium, iron, lead, mercury, molybdenum, silver, thallium, vanadium, and zinc were all within background levels and below regulatory agency screening levels. Test results indicated concentrations of arsenic, cobalt, copper, manganese, nickel, and selenium in some samples that exceeded regional background levels. Of these metals, arsenic, copper, nickel, and selenium in some samples exceeded some regulatory agency screening levels. However, the results of the pesticides and herbicides tests indicate that the use of pesticides and herbicides, if any, did not contribute to the detected levels of metals in proposed Project area soil. Instead, this indicates that the naturally occurring concentrations of some metals in proposed Project area soil and in the local area are higher than regional background levels. This is likely due to the proposed Project area being located west of the Sacramento River. Sediment at the proposed Project area is derived more from the Coast Ranges located to the west. The rocks of the Coast Ranges are known to include serpentinite, which can contain metals such as arsenic, chromium, cobalt, nickel, and zinc. Consequently, and as indicated by the sampling results, the naturally occurring local background concentrations of some metals in the proposed Project area soil have levels of some metals that are higher than the regional background levels.

3.10.3 Regulatory Setting

Federal and State regulations discussed in Section 3.11.3, "Regulatory Setting," of Section 3.11, "Hydrology and Water Quality," of the Final SRGO Program EIR were reviewed for relevance to the proposed Project and are identified below as appropriate, along with any applicable new or updated policies since certification of the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.11.3, pp. 3.11-11 through 3.11-27). As a statewide, program-level document, the Final SRGO Program EIR did not discuss regional and local regulations; this Draft SEIR provides project-specific regional and local goals and policies to supplement the regulatory setting information provided in the Final SRGO Program EIR. The relevance to the proposed Project of each federal and State regulation and regional or local goal and policy are indicated.

Federal

U.S. Army Corps of Engineers–Related Laws and Regulations

This discussion presents an overview of USACE's regulatory responsibilities that apply to navigable waters and construction within the ordinary high-water mark or other waters of the United States. In addition, USACE constructs flood control and risk management projects, monitors operations and maintenance work for those projects, and provides emergency response to floods. The USACE regulations are relevant to the proposed Project based on the location of the proposed Project (i.e., within the Yolo Bypass) and the evaluation of potential effects of implementation of the proposed Project on surface hydraulics and hydrology.

Flood Control Act of 1917

The Flood Control Act of 1917 was enacted in response to costly floods that occurred in the Sacramento Valley and elsewhere in the United States between 1907 and 1913. The law authorized the formation of the federal/State Sacramento River Flood Control Project, which includes various levees, weirs, control structures, bypass channels, and river channels in the Delta and its watershed. The 1917 law was modified and extended by the Flood Control Acts of 1928, 1936, and 1941.

Flood Control Act of 1936

The Flood Control Act of 1936 established a nationwide policy that flood control on navigable waters or their tributaries is in the interest of the general public welfare, and therefore is a proper activity of the federal government, acting in cooperation with State and local entities. The Flood Control Act of 1936, its amendments, and subsequent legislation specify the details of federal participation. Projects are authorized either specifically through legislation by Congress or through a blanket funding authority for small projects.

Operations and Maintenance of Flood Control Projects

Routine operations and maintenance activities for federal project levee structures and facilities are discussed in Code of Federal Regulations (CFR) Title 33, Section 208.10. According to these regulations (33 CFR Section 208.10[5]):

> *No improvement shall be passed over, under, or through the walls, levees, improved channels or floodways, nor shall any excavation or construction be permitted within the limits of the project right-of-way, nor shall any change be made in any feature of the works without prior determination by the District Engineer of the Department of the Army or his authorized representative that such improvement, excavation, construction, or alteration will not adversely affect the functioning of the protective facilities.*

This regulation is the basis for requiring a permit before any construction at federal project levees. Types of alterations and modifications typically covered by a Section 408 permit include bridges, pump houses, stairs, pipelines, bike trails, and power poles. Major modifications or improvements to levees and flood control facilities (e.g., the Yolo Bypass) require approval through a Section 408 Permission.

U.S. Environmental Protection Agency–Related Laws and Regulations

Clean Water Act

The Federal Water Pollution Control Act Amendments of 1972, also known as the Clean Water Act or CWA, established the institutional structure for EPA to regulate discharges of pollutants into the waters of the United States, establish water quality standards, conduct planning studies, and provide funding for specific grant projects. Congress has amended the CWA several times since 1972. EPA has delegated to most states the authority to administer many provisions of the CWA. In California, the State Water Board has been designated by EPA to develop and enforce water quality objectives and implementation plans. The CWA is relevant to the proposed Project as it pertains to potential effects of implementation of the proposed Project on water quality.

Section 303

Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. The three major components of water quality standards are designated users, water quality criteria, and antidegradation policy. In 1992, EPA established the National Toxics Rule to provide ambient water quality criteria for priority toxic pollutants to protect aquatic life and human health in accordance with CWA Section 303.

Section 303(d) of the CWA requires states and authorized Native American tribes to develop a list of water quality–impaired segments of waterways. The list includes waters that do not meet water quality standards necessary to support the beneficial uses of a waterway, even after point Sources of pollution have installed the minimum required levels of pollution control technology. The list includes only waters impaired by "pollutants" (clean sediments, nutrients such as nitrogen and phosphorus, pathogens, acids/bases, temperature, metals, cyanide, and synthetic organic chemicals [EPA 2017]), not those impaired by other types of "pollution" (e.g., altered flow, channel modification).

CWA Section 303(d) also requires states to maintain a list of impaired water bodies so that a TMDL can be established. A TMDL is a plan to restore the beneficial uses of a stream, or to otherwise correct impairment. It establishes the allowable pollutant loadings or other quantifiable parameters (e.g., pH, temperature) for a water body, thereby providing the basis for establishing water quality–based controls. The calculation for establishing TMDLs for each water body must include a margin of safety to ensure that the water body can be used for the purposes designated by the state. The calculation also must account for seasonal variations in water quality (EPA 2017).

Water quality criteria are designed to protect beneficial uses. Ambient surface water quality may be judged against national and State water quality criteria and specific numeric objectives. See the discussion of water quality control plans below for details regarding water quality criteria and numeric objectives.

Section 401

In California, Section 401 water quality certification is the responsibility of the Water Boards, which certify that an activity is consistent with State-issued water quality control plans, called "basin plans." Section 401 requires federal agencies to obtain certification from the State or Native American tribes before issuing permits that would increase pollutant loads to a water body. The certification is issued only if such increased loads would not cause or contribute to exceedances of water quality standards.

Section 402

Section 402 of the CWA established the National Pollutant Discharge Elimination System (NPDES) permit program to regulate point-source and nonpoint-source discharges of pollutants into waters of the United States (see 40 CFR Part 122). An NPDES permit sets specific limits for discharges of pollutants into waters of the United States and establishes monitoring and reporting requirements, as well as special conditions. The regional water boards typically issue NPDES permits for a 5-year period. The NPDES permits are issued for long-term discharges, including discharges from wastewater treatment plants, and temporary discharges, such as discharges during construction activities. The State Water Board has adopted a Statewide Permit for Stormwater Discharges Associated with Construction Activity (Construction General Permit) (Order 2009-0009-DWQ) for construction sites where 1 or more acres of soil would be disturbed. The Construction General Permit requires, among other actions, the implementation of mandatory best management practices (BMPs), including pollution/sediment/spill control plans, training, sampling, and monitoring for non-visible pollutants.

Section 404

Section 404 of the CWA establishes programs to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. Under Section 404, any person or public agency proposing to locate a structure, excavate, or discharge dredged or fill material into waters of the United States, or to transport dredged material for the purpose of dumping it into ocean waters, must obtain a permit from USACE. The extent of waters of the United States is defined in 33 CFR Section 230.3(s) and clarified in USACE Regulatory Guidance Letters. The Section 404(b)(1) guidelines provide environmental criteria and other guidance used in evaluating proposed discharges of dredged materials into waters of the United States.

Federal Antidegradation Policy

In 1975, EPA included the antidegradation requirements in the Water Quality Standards Regulation (40 CFR Section 130.17, 40 CFR Sections 55340–55341). The requirements were included in the 1987 CWA amendment in Section 303(d)(4)(B).

The federal antidegradation policy is relevant to the proposed Project as it pertains to potential effects of implementation of the proposed Project on water quality.

Federal Safe Drinking Water Act

The Safe Drinking Water Act was originally enacted by Congress in 1974, to protect public health by regulating the nation's public drinking water supply. The Safe Drinking Water Act authorizes EPA to set national health-based standards for drinking water to protect against both naturally occurring and human-made contaminants that may be found in drinking water. The law, amended in 1986 and 1996, requires many actions to protect drinking water and its Sources, including rivers, lakes, reservoirs, springs, and

groundwater wells. The federal antidegradation policy is relevant to the proposed Project as it pertains to potential effects of implementation of the proposed Project on water quality (e.g., drinking water quality).

Bay-Delta Accord of 1994

The Bay-Delta Accord, signed in 1994, established interim Bay-Delta standards supported by both the State and federal governments and allowed the federal government to return primary control over Bay-Delta water management to the State of California. It committed water users to provide money and water to improve the Bay-Delta ecosystem, and in return guaranteed a 3-year reprieve from additional species protection requirements. In addition, the Bay-Delta Accord started a long-term planning process to find comprehensive solutions to the environmental and water supply problems in the Bay-Delta. CALFED, a collaborative State/federal effort, was tasked with identifying a package of projects and programs to restore the Bay-Delta's ecosystem and improve water supply reliability and water quality. The Bay-Delta Accord of 1994 is relevant to the proposed Project based on the location of the proposed Project (e.g., within the Bay-Delta).

State

Central Valley Flood Protection Board

The CVFPB was created in 1911 to help manage flood risks in the Central Valley on a systemwide basis through the development of a comprehensive flood control plan for the Sacramento and San Joaquin rivers, and to act as the nonfederal sponsor for federal flood control projects in the Central Valley. The CVFPB has jurisdiction throughout the Sacramento and San Joaquin valleys, which is synonymous with the drainage basins of the Central Valley and includes the Sacramento–San Joaquin Drainage District.

An encroachment permit from the CVFPB is required for every proposal or plan of work that:

(1) Is located between or in the vicinity of any project levees.

(2) Is located within a CVFPB easement.

(3) Is located within a designated floodway that has been adopted by the CVFPB.

(4) Is located within 30 feet of a non-leveed regulated stream listed in California Code of Regulations Title 23, Division 1, Article 8, Table 8.1.

(5) May have a negative effect on any adopted plan of flood control.

Title 23 of the California Code of Regulations and the California Water Code provide guidance to DWR and the CVFPB on enforcement of appropriate standards for flood control projects in the Central Valley. These codes authorize DWR and the CVFPB to enforce standards for erecting, maintaining, and operating levees, channels, and other flood control works within their jurisdictions.

The CVFPB regulations are relevant to the proposed Project based on the location of the proposed Project (i.e., within the Yolo Bypass) and the evaluation of potential effects of implementation of the proposed Project on surface hydraulics and hydrology.

Delta Protection Act

The Delta Protection Act (Water Code Sections 12200–12205) was enacted in 1959 for the protection, conservation, development, control, and use of the waters in the Delta for the public good. This law was enacted at the same session in which the Legislature enacted the Burns-Porter Act, financing the initial facilities of the State Water Resources Development System (now known as the SWP). The Delta Protection Act of 1959 required the SWP, in conjunction with the federal CVP, to provide salinity control and an adequate water supply for the users of water in the Delta.

The Delta Protection Act of 1992 (Public Resources Code Sections 29700–29716) includes a series of findings and declarations regarding the quality of the Delta environment and emphasizes the national, state, and local importance of protecting the Delta's unique resources. The law mandated a State-level planning effort to address the needs of Delta communities. The Delta Protection Commission became a permanent State agency in 2000 because a need for continued planning and management was identified. The Delta Protection Act is relevant to the proposed Project based on the location of the proposed Project (i.e., within the Bay-Delta).

Delta Reform Act of 2009 and Delta Plan

According to the Delta Reform Act, a State or local agency approving, funding, or carrying out a project, plan, or program, upon determining that its project is a "permitted action" subject to regulations of the Delta Plan, must certify the consistency of the project with the Delta Plan's policies (Water Code Section 85225).

The Delta Stewardship Council was granted specific regulatory and appellate authority by the California Legislature under the 2009 Delta Reform Act over certain actions that take place in the Delta or Suisun Marsh, in whole or in part. The council exercises that authority by developing and implementing the Delta Plan and its accompanying regulations.

The mission of the Delta Stewardship Council is to promote the coequal goals of water supply reliability and ecosystem restoration in a manner that protects and enhances the unique values of the Delta as an evolving place (Water Code Section 85054). The council has a legally enforceable management framework for the Delta and Suisun Marsh in the Delta Plan, which applies best available science to further the coequal goals.

The Delta Reform Act of 2009 and Delta Plan are relevant to the proposed Project based on the location of the proposed Project (i.e., within the Delta) and because they provide context for the evaluation of potential effects of implementation of the proposed Project on water quality.

California Safe Drinking Water Act

The California Safe Drinking Water Act (Health & Safety Code Sections 4010 through 4039.6) authorizes the California Department of Public Health to establish maximum contaminant levels that are at least as stringent as those required by EPA under the federal Safe Drinking Water Act. The California Department of Public Health has established maximum contaminant levels for contaminants that may occur in public water systems, including all substances for which federal maximum contaminant levels exist, and that may have adverse health effects. Operators of public water systems in California must meet federal and State drinking water standards. The California Safe Drinking Water Act is relevant to the proposed Project as it pertains to potential effects of implementation of the proposed Project on water quality (e.g., drinking water quality).

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) established the State Water Board and divided the state into nine regions, each overseen by a regional water board (see California Water Code Section 13000 et seq.) The nine regional water boards have primary responsibility for the coordination and control of water quality within their respective jurisdictional boundaries. Under the Porter-Cologne Act, "water quality objectives" are limits or levels of water quality constituents or characteristics established for the protection of beneficial uses.

The Porter-Cologne Act requires the regional water boards to establish water quality objectives while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Designated beneficial uses, together with the corresponding water quality objectives, and an antidegradation policy also constitute water quality standards under the federal Clean Water Act. The water quality objectives provide requirements for water quality control.

If USACE determines that only non-federal waters are present in the restoration project area, then no federal CWA permit would be required. Regardless of federal jurisdiction, however, the project would require a permit, or "waste discharge requirements," for impacts on any waters of the state. The waste discharge requirements would be issued by the appropriate regional water board or, for statewide or multi-regional projects, by the State Water Board. Under the Porter-Cologne Act, discharges to all waters of the State, including all wetlands and other waters of the State (including but not limited to isolated wetlands), are subject to State regulations.

A discharger whose project disturbs 1 or more acres of soil or disturbs less than 1 acre but is part of a larger common plan of development that in total disturbs one acre or more, must obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities, Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, and disturbances to the ground such as stockpiling or excavation; however, it does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a stormwater pollution prevention plan (SWPPP).

The Porter-Cologne Act is relevant to the proposed Project as it pertains to potential effects of implementation of the proposed Project on water quality.

Water Quality Control Plans

Under the Porter-Cologne Act, waters of the State fall under the jurisdiction of the State Water Board and the nine regional water boards. "Waters of the State" means any surface water or groundwater, including saline waters, within the boundaries of the state (Water Code Section 13050[e]). The federal government has delegated to the State Water Board and regional water boards the authority to implement the requirements of the federal CWA in California, including issuing NPDES permits, under the Porter-Cologne Act. However, the requirements of the Porter-Cologne Act are even broader than those of the CWA. The Porter-Cologne Act requires the regional water boards to prepare and periodically update water quality control plans, also known as "basin plans." Each basin plan establishes water quality objectives sufficient to ensure that the designated beneficial uses of surface water and groundwater are reasonably protected, and actions to control nonpoint and point Sources of pollution.

Any person who discharges or proposes to discharge any waste that could affect the quality of the waters of the State must file a "report of waste discharge" with the appropriate regional water board. "Waste" includes any and all waste substances associated with human habitation, of human or animal origin, or from any producing, manufacturing, or processing operation (Water Code Section 13050[d]). Upon receipt of a report of waste discharge, the regional water board may issue "waste discharge requirements" designed to ensure compliance with applicable water quality objectives and other requirements of the basin plan.

A public review process is conducted every 3 years to identify and prioritize the actions needed to address water quality concerns and maintain the effectiveness of the basin plan. Amendments to basin plans may include site-specific water quality objectives for a single constituent, basin-wide control programs for a suite of potential pollutants, and/or policy recommendations and strategies for addressing emerging contaminants and/or climate change.

The following water quality control plans are relevant to the proposed Project as they pertain to potential effects of implementation of the proposed Project on water quality and include the relevant water quality objectives to which the proposed Project's changes are compared.

Sacramento and San Joaquin River Basin Water Quality Control Plan

The primary water quality control plan for the proposed Project area is *The Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region: the Sacramento River Basin and the San Joaquin River Basin* (Regional Water Board 2019). As outlined in the Basin Plan, water quality control consists primarily of protecting and maintaining water quality standards. The standards consist of (a) designated beneficial uses of water, (b) water quality objectives, and (c) the State's anti-degradation policy.

In addition to identifying and establishing water quality standards, the Basin Plan outlines implementation, regulatory (permit), and enforcement programs. Water quality objectives have been established by the Central Valley Regional Water Board to protect the designated beneficial uses established in the Basin Plan. These protective limits are achieved primarily through the combined, collective issuance of individual water quality permits (and certifications) for significant human-caused Sources of pollution. Permits may contain specific numeric limits (i.e., effluent limitations) on pollutant quantities to be discharged or regulate other (e.g., construction) activities to ensure that, collectively and with the benefit of dilution, water quality objectives would be achieved. Surface water bodies in the North Delta are currently listed as impaired in multiple pollutant categories. Section 303(d) of the CWA requires the development of TMDLs for impaired water bodies (State Water Board 2022a) (Table 3.10-4).

Central Valley Pesticide and TMDL Basin Plan Amendment

In March 2014, the Central Valley Regional Water Board adopted Resolution RS-2014-0041 for control of diazinon and chlorpyrifos discharges. This amendment applies to the Sacramento and San Joaquin River basins in response to diazinon and chlorpyrifos concentrations, which exceed applicable water quality objectives. These contaminants are most often found in water bodies because of application as a pesticide in agricultural areas. The aquatic life beneficial use is the most sensitive to both diazinon and chlorpyrifos. The TMDL for the two pesticides applies to Miner Slough, the Sacramento River Deep Water Ship Channel, Prospect Slough, and Cache Slough. Not to be exceeded more than once in a 3-year

period, diazinon water quality objectives are 0.16 µg/l (1-hour average) and 0.10 µg/l (4-day average). Chlorpyrifos objectives are 0.025 µg/l (1-hour average) and 0.015 µg/l (4-day average).

Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Watershed

The 1995 *Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta* (1995 Bay-Delta Plan) (State Water Board 1995) was developed as a result of the 1994 Bay-Delta Accord, which committed the CVP and SWP to new Delta habitat objectives. One of the main features of the 1995 Bay-Delta Plan was the estuarine habitat objectives (X2) for Suisun Bay and the western Delta. The "X2 standard" refers to the position at which 2 ppt salinity occurs in the Delta estuary and is intended to improve shallow-water fish habitat in the spring of each year (see Section 3.10.2 for additional information regarding X2). The standard as implemented in D-1641 specifies that the location of X2 must remain west of the confluence of the Sacramento and San Joaquin rivers, at Collinsville, measured 81 km upstream of the Golden Gate Bridge, for the months of February–June, and downstream of other specific locations in the Delta on a certain number of days each month from February through June (Reclamation 2019). A positive shift in the X2 location represents a condition of increased saltwater intrusion, representing a poorer condition.

Other elements of the 1995 Bay-Delta Plan included export-to-inflow ratios intended to reduce entrainment of fish at the export pumps, Delta Cross Channel gate closures, minimum Delta outflow requirements, and San Joaquin River salinity and flow standards. The objectives were largely implemented through a water rights decision (D-1641) (State Water Board 2000) and placed responsibility for attaining these requirements primarily on the U.S. Bureau of Reclamation and DWR.

The Bay-Delta Plan and D-1641 include several additional salinity objectives to protect beneficial uses (e.g., municipal and industrial uses, agricultural uses, and fish and wildlife uses) at locations throughout the Delta, such as Rock Slough (approximately 40 river miles from the proposed Project), the Sacramento River at Emmaton (approximately 25 river miles from the proposed Project), the San Joaquin River at Jersey Point (approximately 28 river miles from the proposed Project), and the Sacramento River at Collinsville (approximately 30 river miles from the proposed Project) (State Water Board 2000) (**Table 3.10-5**). D-1641 considered activities from various stakeholders and an array of factors affecting salinity in the South Delta in identifying flow objectives and allocating responsibility for meeting water quality requirements. Accordingly, D-1641 is considered in the discussion below regarding the proposed Project's potential impacts on salinity.

The Bay-Delta Plan was updated by the State Water Board in 2006 (State Water Board 2006) and amended in 2018 (State Water Board 2018). As of 2025, the State Water Board is considering updates to the Bay-Delta Plan, including the provisions based on the voluntary agreements proposed by the public water agencies and State and federal agencies. These provisions are known as the Healthy Rivers and Landscapes Proposal and referred to as the "VA pathway" or "VA provisions" in the proposed Bay-Delta Plan updates.

TABLE 3.10-5
D-1641 STATION SALINITY WATER QUALITY OBJECTIVES—FISH AND WILDLIFE AND AGRICULTURE

Station	Water Year Type[1]	Fish and Wildlife		Agriculture			
		Value[2]	Time Period	Value[2]	Time Period	Value[2]	Time Period
Sacramento at Emmaton	Wet	Not Applicable		0.45	Apr 1–Aug 15	Not Applicable	
	Above Normal			0.45	Apr 1–Jun 30	0.63	Jul 1–Aug 15
	Below Normal			0.45	Apr 1–Jun 19	1.14	Jun 20–Aug 15
	Dry			0.45	Apr 1–Jun 14	1.67	Jun 15–Aug 15
	Critical			2.78	Apr 1–Aug 15	Not Applicable	
San Joaquin at Jersey Point	Wet	0.44	Apr 1–May 31	0.45	Apr 1–Aug 15	Not Applicable	
	Above Normal	0.44	Apr 1–May 31	0.45	Apr 1–Aug 15	Not Applicable	
	Below Normal	0.44	Apr 1–May 31	0.45	Apr 1–Jun 19	0.74	Jun 20–Aug 15
	Dry	0.44	Apr 1–May 31	0.45	Apr 1–Jun 14	1.35	Jun 15–Aug 15
	Critical	Not Applicable		2.2	Apr 1–Aug 15	Not Applicable	
San Joaquin at Prisoners Point	Wet, Above	0.44	Apr 1–May 31	Not Applicable			
	Normal, Below	0.44	Apr 1–May 31				
	Normal, Dry	0.44	Apr 1–May 31				
Collinsville[3]	Not Applicable	19	Oct	Not Applicable			
		15.5	Nov–Dec				
		12.5	Jan				
		8	Feb–Mar				
		11	Apr–May				

Notes: D-1641 = Water Right Decision 1641

1. Sacramento Valley Water Year Hydrologic Classification.
2. Maximum 14-day running average of mean daily electrical conductivity (EC) (millimhos per centimeter [mmhos/cm]).
3. Maximum monthly average of both daily high-tide EC values (mmhos/cm).

Source: State Water Board 2000

Sacramento–San Joaquin Delta Mercury Control Program and Methylmercury Total Maximum Daily Load

On April 22, 2010, the DMCP and associated TMDL—an official calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards—for the control of methylmercury and total mercury in the Delta was adopted by the Central Valley Regional Water Board as a Basin Plan amendment. It included a phased approach for addressing the methylmercury impairment in the Delta (Central Valley Regional Water Board Resolution R5-2010-0043). The DMCP was approved by the State Water Board and the California Office of Administrative Law on September 15, 2011 (State Water Board 2011). Final approval by EPA was received on October 20, 2011 (EPA 2011).

Implementation of the DMCP requires State Water Board staff to review the DMCP and consider revising objectives, allocations, implementation strategies and schedules, and the final compliance date for dischargers. The DMCP has been implemented using a phased, adaptive management approach. Among other actions, the first phase (Phase 1–DMCP Review) emphasizes studies and pilot projects to develop and evaluate management practices for controlling methylmercury and developing upstream mercury

control programs for major tributaries, developing and implementing a mercury exposure reduction program to protect humans, and developing a mercury offset program. For Phase 2, dischargers would implement methylmercury controls to comply with final allocations and continue efforts to reduce inorganic (total) mercury. Compliance monitoring and implementation of upstream control programs also would occur in Phase 2. Phase 1 is ongoing and will conclude upon approval of the DMCP review by the Central Valley Regional Water Board. Phase 2 was initiated October 20, 2022, and will extend to October 20, 2030 (Robbins et al. 2024).

The DMCP sets limits for the amount of methylmercury that may be discharged by both point and nonpoint Sources to various sub-regions of the Delta over the period of a year. The regulation sets site-specific methylmercury fish tissue objectives and monitoring provisions that apply to all Delta waterways, to Yolo Bypass waterways within the Delta, and to those north of the Legal Delta boundary to which the commercial beneficial use applies (Regional Water Board 2010; State Water Board 2018; Robbins et al. 2024).

The Yolo Bypass, where the proposed Project area is located, is allocated a total methylmercury load of 235 grams per year from all possible Sources, including wetlands. This represents a 78 percent reduction from current estimated loads (Regional Water Board 2010; Robbins et al. 2024). The Toe Drain and other water bodies downstream of the proposed Project area are specifically identified as being subject to the regulation. Under the DMCP, nonpoint Sources will be regulated through the authority contained in State and federal laws and regulations, including the State Water Board's Nonpoint Source Implementation and Enforcement Policy. Therefore, agricultural and wetland managers are responsible only for the methylmercury added by their activity or land use, not for methylmercury in source water.

Specifically, during Phase 1, all nonpoint Sources in the Delta and Yolo Bypass must implement reasonable, feasible actions to reduce sediment in runoff with the goal of reducing inorganic mercury loading to the Yolo Bypass and Delta, in compliance with existing Basin Plan objectives and requirements and Irrigated Lands Regulatory Program requirements. For DMCP subareas not in compliance with allocations by 2030, the regional water board may develop load allocations for individual Sources and require individual monitoring and waste discharge requirements.

State Water Resources Control Board Statement of Policy with Respect to Maintaining High Quality of Waters in California

In 1968, the State Water Board adopted a policy (Resolution No. 68-16) that is frequently referred to as the "Anti-degradation Policy." This policy states that if water quality is better than the State Water Board's adopted water quality requirements, the higher water quality shall be maintained until it is demonstrated that the change in water quality will be consistent with maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial uses, and will not result in water quality less than prescribed in adopted policies.

The policy also states that any activity that discharges or proposes to discharge waste to waters with higher water quality than specified in adopted policies must implement best practicable treatment or must provide that a pollution or nuisance will not occur, and that the highest water quality consistent with the maximum benefit to the people of the state will be maintained.

In July 1990, the State Water Board issued an administrative procedures update to the regional water boards, describing procedures for findings that would allow degradation of water quality if balanced against the benefit to the public of the activity that caused the water quality degradation. The administrative procedures update stated that the findings should identify the pollutants that will lower water quality, the socioeconomic and public benefit of the action, and the beneficial uses affected. The State Water Board's statement is relevant to the proposed Project as it provides context to the existing water quality conditions.

Water Quality Criteria for Toxics

The *Policy for Implementing Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* is referred to as the "State Implementation Policy." This State policy for water quality control was adopted by the State Water Board on March 2, 2000, and became effective by May 22, 2000. The policy applies to discharges of toxic pollutants into the inland surface waters, enclosed bays, and estuaries of California subject to regulation under the State Porter-Cologne Act (Division 7 of the Water Code) and the federal CWA. Such regulation may occur through the issuance of NPDES permits or other relevant regulatory approaches. This policy establishes the following:

- Provisions for implementing priority pollutant criteria promulgated by EPA through the National Toxics Rule (40 CFR Section 131.36) (promulgated December 22, 1992, and amended May 4, 1995) and through the California Toxics Rule (40 CFR Section 131.38) (promulgated May 18, 2000, and amended February 13, 2001), and for priority pollutant objectives established by the regional water boards in their water quality control plans.
- Monitoring requirements for 2,3,7,8-tetrachlorodibenzo-p-dioxin (known as "TCDD" or "dioxin") equivalents.
- Chronic toxicity control provisions.

In addition, the policy includes special provisions for certain types of discharges and factors that could affect the application of other provisions in the policy.

The California Toxics Rule is applicable to all State waters, as are the EPA advisory National Recommended Water Quality Criteria. The water quality criteria for toxics are relevant to the proposed Project as they pertain to potential effects of implementation of the proposed Project on water quality (e.g., toxics).

Sustainable Groundwater Management Act

The SGMA was enacted in September 2014 (see California Water Code Section 10720 et seq.). This law established a new structure for locally managing California's groundwater in addition to the existing groundwater management provisions established by Assembly Bill (AB) 3030 (1992), Senate Bill (SB) 1938 (2002), and AB 359 (2011), as well as SBX7 6 (2009). The SGMA includes the following key elements:

- Provides for the establishment of a groundwater sustainability agency, or GSA, by one or more local agencies overlying a designated groundwater basin or subbasin identified in DWR Bulletin 118-03.

- Requires all DWR Bulletin 118 groundwater basins found to be of "high" or "medium" priorities to prepare groundwater sustainability plans, or GSPs.
- Provides for the proposed revisions, by local agencies, to the boundaries of a DWR Bulletin 118 basin, including the establishment of new subbasins.
- Authorizes DWR to adopt regulations for the development of GSPs and review the GSPs for compliance every 5 years.
- Requires DWR to establish BMPs and technical measures for GSAs to develop and implement GSPs.
- Provides regulatory authority to the State Water Board for developing and implementing interim GSPs under certain circumstances (such as lack of compliance with development of GSPs by GSAs).

The SGMA defines "sustainable groundwater management" as "the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results." "Undesirable results" are defined as any of the following effects:

- Chronic lowering of groundwater levels.
- Significant and unreasonable reduction of groundwater storage.
- Significant and unreasonable seawater intrusion.
- Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies.
- Significant and unreasonable land subsidence that substantially interferes with surface land uses.
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

Based on the basin priority definitions included in DWR's California Statewide Groundwater Elevation Monitoring program in June 2014 and confirmed in January 2015, the SGMA required that GSPs be formed by 2020 or 2022. GSPs were required by 2020 for medium- and high-priority basins identified as subject to critical overdraft conditions. GSPs were to be completed for all other high- and medium-priority basins by 2022. Sustainable groundwater operations must be achieved within 20 years after completion of the GSPs.

The SGMA is relevant to the proposed Project as it pertains to potential effects of implementation of the proposed Project on groundwater resources, sustainable groundwater management of the Yolo Subbasin, and compliance with the Yolo Subbasin GSP.

Regional and Local

The following regional and local policies relevant to the proposed Project based on location, project type, and/or environmental setting have been included for context; however, DWR, as a State agency, is not subject to local ordinances.

Irrigated Lands Regulatory Program

The Irrigated Lands Regulatory Program is a statewide program initiated in 2003 with focus on protecting surface waters; groundwater regulations were added in 2012. The program regulates all commercial irrigated lands within the Yolo Subbasin. The Irrigated Lands Regulatory Program was implemented to protect receiving water bodies from impairment associated with agricultural runoff, tile drain flows, and stormwater runoff from irrigated fields. Elements of this program that overlap SGMA requirements are the monitoring programs focused on identifying groundwater impairment associated with irrigated agriculture. As of March 12, 2014, a new set of water quality regulations was imposed on irrigated agriculture and managed wetland landowners and operators in the Sacramento River watershed.

Yolo County General Plan

The goals and policies of the Yolo County General Plan (Yolo County 2009) listed below provide regional and local context for evaluation of potential effects of implementation of the proposed Project on surface hydraulics and hydrology, groundwater hydrology, and/or water quality.

The Yolo County General Plan's Conservation and Open Space Element (Yolo County 2009) includes goals and policies focused on balanced management of the county's multiple natural and cultural resources. The following goal and policies in Section G, "Water Resources," of the Conservation and Open Space Element are relevant to the proposed Project:

Goal CO-5: Water Resources. Ensure an abundant, safe, and sustainable water supply to support the needs of existing and future generations.

Policy CO-5.1: Coordinate with water purveyors and water users to manage supplies to avoid long-term overdraft, water quality degradation, land subsidence and other potential problems.

Policy CO-5.5: Integrate balanced water management programs that emphasize multiple benefits and balance competing needs into all aspects of the planning and development process.

Policy CO-5.6: Improve and protect water quality for municipal, agricultural, and environmental uses.

Policy CO-5.9: Within the Delta Primary Zone, ensure compatibility of permitted land use activities with applicable water policies of the Land Use and Resource Management Plan of the Delta Protection Commission.

Policy CO-5.12: Support the integrated management of surface and groundwater, stormwater treatment and use, the development of highly treated wastewater, and desalinization where feasible.

Policy CO-5.23: Support efforts to meet applicable water quality standards for all surface and groundwater resources.

Policy CO-5.30: Anticipate and adapt to changes in the amount and timing of water availability due to predicted effects of global warming.

The following goal and policies in Section K, "Delta Region," of the Conservation and Open Space Element (Yolo County 2009) are relevant to the proposed Project:

Goal CO-9: Delta Governance. Participate in State and regional efforts to establish governance, policy, and regulations for the Delta, to ensure the consideration of Yolo County's interests.

Policy CO-9.7: Protect water quality in the Sacramento River, its tributaries, and groundwater aquifers from excess salinity due to decreased freshwater inflow from Delta projects.

Policy CO-9.12: Work to ensure that changes to the operation of the Yolo Bypass, including the Fremont Weir, toe drain, and/or increased frequency of intentional flooding do not adversely affect Yolo County interests. These may include: the economic viability of agriculture within the Bypass, the feasibility of planned development for the Elkhorn Specific Plan, the use of County Road 22 as an alternative route during closures of Interstate 5, and the continued operation of Interstates 5 and 80, and the Union Pacific Railroad across the Bypass.

The Yolo County General Plan's Public Facilities and Services Element provides information and policy guidance to ensure that infrastructure and services will be sufficient to support existing and new development in Yolo County (Yolo County 2009). The following goal and policies in Section 2, "Stormwater and Drainage," are relevant to the proposed Project:

Goal PF-2: Stormwater Management. Provide efficient and sustainable stormwater management to reduce local flooding in existing and planned uses.

Policy PF-2.1: Improve stormwater runoff quality and reduce impacts to groundwater and surface water resources.

Policy PF-2.2: Construct on-site stormwater detention facilities that are designed so that runoff from the 100-year storm event does not: (1) result in an increase in peak release rate; (2) result in a time decrease associated with the time of concentration; (3) contribute to adjacent flood problems; and/or (4) significantly alter the direction of runoff.

Policy PF 2.4: Encourage sustainable practices for stormwater management that provide for groundwater recharge and/or improve the quality of runoff through biological filtering and environmental restoration.

The Yolo County General Plan's Health and Safety Element (Yolo County 2009) includes goals and policies intended to ensure that appropriate consideration of both natural and human-made hazards and risks are factored into land use decision-making. The following goal and policies in Section C, "Safety," Subsection 2, "Flood Hazards," of the Health and Safety Element are relevant to the proposed Project:

Goal HS-2: Flood Hazards. Protect the public and reduce damage to property from flood hazards.

Policy HS-2.2: Ensure and enhance the maintenance and integrity of flood control levees.

Policy HS-2.5: Within the Delta Primary Zone, ensure compatibility of permitted land use activities with applicable flood control and protection policies of the Land Use and Resource Management Plan of the Delta Protection Commission.

Policy HS-2.6: Maintain the structural and operational integrity of essential public facilities during flooding.

Policy HS-2.7: Manage the floodplain to improve the reliability and quality of water supplies.

Policy HS-2.8: Consider and allow for the ecological benefits of flooding within historic watercourses while balancing public safety and the protection of property.

3.10.4 Impact Analysis and Mitigation Measures

Significance Criteria

In accordance with Appendix G of the CEQA Guidelines, an impact related to hydrology and water quality is considered significant if the proposed Project would do any of the following:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
  - Result in substantial on- or off-site erosion or siltation.
  - Substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding.
  - Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional Sources of polluted runoff.
  - Impede or redirect flood flows.
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Issues Not Analyzed Further in This Draft SEIR

Risk release of pollutants due to project inundation because of being located in a tsunami or seiche zone.

Because of the proposed Project area's inland location and the lack of large, closed water bodies, the proposed Project is not located in a seiche or tsunami zone. Therefore, no impact would occur and the potential release of pollutants during inundation caused by a tsunami or seiche is not evaluated further in this Draft SEIR. Potential impacts associated with implementation of the proposed Project on the risk of release of pollutants due to project inundation in a flood hazard zone are discussed in Impact 3.10-1.

Methodology and Assumptions

As discussed in Chapter 1, "Introduction", the proposed Project is a "restoration project" as defined in Section V of the SRGO (State Water Board 2022b: Section V, p. 2); therefore, this Draft SEIR supplements and incorporates by reference the Final SRGO Program EIR, including its appendices (State Water Board 2022c). As provided by CEQA Guidelines Section 15163(b), a supplement to an EIR need

contain only the information necessary to make the previous EIR adequate for the project as revised. This means that only those project-specific activities that would introduce new significant environmental effects or cause a substantial increase in the severity of significant effects identified in the SRGO Program EIR need to be evaluated. Where existing information and analysis in the SRGO Program EIR is considered sufficient to evaluate the impacts of the proposed Project, no additional environmental review is provided.

As further outlined in Chapter 1, this Draft SEIR incorporates by reference the general protection measures and species protection measures outlined in Final SRGO Program EIR Appendices E and F, which are intended to avoid and minimize impacts on sensitive resources. Consistent with the Final SRGO Program EIR, the impact analysis for each resource area assumes that applicable general protection measures and species protection measures would be implemented and enforced in the same way as mitigation measures, consistent with Section 15126.4 of the CEQA Guidelines, and that the proposed Project would be constructed and operated in compliance with relevant federal and State regulations and ordinances. Therefore, if the analysis has determined that incorporating one or more general protection measures and/or species protection measures into the proposed Project would reasonably mitigate an impact, then the impact conclusion is less than significant. If the analysis has determined that an impact would remain significant after the incorporation of appropriate general protection measures and species protection measures, then mitigation measures from the Final SRGO Program EIR and/or project-specific mitigation measures have been recommended to further reduce the magnitude of the impact. All mitigation measures are from the Final SRGO Program EIR unless specifically stated otherwise.

The following impact analysis considers the potential impacts of the proposed Project on surface hydraulics and hydrology (Impact 3.10-1), groundwater hydrology (Impact 3.10-2), and water quality (Impact 3.10-3). The impact analysis evaluates the effects of construction activities (short-term, temporary); effects of constructed restoration elements (long-term, permanent); and effects of operations, monitoring, and maintenance activities. The approach to analyzing the proposed Project's effects on surface hydraulics and hydrology, groundwater hydrology, and water quality related to each of these impact types are described in detail in the following subsections.

Evaluated Baseline Conditions

As introduced in Section 3.2.1, "Explanation of Baselines for this Draft SEIR," the approach to evaluating impacts of the proposed Project involves two baseline conditions. The "existing conditions" for this Draft SEIR are defined as the physical environmental conditions as they existed at the time of publication of the NOP (July 23, 2024). This baseline condition is referred to as the "NOP baseline." A second baseline was developed in response to comments on the NOP and is referred to as the "future no-action baseline." The future no-action baseline reflects environmental conditions that will exist at the time the proposed Project is planned to be operational (2028) and includes the additional operation of three specific projects (Lookout Slough, the Big Notch Project, and Prospect Island). The applicability of each of these baseline conditions to the modeling efforts are discussed below.

Approach to the Analysis of Surface Hydraulics and Hydrology

Construction Activities and Operations, Monitoring, and Maintenance Activities

Methods

The potential effects of the proposed Project's construction activities and operations, monitoring, and maintenance activities on surface hydraulics and hydrology were evaluated qualitatively by considering whether temporary construction activities and periodic operations, monitoring, and maintenance activities could alter the proposed Project area's existing drainage patterns. These activities were also considered qualitatively for whether they would substantially increase the rate or amount of surface runoff in a manner which would result in substantial on- or off-site erosion or siltation; result in on- or off-site flooding; create or contribute to runoff water that would exceed the capacity of existing or planned stormwater drainage systems; or impede or redirect flood flows. This analysis is relevant to regulations related to surface hydraulics and hydrology, including the USACE and CVFPB flood control regulations.

Results

The results of the analysis of potential effects of the proposed Project's construction activities and operations, monitoring, and maintenance activities on surface hydraulics and hydrology are presented in Impact 3.10-1, under "Effects of Construction Activities" and "Effects of Operations, Monitoring, and Maintenance Activities."

Constructed Restoration Elements

Methods

Hydraulic Impact Assessment

The potential effects of the proposed Project's constructed restoration elements were evaluated quantitively using a hydraulic model that simulated changes in existing surface hydraulics and hydrology with implementation of the proposed Project. The commercial TUFLOW software package was used to assess whether long-term operation of the proposed Project could substantially alter the proposed Project area's existing drainage pattern compared to existing conditions. The high-resolution, two-dimensional model simulates depth-averaged unsteady-state free-surface flow (to simulate floods and tides) using the finite volume method.[10]

The hydraulic modeling approach, analysis, and results are summarized herein as relevant to the impact analysis. See Appendix H, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment," for additional information regarding the modeling methods, data, assumptions, and results. To facilitate a conservation analysis, the hydraulic modeling evaluated changes to hydraulic and hydrologic conditions under the 100-year design storm for the NOP baseline (comparison of conditions with the proposed Project to conditions without the proposed Project) and the future no-action baseline (comparison of conditions with the proposed Project to conditions without the proposed Project). **Table 3.10-6** summarizes the hydraulic and hydrologic conditions, variables, area of analysis, quantitative threshold(s), and applicable significance criteria from CEQA Guidelines Appendix G. Hydraulic and hydrologic conditions are defined as changes in water surface elevation (as measured by changes in water levels [feet]) and changes in channel stability and erosion (as measured by velocity [feet per second] and shear

[10] The "finite volume method" (FVM) is a numerical technique used to solve partial differential equations (PDEs), particularly those arising from physical conservation laws. It is widely used in computational fluid dynamics and other fields. FVM works by discretizing the computational domain into small, non-overlapping control volumes (cells) and then applying a volume integral formulation of the PDE over each cell.

stress [pounds per square foot]). This analysis is relevant to regulations related to surface hydraulics and hydrology, including the USACE and CVFPB flood control regulations.

TABLE 3.10-6
IMPACT ASSESSMENT CRITERIA FOR SURFACE HYDRAULICS AND HYDROLOGY

Hydraulic and Hydrologic Conditions	Variable (unit)	Area of Analysis	Quantitative Threshold(s)	CEQA Guidelines Appendix G Significance Criteria
Water Surface Elevation	Water levels (feet)	Locally (across the proposed Project area) Regionally (in the Yolo Bypass and downstream areas, including Rio Vista)	Increases of 0.1 foot under the proposed Project compared to existing conditions, as generally considered by the CVFPB and USACE.	Changes to the existing drainage pattern in a manner which could substantially increase the rate or amount of surface runoff in a manner which would result in on or off-site flooding; or impede or redirect flood flows.
Channel Stability and Erosion	Velocity (feet per second)	Locally (across the proposed Project area)	Varies based on the material (e.g., soil, vegetation); therefore, exceedances in a material's permissible velocity and shear stress under the proposed Project compared to existing conditions (see Appendix H, Table 1).	Changes to the existing drainage pattern in a manner which could result in substantial on- or off-site erosion or siltation.
	Bed shear stress (pounds per square foot)	Locally (across the proposed Project area)		

Notes: CEQA = California Environmental Quality Act; CVFPB = Central Valley Flood Protection Board; USACE = U.S. Army Corps of Engineers
Source: Compiled by Environmental Science Associates in 2025 based on Appendix H, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment."

Hydrodynamic Flow Modeling

The RMA Bay-Delta model was applied to quantify changes in flow and salinity with implementation of the proposed Project. (See "Approach to the Analysis of Water Quality" for additional details regarding how the RMA Bay-Delta model was applied to salinity.) In summary, the RMA Bay-Delta model uses the finite element method to simulate two-dimensional depth-averaged/one-dimensional cross-sectionally averaged flow and salinity for a 7.5-minute computational time step.[11] The model has been applied to flow and salinity impacts analyses for numerous restoration projects in the Bay-Delta system (see, for example, RMA 2009, 2012, 2015a, 2015b). The RMA Bay-Delta model has undergone continual development over more than 20 years to reflect currently available data. See Appendix I, "Tide's End Multibenefit Restoration Project Modeling Evaluation of Stage and Water Quality Impacts," for additional details of the modeling approach, configuration, assumptions, limitations, and results.

Hydrodynamic simulations were performed for two periods: January–December 2018 (classified as a below-normal water year) and January–December 2020 (classified as a dry water year). Running the model for these two time periods provides an understanding of how flow might change under a range of conditions that is consistent with environmental review of similar projects (e.g., DWR 2020b). To assess potential impacts associated with the proposed Project, hydrodynamic simulations were performed for the following scenarios: Baseline conditions without the proposed Project, Baseline conditions with the proposed Project, Future conditions without the proposed Project, and Future conditions with the proposed Project. RMA's "Baseline conditions" scenarios include projects constructed prior to July 2024

[11] The "finite element method" is a popular method for numerically solving differential equations arising in engineering and mathematical modeling and a common approach for modeling fluid flow and other environmental phenomena. "Computational time step" refers to the interval at which outputs from the model are generated.

and is synonymous with the hydraulic impact assessment's "NOP-existing conditions" scenarios. The Baseline conditions are presented in this section. The Future condition scenarios include projects constructed after July 2024 (e.g., Lookout Slough) and planned restoration projects at Prospect Island, McCormack Willamson Tract Phase B, Little Egbert Multi-Benefit Project, Cache Slough Mitigation Bank, Chipps Island, Grizzly King, North Delta Fish Conservation Bank, Peters Pocket and Zacharias Ranch, as well as Big Notch flows. The Future conditions are presented in Chapter 4, "Cumulative Impacts," and discussed further in Appendix I to this Draft SEIR, "Tide's End Multibenefit Restoration Project Modeling Evaluation of Stage and Water Quality Impacts".

The hydrodynamic modeling results were post-processed to assess potential tidal range impacts of the proposed Project. Changes in tidal range can affect regional water diversions and drainage patterns. For instance, lands adjacent to the proposed Project area use both pumps and gravity-driven diversions to irrigate agricultural land with water from Delta channels. Some of these lands also use pumps to drain agricultural land and discharge to Delta channels. Thus, large changes to the tidal range have the potential to affect agricultural water management. Because soil drainage for agriculture is managed by pumping and gravity drainage in the Delta, any impacts on pumping and gravity drainage would directly affect soil drainage. More specifically, for pumps, an increase in the low-tide elevation would reduce the amount of head needed to be overcome by the pump and thus would result in the possibility of reducing energy consumption costs, while a reduction in the elevation of high tides would increase those energy consumption costs. For intakes operated using gravity, an increase in the elevation of low tides would result in the possibility of increasing the duration and flow of water onto agricultural fields, while a decrease in the high-tide elevation would result in the possibility of conversely decreasing the duration and flow of irrigation water onto agricultural fields.

Wind-Wave Analysis

Historically, wind waves can grow to 4 feet or more in the Yolo Bypass during large storm events due to the combination of long fetch lengths and strong sustained winds (DWR 2016). To evaluate potential changes in wind waves due to proposed Project grading and wetland and riparian habitat restoration, a two-dimensional wind-wave model was developed using the Simulating WAves Nearshore (SWAN) model. SWAN is a third-generation phase-averaged wave action model developed at Delft University of Technology (Delft University of Technology 2019). Delft3D software (Version 4.04.01; Deltares 2011) was used to prepare inputs and execute the SWAN model.

SWAN was selected for its capabilities to represent the wave process for the inundated proposed Project area: shallow-water wave mechanics and, if deemed necessary in future analysis, wave attenuation by vegetation. SWAN is functionally equivalent to USACE's STWAVE model, with both considered third-generation wave models that account for wave generation, propagation, and dissipation. SWAN is deemed "Allowed for use" by USACE's Hydrology, Hydraulics and Coastal Community of Practice and approved for Federal Emergency Management Agency flood studies and includes a module (SWAN VEG) for evaluating wave damping effects of a vegetation field (e.g., tules, riparian vegetation).

The wave modeling approach, analysis, and results were summarized by Environmental Science Associates (ESA 2024a, 2025a). To facilitate understanding of the proposed Project effects, the wind-wave modeling evaluated changes to wave conditions under a range of high- and low-flow conditions, comparing the proposed Project to conditions without the proposed Project. Table 3.10-6 summarizes the

hydraulic and hydrologic conditions, variables, area of analysis, quantitative threshold(s), and applicable significance criteria from CEQA Guidelines Appendix G. Hydraulic and hydrologic conditions are defined as changes in water surface elevation (or in this case, as measured by changes in wave height [feet]). This analysis is relevant to regulations related to surface hydraulics and hydrology, including the USACE and CVFPB flood control regulations.

Results

This section summarizes the results of the hydraulic impact assessment, hydrodynamic flow modeling, and wind-wave analysis. These results are interpreted further in Impact 3.10-1 under "Effects of Constructed Restoration Elements."

Changes in Water Surface Elevation

Changes in water surface elevation were evaluated across the Yolo Bypass and downstream areas, and within the proposed Project area. **Table 3.10-7** presents the changes in water levels at the 13 index points under the proposed Project compared to the NOP baseline and the future no-action baseline. The 13 index points are illustrated in **Figure 3.10-4**.

As shown in Table 3.10-7, although decreases in water levels were simulated upstream of the proposed Project area (index points 1, 2, and 5), the changes were minor (between 0 and -0.02 foot) and relatively localized. No change in water levels was simulated at the remaining index points downstream and adjacent to the proposed Project area. Because the changes to existing conditions in the proposed Project area were found to be localized and to generally result in decreases in water levels for the 100-year design storm, the proposed Project's potential to transfer risk from one part of the system to another would be negligible.

Changes in Channel Stability and Shear Stress

A comparison of the modeled velocities (generally 2–3 feet per second across the proposed Project area) with established erosion thresholds for local soil and cover types (see Table 1 in Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment") indicates that the existing condition is not prone to erosion of the in-place material for the range of flows being analyzed. Localized changes in velocity and bed shear stress resulting from the proposed Project were also evaluated. Across the proposed Project area, simulated changes in velocity under both the NOP baseline and the future no-action baseline ranged between -1 and 1 foot per second. Although the hydraulic modeling analysis indicates that the proposed Project would result in some changes in velocity, these changes are relatively minor and localized in nature. Maximum velocities in and around the proposed Project area would remain low enough that channel erosion and scour potential along existing and proposed facilities would not change substantially compared to existing conditions; therefore, the risk of increased erosion posed by the proposed Project is considered minimal.

Changes to Tidal Range in the Delta

Modeling by RMA predicted a slight muting of tidal range in the vicinity of the proposed Project area (i.e., tidal range in the Toe Drain) under the Baseline conditions: a decrease in water surface elevation of a maximum of -0.08 foot in mean higher high water, and an increase in water surface elevation of a maximum of 0.05 foot in mean lower low water. The amount of tidal muting decreases with distance from the proposed Project area, such that little to no change is predicted for areas outside of the northwest Delta (e.g., changes less than 0.05 foot). Even at their largest value of approximately 0.2 foot, the proposed Project's effects on water surface elevation in the Delta are only a fraction of the total tide range and its

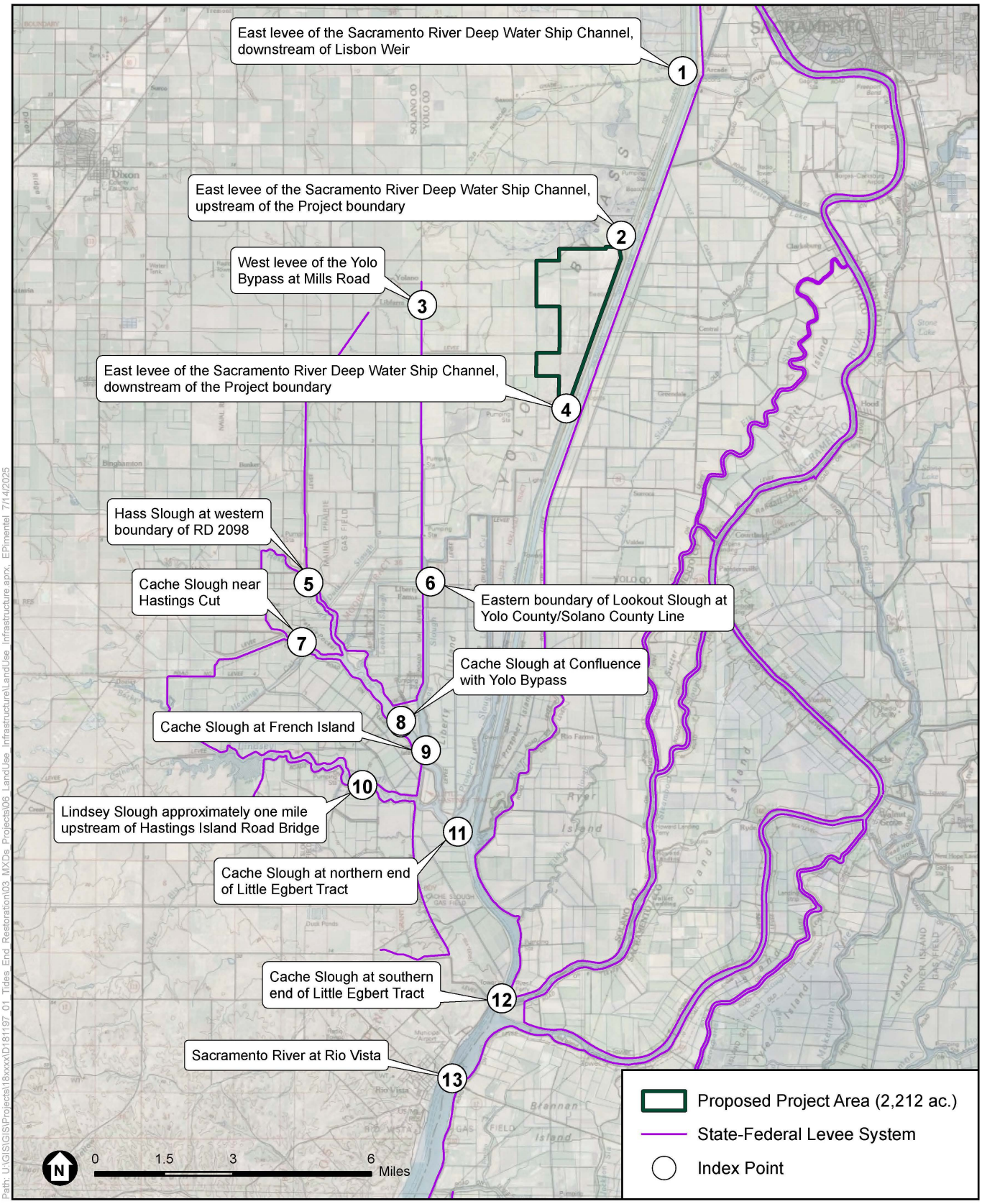
natural variations during the entire tidal cycle. The average natural tide range between mean higher high water and mean lower low water for the areas adjacent to the proposed Project area is approximately 4 feet and 4.4 feet. Natural variations in the sun and moon's positions cause additional variations of approximately 1 foot in the mean tide range on a 2-week cycle, known as the "spring-neap cycle."

TABLE 3.10-7
PROPOSED PROJECT CHANGES IN WATER SURFACE ELEVATION UNDER THE 100-YEAR DESIGN STORM

Index Point	1957 Design WSEL (feet, NAVD88)	Design Freeboard (feet)	Existing Top of Levee Elevation (feet, NAVD88)	Baseline Condition	WSEL (feet, NAVD88)		
					Without Project	With Project	Change
1	25.72	6	32.03	NOP—Existing Conditions	27.65	27.63	-0.02
				Future No-Action	27.6	27.59	-0.01
2	24.44	6	34.14	NOP—Existing Conditions	25.82	25.81	-0.01
				Future No-Action	25.77	25.75	-0.02
3	23.42	6	29.99	NOP—Existing Conditions	24.26	24.26	0.00
				Future No-Action	24.26	24.26	0.00
4	22.06	6	28.68	NOP—Existing Conditions	23.60	23.60	0.00
				Future No-Action	23.50	23.50	0.00
5	17.88	3	20.86	NOP—Existing Conditions	19.22	19.22	0.00
				Future No-Action	19.22	19.22	0.00
6	19.71	6	25.34	NOP—Existing Conditions	20.41	20.41	0.00
				Future No-Action	20.18	20.17	-0.01
7	17.88	3	20.86	NOP—Existing Conditions	19.22	19.22	0.00
				Future No-Action	19.22	19.22	0.00
8	17.86	3	20.59	NOP—Existing Conditions	19.21	19.21	0.00
				Future No-Action	19.21	19.21	0.00
9	17.86	N/A	N/A	NOP—Existing Conditions	19.17	19.17	0.00
				Future No-Action	19.18	19.18	0.00
10	17.85	3	19.57	NOP—Existing Conditions	18.84	18.84	0.00
				Future No-Action	18.86	18.86	0.00
11	17.82	3	20.82	NOP—Existing Conditions	18.40	18.40	0.00
				Future No-Action	18.39	18.39	0.00
12	12.42	N/A	11.85 (Restricted Height Levee El.)	NOP—Existing Conditions	15.03	15.03	0.00
				Future No-Action	15.02	15.02	0.00
13	12.01	3	22.99	NOP—Existing Conditions	12.56	12.56	0.00
				Future No-Action	12.56	12.56	0.00

Notes: N/A = not applicable; NAVD88 = North American Vertical Datum of 1988; NOP = Notice of Preparation; WSEL = water surface elevation

Source: Data compiled by Environmental Science Associates in 2025 using information presented in Table 7 of Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment".



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Tide's End Multibenefit Restoration Project

Figure 3.10-4
Hydraulic Modeling Index Points

Prepared by: ESA

SOURCE: Esri 2025, USACE 2024, ESA 2025

Changes in Wind Waves

Site-specific wind-wave modeling suggests that wave heights may be as high as approximately 4.5 feet along the Sacramento River Deep Water Ship Channel during certain conditions (ESA 2024a). The proposed Project's habitat elements would work collectively as a wind-wave buffer to provide additional protection to portions of the Sacramento River Deep Water Ship Channel levee, which protects the city of West Sacramento. Proposed adjustments to the amount and orientation of managed wetland, marsh riparian forest and scrub, and tidal wetland vegetation along the eastern side of the Capitol Oil parcel would increase the attenuation of wave energy generated by wind over open water during periods when the Yolo Bypass is flooded, thereby reducing erosion on the levee and enhancing ecological resilience. The alignments of the perimeter berms that form the agricultural fields and managed wetlands throughout the site would also act as wave breaks during periods of shallow flooding in the Yolo Bypass, providing additional wind-wave reduction benefits.

In addition to reducing wave heights on-site, the proposed assemblage of nature-based features and agricultural infrastructure would provide reductions (up to approximately 2.3 feet) in wind-wave runup heights near the Sacramento River Deep Water Ship Channel levee, during periods when the depth of flooding in the Yolo Bypass is at or below the tops of the berms and/or tops of the tules across a full range of winter operating conditions (ESA 2025a). This is expected to result in less wind-wave erosion on the levee over time, particularly during lower stage conditions which are more frequent and can be longer in duration.

Approach to the Analysis of Groundwater Hydrology

Construction Activities, Constructed Restoration Elements, and Operations, Monitoring and Maintenance Activities

Methods

Qualitative methods were used to evaluate whether implementation of the proposed Project could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the proposed Project may impede sustainable groundwater management of the basin or obstruct implementation of a sustainable groundwater management plan. The types of construction, operations, monitoring, and maintenance activities were considered to determine whether such activities would require groundwater supply or interfere with groundwater recharge (e.g., through creation of impervious surfaces). Potential effects on the groundwater system were considered based on existing environmental conditions. For example, based on the depth to groundwater, the analysis considered whether construction activities would require groundwater dewatering. The effects of constructed restoration elements were considered in the context of the existing groundwater system, as to whether long-term operation of the proposed Project could deplete groundwater supplies or interfere with groundwater recharge. Based on the identified effects, the analysis determined whether implementation of the proposed Project would conflict with the Yolo Subbasin GSP (Geosyntec 2022). This analysis is relevant to regulations related to groundwater, including the SGMA.

Results

The results of the analysis of potential effects of the proposed Project's construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities on groundwater hydrology are presented in Impact 3.10-2.

Approach to the Analysis of Water Quality

Construction Activities and Operations, Monitoring and Maintenance Activities

Methods

The potential effects of the proposed Project's construction activities and operations, monitoring, and maintenance activities on water quality were evaluated qualitatively by considering whether temporary construction activities and periodic operations, monitoring, and maintenance activities could substantially degrade surface water or groundwater quality. The types of construction activities and operations, monitoring, and maintenance activities were considered to determine whether such activities could result in a release of pollutants into surface water and/or groundwater that could violate water quality standards or waste discharge requirements or obstruct implementation of a water quality control plan. This analysis is relevant to regulations related to surface water and groundwater quality including the federal CWA, Porter-Cologne Act, and water quality control plans.

Results

The results of the analysis of potential effects of the proposed Project's construction activities and operations, monitoring, and maintenance activities on surface water and groundwater quality are presented in Impact 3.10-3, under "Effects of Construction Activities" and "Effects of Operations, Monitoring, and Maintenance Activities."

Constructed Restoration Elements

Methods

The potential effects of the proposed Project's constructed restoration elements were evaluated using a combination of qualitative and quantitative methods to assess whether long-term operation of the proposed Project could result in the release of pollutants into surface water and/or groundwater that could violate water quality standards or waste discharge requirements, substantially degrade water quality, or obstruct implementation of a water quality control plan. In general, the effects of constructed restoration elements were considered in the context of (a) whether long-term operation would alter the existing water quality conditions, as described in Section 3.10.2.3, "Water Quality," in Section 3.10.2, "Environmental Setting"; and (b) whether such changes would violate thresholds identified in applicable regulatory requirements (e.g., water quality objectives in the applicable water quality control plan). **Table 3.10-8** presents the water quality constituents, the approach to the analysis, quantitative or qualitative thresholds, and applicable regulations to which the changes were compared.

Salinity Modeling

As mentioned above under "Approach to the Analysis of Surface Hydrology and Hydraulics" and indicated in Table 3.10-8, the RMA Bay-Delta model was applied to quantify changes in salinity and impacts on existing beneficial uses of water within the Delta with implementation of the proposed Project. Specifically, the RMA Bay-Delta model was used to predict electrical conductivity (EC) throughout the Delta (RMA 2023). The modeling approach and analysis are summarized herein as relevant to the impact analysis presented in Impact 3.10-3, "Effects of Constructed Restoration Elements." See Appendix M, "Tide's End Multibenefit Restoration Project Modeling Evaluation of Stage and Water Quality Impacts," for additional details of the modeling approach, configuration, assumptions, limitations, and results.

TABLE 3.10-8
SUMMARY OF APPROACH TO THE ANALYSIS OF EFFECTS OF THE CONSTRUCTED RESTORATION ELEMENTS ON WATER QUALITY

Water Quality Parameter	Approach to Analysis	Threshold	Applicable Regulations/Basis for Threshold
Salinity	RMA Bay-Delta model (Appendix I) used to quantitatively assess impacts of the proposed Project.	The proposed Project would increase the frequency or magnitude of exceedances of a standard set forth in the State Water Board's Bay-Delta Water Quality Control Plan and/or Water Right Decision 1641.	D-1641 (State Water Board 2000) is part of the State Water Board's implementation of the 1995 Bay-Delta Water Quality Control Plan and is considered the relevant water quality standard for assessing salinity impacts (City of Vallejo vs. State of California State Department of Water Resources 2022). D-1641 includes water right permit terms and conditions to implement water quality objectives to protect beneficial uses. D-1641 contains flow and water quality objectives that must be measured at various compliance monitoring stations through the Delta (Section 3.10.3).
Bromide	Empirical relationships between EC and bromide (DWR 2001; Reclamation 2015) and the RMA Bay-Delta model (Appendix I) used to quantitatively assess impacts of the proposed Project.	The proposed Project would substantially increase bromide concentrations at drinking water intakes above 0.05 mg/l.	No bromide water quality objectives exist for Delta waterways (Regional Water Board 2019; State Water Board 2018). The CALFED Drinking Water Quality Program recommends a goal of 0.05 mg/l bromide at drinking water intakes (CALFED Bay-Delta Program 2005).
Turbidity	Hydraulic modeling of the proposed Project (Appendix H) used to qualitatively assess impacts of the proposed Project.	The proposed Project would increase the frequency or magnitude of exceedances of a standard set forth in the State Water Board's relevant water quality control plans.	The relevant water quality control plans (Section 3.10.3) have specific objectives for turbidity (Regional Water Board 2019; State Water Board 2018) that are incorporated by reference.
Dissolved organic carbon	Findings from the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project (DWR 2020b) used to qualitatively assess impacts of the proposed Project.	The proposed Project would substantially increase DOC concentrations at drinking water intakes.	No DOC water quality objectives exist for Delta waterways (Regional Water Board 2019; State Water Board 2018). California Department of Public Health standards for finished water are that water must meet 0.5 mg/l TOC (CDPH 2014). DOC is generally about 85% to 95% of TOC (State Water Contractors 2022).
Methylmercury	Findings from Robbins et al. (2024) used to quantitatively and qualitatively assess impacts of the proposed Project.	The proposed Project would not substantially increase (relative to existing conditions) off-site export of methylmercury that exceeds a standard or recommendation set forth in the State Water Board's relevant water quality control plans and other regulations incorporated therein.	The relevant water quality control plans and Delta Mercury Control Program (Section 3.10.3) have objectives or recommendations for mercury (Regional Water Board 2019; State Water Board 2018; Robbins et al. 2024) that are incorporated by reference.

Water Quality Parameter	Approach to Analysis	Threshold	Applicable Regulations/Basis for Threshold
Organic chemicals	Hydraulic modeling of the proposed Project (Appendix H) and findings from the Phase II soil sampling investigation (Appendix F) used to qualitatively assess impacts of the proposed Project.	The proposed Project would substantially increase off-site export of organic chemicals that exceeds a standard or recommendation set forth in the State Water Board's relevant water quality control plans, and other regulations incorporated therein.	The relevant water quality control plans (Section 3.10.3) have specific objectives for Delta waterways for chlorpyrifos and diazinon (Regional Water Board 2019; State Water Board 2018) that are incorporated by reference. The Basin Plan Amendment for the Control of Pyrethroid Pesticide Discharges (Regional Water Board 2017) and implementing TMDL (EPA 2019) set goals for six pyrethroid insecticides and propose agricultural and urban management practices to control off-site movement.
Boron	Findings from the State Water Board (2017) and State Water Contractors (2021) used to qualitatively assess impacts of the proposed Project.	The proposed Project would substantially increase off-site export of boron that exceeds a standard or recommendation set forth in the State Water Board's relevant water quality control plans.	No boron water quality objectives exist for Delta waterways (Regional Water Board 2019; State Water Board 2018). The California State Notification Level is 1,000 µg/l. Boron is not considered harmful in drinking waters in concentrations up to 30 mg/l. EPA has established a water quality criterion for boron of 0.75 mg/l for long term-term irrigation on sensitive crops (State Water Board 2017).
Water temperature	Findings from DWR (2020b) and the State & Federal Contractors Water Agency (2013) used to qualitatively assess impacts of the proposed Project.	The proposed Project would substantially increase water temperature in excess of a standard or recommendation set forth in the State Water Board's relevant water quality control plans.	The relevant water quality control plans (Section 3.10.3) have specific objectives for Delta waterways for water temperature (Regional Water Board 2019; State Water Board 2018). These are summarized below: • At no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature. Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California* including any revisions. There are also temperature objectives for the Delta in the *Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary*.
Dissolved oxygen	Findings from DWR (2020b) and the State & Federal Contractors Water Agency (2013) used to qualitatively assess impacts of the proposed Project.	The proposed Project would substantially decrease dissolved oxygen in excess of a standard or recommendation set forth in the State Water Board's relevant water quality control plans.	The relevant water quality control plans (Section 3.10.3) have specific objectives for Delta waterways for dissolved oxygen (Regional Water Board 2019; State Water Board 2018). These are summarized below: • Dissolved oxygen concentration shall not be reduced below 7.0 mg/l in the Sacramento River (below the I Street Bridge) and in all Delta waters west of the Antioch Bridge; 6.0 mg/l in the San Joaquin River (between Turner Cut and Stockton, 1 September through 30 November); and 5.0 mg/l in all other Delta waters except for those bodies of water which are constructed for special purposes and from which fish have been excluded or where the fishery is not important as a beneficial use. Further, dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time: o Waters designated WARM 5.0 mg/l. o Waters designated COLD 7.0 mg/l. o Waters designated SPWN 7.0 mg/l.

Water Quality Parameter	Approach to Analysis	Threshold	Applicable Regulations/Basis for Threshold
Harmful algal blooms	Hydraulic modeling of the proposed Project (Appendix H) and findings from DWR (2020b) used to qualitatively assess impacts of the proposed Project.	The proposed Project would substantially increase the potential for formation of HABs or CHABs on- or off-site.	Currently, there are no mandatory federal or State standards for cyanotoxins in drinking water or recreational waters. Several agencies have developed and are further refining recommended guidelines for addressing health concerns for cyanotoxins in recreational waters. Specifically, the OEHHA submitted to the State Water Board Drinking Water Notification Levels for microcystins at 0.03 µg/l, cylindrospermopsin at 0.3 µg/l, anatoxin-a at 4 µg/l, and saxitoxin at 0.6 µg/l. These are interim Notification Levels, as OEHHA will complete review of additional recent toxicity studies and derive final recommendations. Statewide voluntary guidance on cyanobacteria blooms in recreational waters was developed in January 2016 as a collaborative effort within the California Cyanobacteria Harmful Algal Bloom network (State Water Contractors 2022).

Notes: °F = degrees Fahrenheit; µg/l = micrograms per liter; Bay-Delta = San Francisco Bay/Sacramento–San Joaquin Delta; CALFED = CALFED Bay-Delta Program; CHAB = cyanobacterial harmful algal bloom; D-1641 = Water Right Decision 1641; Delta = Sacramento–San Joaquin Delta; DOC = dissolved organic carbon; DWR = California Department of Water Resources; EC = electrical conductivity; EPA = U.S. Environmental Protection Agency; HAB = harmful algal bloom; mg/l = milligrams per liter; OEHHA = California Office of Environmental Health Hazard Assessment; proposed Project = proposed Tide's End Multibenefit Restoration Project; RMA = Resource Management Associates, Inc.; State Water Board = State Water Resources Control Board; TMDL = total maximum daily load; TOC = total organic carbon

Source: Data compiled by Environmental Science Associates in 2025.

Like the hydrodynamic simulations, salinity simulations were performed for two periods: January–December 2018 (classified as a below-normal water year) and January–December 2020 (classified as a dry water year). Running the model for these two time periods provides an understanding of how salinity might change under a range of conditions that is consistent with environmental review of similar projects (e.g., DWR 2020b). To assess potential impacts associated with the proposed Project, salinity simulations were performed for the following scenarios: Baseline conditions without the proposed Project, Baseline conditions with the proposed Project, Future conditions without the proposed Project, and Future conditions with the proposed Project. RMA's "Baseline conditions" scenarios include projects constructed prior to July 2024 and are synonymous with the hydraulic impact assessment's "NOP-existing conditions" scenarios.[12] The Baseline conditions are presented in this section. The Future condition scenarios include projects constructed after July 2024 (e.g., Lookout Slough) and planned restoration projects at Prospect Island, McCormack Willamson Tract Phase B, Little Egbert Multi-Benefit Project, Cache Slough Mitigation Bank, Chipps Island, Grizzly King, North Delta Fish Conservation Bank, Peters Pocket, and Zacharias Ranch, as well as Big Notch flows. The Future conditions are presented in Chapter 4, "Cumulative Impacts," and discussed further in Appendix I to this Draft SEIR, "Tide's End Multibenefit Project Modeling Evaluation of Stage and Water Quality Impacts."

The salinity modeling results were post-processed to determine potential violations of D-1641 standards and impacts on the location of X2 (see Section 3.10.2, "Regulatory Setting"). Salinity modeling results were also evaluated against D-1641 salinity water quality objectives for agriculture and for fish and wildlife at the following stations: D22–Sacramento River at Emmaton, D15–San Joaquin River at Jersey Point, D29–San Joaquin River at Prisoners Point, and C2–Sacramento River at Collinsville (Table 3.10-5). The agricultural water quality objectives are intended to protect agricultural beneficial uses, whereas the fish and wildlife standards are intended to maintain water quality conditions to prevent the following: (a) loss of biodiversity, (b) conversion of brackish marsh to salt marsh habitat; (c) decreased population abundance of wildlife species and/or loss of habitat from increased salinity; and (d) significant reductions in plant stature or percent cover from soil salinity or other water quality issues.

To evaluate changes in drinking water quality, EC results were converted to chloride and salinity changes were evaluated for analysis of D-1641 standards at several water intake locations (e.g., Clifton Court, Delta Mendota Canal at Tracy Pumping Plant, and Contra Costa intakes).[13] The set of selected D-1641 compliance and water intake locations cover key locations and provide broad spatial representation. The effects of the proposed Project at these locations are considered representative of the effect of the proposed Project in various locations of the Delta as a whole. Chloride and bromide changes at the water intakes were also evaluated at relevant water intake locations (e.g., Barker Slough NBA Intake and City of Vallejo Intake at Cache Slough).

The potential impacts of the proposed Project on salinity were examined on a relative basis in terms of the change and percentage change from the Baseline conditions with the proposed Project compared to Baseline conditions without the proposed Project, and whether the proposed Project would increase the frequency or duration of any periods of noncompliance with D-1641 salinity water quality objectives (Table 3.10-8).

[12] Tide's End Multibenefit Restoration Project Modeling Evaluation of Stage and Water Quality Impacts (Appendix I) "Baseline conditions" and "Future conditions" scenarios are synonymous with the hydraulic impact assessment's "NOP-existing conditions" and "future no-action" scenarios.

[13] D-1641 has a constant standard for maximum mean daily chloride of 250 mg/l from October through September at these locations.

Daily and monthly average salinity changes were assessed at the D-1641 standards locations and water export locations summarized above and presented in Table 3.10-5. For the February–June period, salinity modeling results were specifically evaluated for any shift in the X2 location from west of Collinsville (X2 less than or equal to 81 km) to east of Collinsville with implementation of the proposed Project, because such a change would be in violation of the 2018 amended Bay-Delta Plan and D-1641 standards.

Other Water Quality Constituents

Details on the approach and analysis for other water quality constituents are presented in the impact analysis for Impact 3.10-3.

Results

This section presents the results of the salinity modeling, which are interpreted further in Impact 3.10-3 under "Effects of Constructed Restoration Elements." The results of the analyses of other water quality constituents summarized in Table 3.10-8 are presented in Impact 3.10-3, under "Effects of Constructed Restoration Elements."

Electrical Conductivity Changes at Compliance Locations

Monthly averaged absolute and relative (percent) changes between the Baseline conditions with- and without-Project simulations for the 2018 model year simulation for the set of D-1641 compliance and water intake locations are summarized in tabular format in **Table 3.10-9**. Overall, the changes in EC predicted to result from the proposed Project are very small and considerably less than the natural variations between seasons and between the same time in different years. Therefore, the modeling results for hydrodynamic and salinity water quality constituents suggest that the proposed Project would result in negligible changes in salinity levels across the proposed Project area and within the Yolo Bypass and Delta. Simulated changes between the Baseline conditions with- and without-Project simulations can be summarized as follows:

- The largest percentage salinity increases attributable to the proposed Project occur during the spring in Barker Slough (0.30 percent) and at the Vallejo Intake (0.20 percent).
- Salinity reductions of up to 0.40 percent occur at Emmaton.
- Salinity changes at the South Delta water intakes are less than 0.10 percent.

Evaluation of Potential Noncompliance at Select D-1641 Stations

Compliance for each D-1641 fish and wildlife and agriculture station listed in Table 3.10-5 was determined from the 14-day running average of mean daily EC. Results found that under the Baseline conditions, the proposed Project would result in no compliance issues, no new compliance issues, and no times of increased likelihood of noncompliance. Similarly, these results indicated no violations of the water quality objectives at any of the intakes under any of the modeled configurations or time periods.

Changes in the Location of X2

Salinity modeling indicated that under the Baseline conditions, the proposed Project would result in small reductions in the location of X2 (less than 0.05 km). The very small changes in X2 associated with implementation of the proposed Project would not be expected to cause or exacerbate noncompliance with X2 objectives. Further, comparison of the February–June X2 position found that all X2 locations were west of Collinsville (i.e., less than 81 km) in accordance with D-1641 objectives.

TABLE 3.10-9
SUMMARY OF SALINITY MODELING RESULTS FOR BASELINE CONDITIONS

	D22–Sacramento River at Emmaton			D15–San Joaquin River at Jersey Point			D29–San Joaquin River at Prisoners Point			C2–Sacramento River at Collinsville			C9–Clifton Court Forebay Intake		
Date	Without Project (µS/cm)	With-Project Change (µS/cm)	Percent Change (%)	Without Project (µS/cm)	With-Project Change (µS/cm)	Percent Change (%)	Without Project (µS/cm)	With-Project Change (µS/cm)	Percent Change (%)	Without Project (µS/cm)	With-Project Change (µS/cm)	Percent Change (%)	Without Project (µS/cm)	With-Project Change (µS/cm)	Percent Change (%)
Jan 2018	562	-1.0	-0.18%	858	-0.2	-0.02%	387	0.0	0.00%	2,430	-2.7	-0.11%	589	0.0	0.00%
Feb 2018	262	-0.2	-0.09%	366	0.0	0.01%	309	0.0	0.01%	1,076	-1.1	-0.11%	505	0.0	0.01%
Mar 2018	206	-0.1	-0.03%	299	0.0	0.01%	293	0.0	0.01%	701	-0.8	-0.12%	478	0.0	0.01%
Apr 2018	141	0.1	0.07%	199	0.0	0.01%	234	0.0	0.00%	170	0.0	0.01%	268	0.0	0.00%
May 2018	235	-0.2	-0.08%	234	0.0	0.00%	229	0.0	0.00%	924	-0.4	-0.05%	220	0.0	0.00%
Jun 2018	590	-1.2	-0.20%	400	-0.2	-0.05%	191	0.0	0.00%	2,915	-0.3	-0.01%	283	0.0	0.00%
Jul 2018	847	-2.3	-0.27%	854	-0.8	-0.09%	200	0.0	-0.01%	4,551	-1.1	-0.02%	307	-0.1	-0.02%
Aug 2018	730	-2.3	-0.32%	1,381	-1.0	-0.07%	322	-0.1	-0.04%	5,077	-1.5	-0.03%	438	-0.2	-0.03%
Sep 2018	743	-2.6	-0.34%	1,572	-0.9	-0.06%	395	0.0	-0.01%	4,886	-2.3	-0.05%	613	-0.1	-0.01%
Oct 2018	1462	-3.9	-0.27%	1,548	-1.2	-0.08%	338	0.0	-0.01%	6,747	-2.6	-0.04%	570	-0.1	-0.02%
Nov 2018	2,381	-5.5	-0.23%	1,924	-1.7	-0.09%	397	-0.2	-0.05%	9,042	-2.3	-0.03%	570	-0.1	-0.03%
Dec 2018	623	-2.5	-0.40%	1,197	-1.8	-0.15%	472	-0.4	-0.09%	3,823	-6.2	-0.16%	659	-0.5	-0.07%

Date	DMC1–Delta Mendota Canal at Tracy Pumping Plant			C5–Contra Costa Intake at Rock Slough			Contra Costa Water District Intake at Old River			SLBAR3–Barker Slough North Bay Aqueduct Intake			C19–City of Vallejo Intake Cache Slough		
	Without Project (µS/cm)	With-Project Change (µS/cm)	Percent Change (%)	Without Project (µS/cm)	With-Project Change (µS/cm)	Percent Change (%)	Without Project (µS/cm)	With-Project Change (µS/cm)	Percent Change (%)	Without Project (µS/cm)	With-Project Change (µS/cm)	Percent Change (%)	Without Project (µS/cm)	With-Project Change (µS/cm)	Percent Change (%)
Jan 2018	590	0.0	0.00%	707	-0.3	-0.04%	608	0.0	0.00%	349	0.1	0.03%	689	0.6	0.09%
Feb 2018	543	0.0	0.00%	523	0.4	0.08%	462	0.0	0.01%	381	0.5	0.14%	756	1.1	0.14%
Mar 2018	519	0.0	0.00%	445	0.1	0.02%	426	0.0	0.01%	516	0.3	0.06%	660	0.5	0.07%
Apr 2018	269	0.0	0.00%	392	0.0	0.00%	321	0.0	0.00%	573	0.5	0.09%	635	0.9	0.14%
May 2018	229	0.0	0.00%	377	0.1	0.02%	300	0.0	0.00%	303	0.8	0.26%	351	0.8	0.23%
Jun 2018	295	0.0	0.00%	295	0.1	0.03%	278	0.0	0.00%	187	0.5	0.29%	289	0.6	0.22%
Jul 2018	316	-0.1	-0.02%	354	-0.1	-0.02%	332	-0.1	-0.03%	162	0.2	0.10%	277	0.4	0.13%
Aug 2018	414	-0.1	-0.03%	553	-0.1	-0.02%	514	-0.2	-0.04%	166	0.1	0.04%	291	0.3	0.11%
Sep 2018	547	0.0	0.00%	857	-0.1	-0.01%	721	-0.1	-0.01%	199	-0.1	-0.07%	311	0.1	0.03%
Oct 2018	524	-0.1	-0.01%	805	-0.4	-0.05%	656	-0.2	-0.02%	211	0.3	0.12%	396	0.7	0.17%
Nov 2018	541	-0.1	-0.02%	782	-0.5	-0.06%	677	-0.3	-0.04%	215	0.2	0.08%	454	0.6	0.13%
Dec 2018	674	-0.4	-0.06%	848	-0.8	-0.10%	710	-0.6	-0.08%	298	0.0	0.01%	520	0.4	0.08%

Note: µS/cm = microsiemens per centimeter

Source: Data compiled by Environmental Science Associates in 2025 using information presented in Appendix I.

Impacts and Mitigation Measures

Table 3.10-10 summarizes the impact conclusions presented in this section for reference. The resource impact statements consider the significance criteria for hydrology and water quality impacts applicable to the proposed Project and are consistent with the impact statements presented in the Final SRGO Program EIR.

TABLE 3.10-10
SUMMARY OF IMPACT CONCLUSIONS—HYDROLOGY AND WATER QUALITY

Impact Statement	Construction Activities	Constructed Restoration Elements	Operations, Monitoring, and Maintenance Activities
3.10-1: Implementation of the proposed Project could substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that could result in substantial on- or off-site erosion or siltation; substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding; create or contribute runoff water which would exceed the capacity of the existing or planned irrigation drainage system or provide substantial additional Sources of polluted runoff; or impede or redirect flood flows.	LTSG	LTS	LTS
3.10-2: Implementation of the proposed Project could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the proposed Project may impede sustainable groundwater management of the basin or obstruct implementation of a sustainable groundwater management plan.	LTSG	LTS	LTS
3.10-3: Implementation of the proposed Project could result in the release of pollutants into surface water and/or groundwater that could violate water quality standards or waste discharge requirements, substantially degrade water quality, or obstruct implementation of a water quality control plan.	LTSG	LTS	LTSG

Notes: LTS = less than significant; LTSG = less than significant with implementation of general protection measures
Source: Data compiled by Environmental Science Associates in 2025.

Impact 3.10-1: Implementation of the proposed Project could substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that could result in substantial on- or off-site erosion or siltation; substantially increase the rate or amount of surface runoff in a manner which would result in on or off-site flooding; create or contribute runoff water which would exceed the capacity of existing or planned irrigation and drainage system or provide substantial additional Sources of polluted runoff; or impede or redirect flood flows.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO. These impacts included the potential for construction activities for restoration projects to temporarily change drainage patterns that could increase the rate and amount of surface runoff in a manner that would exceed the capacity of existing or planned stormwater drainage systems, result in flooding, or impede or redirect flood flows. Related to the proposed Project, the Final SRGO Program EIR evaluated the following construction activities: installation of infrastructure such as culverts, fish screens, and other water control structures to improve water management

capabilities; removal of legacy structures; creation of depressions, berms, and drainage features; and the installation of cofferdams during construction.

Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-37 and 3.11-38; see also Section 2.7.1, pp. 2-24 through 2-26).

The Final SRGO Program EIR found that these activities could result in temporary changes to existing drainage patterns. The Final SRGO Program EIR determined that a construction-related change in the amount or rate of surface runoff would likely only have relatively localized effects on-site and immediately downstream, or downslope, of the site. However, these changes would not be expected to change surface runoff in a manner that could exceed existing or planned stormwater drainage systems and/or create or increase on- or off-site flooding. Because any changes would have relatively localized effects on-site and immediately downstream (or downslope) of the site and would be temporary, the types of restoration projects permitted under the SRGO would not increase the rate or amount of surface runoff in a manner that would increase the risk of flooding on- or off-site. Therefore, the Final SRGO Program EIR determined this impact to be less than significant (see Final SRGO Program EIR: Section 3.11.4, p. 3.11-38). To further reduce the impact of construction activities changing the rate or amount of surface runoff in a manner which would increase the risk of flooding on- or off-site, the Final SRGO Program EIR included the following general protection measures when applicable to a given project: WQHM-1: Staging Areas and Stockpiling of Materials and Equipment, and WQHM-2: Storm Water Pollution Prevention Plan (see Final SRGO Program EIR: Section 3.11.4, p. 3.11-38).

Construction activities, equipment, and materials used for the proposed Project would be consistent with those analyzed in the Final SRGO Program EIR. Construction of the proposed Project's restoration elements would require site preparation and mobilization/demobilization; use of staging areas, access routes, and haul routes; vegetation clearing; earthmoving involving excavation and grading; and dewatering. Excavation ranging from 0 to 3 feet below the existing grade would be required for leveling and grading the ponds and fields, to replace or install water control devices, and to create tidal and floodplain habitat areas. Channel excavation would range between 5 to 10 feet below the existing grade in localized areas. Improvements also include improvements to and relocation of pump stations that would require up to 18 feet of excavation. Excavation for a sump basin associated with the northernmost pump station would account for the maximum depth of excavation for proposed Project construction (18 feet below existing grade in a localized area 25 feet wide by 10 feet long).

Construction of the proposed facilities improvements would involve the removal and salvage and/or disposal of existing pumps, pipes, and other water control structures and utility lines that would be no longer needed under proposed Project conditions; installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; reconfiguration and modification of irrigation and drainage features, such as canals, ditches, and berms; and installation of temporary cofferdams. These activities would occur both on land and in water.

Various types of construction equipment would be used to prepare the proposed Project area, construct the restoration elements, and finalize and stabilize habitat (see Table 2-6 in Chapter 2, "Project Description," for a list of proposed construction equipment). Construction equipment would require the use of pollutants (e.g., oils, lubricants, hydraulic fluids). Construction materials and equipment would be stored in and distributed from temporary staging areas located within an existing graveled parking lot.

The following subsections evaluate the potential for construction activities to alter existing drainage patterns through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that could result in substantial on- or off-site erosion or siltation; substantially increase the rate or amount of surface runoff in a manner which would result in on or off-site flooding; create or contribute runoff water which would exceed the capacity of existing or planned irrigation and drainage systems or provide substantial additional Sources of polluted runoff; or impede or redirect flood flows.

Result in On- or Off-Site Erosion and Siltation

The proposed Project would involve changes to the existing drainage system by opening the site to tidal channels. Construction activities associated with the proposed restoration elements, including vegetation clearing and grubbing, could temporarily expose soils to increased rates of erosion and increase sediment loading to receiving waters. In addition, construction activities for the proposed facilities improvements, including demolition and construction of structures, would disturb soils across the proposed Project area, possibly releasing sediment to receiving waters. Implementation of general protection measures WQHM-1 and WQHM-2 would further reduce the temporary impacts of construction activities. Additional general protection measures implemented to address potential construction impacts on water quality described in Impact 3.10-3 would apply and include WQHM-3: Erosion and Sediment Control Measures, IWW-11: Sediment Containment during In-Water Pile Driving, and VHDR-4: Revegetation Erosion Control Materials and Methods. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection and species protection measure.

With implementation of these general protection measures, temporary construction activities would not alter the existing drainage patterns in a manner which would result in substantial on- or off-site erosion and siltation.

Increase the Rate or Amount of Surface Runoff

Construction activities associated with the proposed Project would involve staging and stockpiling of cleared vegetation and demolished infrastructure that could pose physical barriers to surface runoff, resulting in short-term ponding of water and/or the redirection of surface runoff on and adjacent to a construction site. Construction activities could temporarily alter the direction, rate, and amount of surface runoff during a rain event within the proposed Project area. In addition, grading for construction activities could temporarily alter the imperviousness of the surface and/or slope of the land across which drainage flows. Although drainage patterns and the amount and rate of surface runoff could be altered as a result of construction activities during a rain event, these changes would be temporary. Additionally, implementation of general protection measures WQHM-1, WQHM-2, WQHM-3, and VHDR-4 would reduce potential impacts. Therefore, with implementation of these general protection measures, temporary construction activities would not be anticipated to result in substantial increases in the rate or amount of surface runoff in a manner that could create or increase on- or off-site flooding.

Create or Contribute Runoff Water

During the construction period, surface runoff would continue to be routed via the existing irrigation and drainage system as under current conditions, ultimately flowing back to the Toe Drain through culverts and drainage swales. The use of pollutants during construction (e.g., for equipment) would be temporary—up to two construction seasons. With implementation of general protection measures, including WQHM-1 and WQHM-2, pollutants would be properly stored in and distributed from designated staging areas. Therefore, temporary changes in drainage patterns caused by proposed Project construction activities would not create or contribute to runoff that would exceed the capacity of the existing or planned irrigation and drainage system or provide substantial additional Sources of polluted runoff.

Impede or Redirect Flood Flows

As described previously, construction activities could temporarily change the existing drainage patterns of the proposed Project area during a rain event through stockpiling of materials, excavation, and grading. However, construction would not occur during the flood season. Therefore, temporary construction activities for the proposed Project would not alter drainage patterns in a manner which would impede or redirect flood flows.

Impact Conclusion

Construction-related changes in the proposed Project area's drainage patterns would be temporary and localized. Consistent with the Final SRGO Program EIR, implementation of general protection measures WQHM-1 and WQHM-2 would further reduce the temporary impacts of construction activities. Additional general protection measures implemented to address potential construction impacts on water quality (also described in Impact 3.10-3) would apply and include WQHM-3, IWW-11, and VHDR-4. With implementation of these general protection measures, the construction-related changes would not result in substantial on- or off-site erosion and siltation, or in substantial increases in the rate or amount of surface runoff which would result in on or off-site flooding; create or contribute runoff water which would exceed the capacity of the existing or planned irrigation and drainage system or provide substantial additional Sources of polluted runoff; or impede or redirect flood flows. Therefore, this impact would be ***less than significant with implementation of general protection measures***.

The effects of the proposed Project's construction activities are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-37 and 3.11-38). The Final SRGO Program EIR adequately addresses construction impacts of the proposed Project on existing drainage patterns.

Effects of Constructed Restoration Elements

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO. These impacts included the potential for constructed facilities (natural and artificial infrastructure) to increase the rate and amount of surface runoff in a manner that would exceed the capacity of existing or planned stormwater drainage systems, result in flooding, or impede or redirect flood flows. The Final SRGO Program EIR evaluated constructed facilities including natural infrastructure such as floodplain habitat, tidal wetland habitat, and riparian habitat, as well as artificial infrastructure such as culverts, fish screens, and other water control structures that improve water management capabilities.

The Final SRGO Program EIR determined that although the constructed facilities could result in permanent alteration of existing drainage patterns, many of the long-term effects of the restoration projects permitted under the SRGO on drainage patterns and flood flows would be beneficial or neutral. The specific purpose of these projects would be to correct existing conditions that contribute to resource degradation, such as groundwater overdraft and poor water quality and flood management. Projects would likely have relatively localized effects on-site and immediately downstream of the floodplain restoration improvements and would not increase surface water elevations or the chance of flooding in adjacent floodplains. Therefore, the Final SRGO Program EIR determined that the impacts of constructed facilities on existing drainage patterns would be less than significant. The Final SRGO Program EIR does not include any general protection measures applicable to this impact (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-40).

As described in Chapter 2, "Project Description," the proposed Project's restoration elements would alter the existing drainage patterns through expansion of tidal channels and adjacent tidal wetland and transition zone areas; creation of floodplain habitat with proper drainage and flow pathways; reconfiguration of local irrigation canals and drainage ditches; improvements to the existing facilities; and revegetation and stabilization of native riparian vegetation along tidal wetland habitat mounds. Specifically, the agricultural berm along the western boundary of the Toe Drain channel would be notched in multiple areas to connect the proposed Project area to tidal waters. This would allow the area to experience tidal inundation during non-flood conditions and greater connectivity during flood conditions. Irrigation infrastructure would be modified to allow the installation of a new primary irrigation pump station at the north end of County Road 107 to supply water to the entire proposed Project area. Along the northern boundary, the agricultural berm would be modified to create a drainage swale to allow lands north of the proposed Project area to drain directly to the Toe Drain.

Additionally, the proposed Project's restoration elements would change land uses across the proposed Project area, which would change the existing floodplain roughness in this portion of the Yolo Bypass. Elevations of all irrigation canal berms, and the general layout and grading of existing areas, would be designed to minimize impacts on hydraulic conveyance during flood operations. The proposed Project would not create new impervious surfaces.

The following subsections evaluate the potential for the constructed restoration elements to alter existing drainage patterns in a manner that could result in substantial on- or off-site erosion or siltation; substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding; create or contribute runoff water which would exceed the capacity of existing or planned irrigation and drainage system or provide substantial additional Sources of polluted runoff; or impede or redirect flood flows.

Result in On- or Off-Site Erosion or Siltation

Grading activities for the proposed Project would permanently change drainage flows, and would change the direction, rate, and amount of surface runoff post-construction. Once construction is completed, graded slopes and crests of perimeter berms and irrigation canal berms throughout the managed floodplain area would receive targeted application of native seed mixes to stabilize the soil. Although the long-term effects of the constructed restoration elements on existing drainage patterns and flood flows are anticipated to be beneficial or neutral, the proposed Project's floodplain grading, improvements to drainage and irrigation infrastructure, and land use changes could alter the existing drainage patterns in a way that could increase erosion or siltation. As described in Section 3.10.2, "Environmental Setting," the current irrigation and

drainage system in the proposed Project area is already vulnerable to sediment deposition, particularly during periods when the local hydrodynamics are governed by the tidal exchange with the Toe Drain.

As described above under "Methodology and Assumptions," hydraulic modeling was conducted to quantify changes in velocity, used as a proxy for changes in channel stability and erosion. Although localized changes in velocity are expected, the maximum velocities in and around the proposed Project area would remain low enough that channel erosion and scour potential along existing and proposed levee facilities would not differ substantially from existing conditions (NOP baseline or future no-action baseline). Comparing the modeled velocities with the permissible shear sand velocity (see Table 1of Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment"), the changes to the existing patterns of sediment deposition and aggradation within the region are not anticipated to change substantially because of the proposed Project. Therefore, compared to existing conditions, the proposed Project's constructed restoration elements would not alter the existing drainage patterns in a manner which would result in substantial on- or off-site erosion and siltation.

The proposed restoration elements include establishment of tule marsh and riparian vegetation that would act as a wind-wave buffer, reducing wave heights in the Yolo Bypass. In addition to improving conditions on-site, the proposed assemblage of nature-based features and agricultural infrastructure would provide reductions (up to approximately 2.3 feet) in wind-wave runup heights near the Sacramento River Deep Water Ship Channel levee, during periods when the depth of flooding in the Yolo Bypass is at or below the tops of the berms and/or tops of the tules across a full range of winter operating conditions (ESA 2025a). This is expected to reduce the effects of wind-wave erosion on the levee over time, particularly during lower stage conditions, which are more frequent and can be longer in duration.

Increase the Rate or Amount of Surface Runoff or Impede or Redirect Flood Flows

Once construction is completed, the proposed Project's constructed restoration elements could result in changes to water surface elevations, increasing the chance of flooding outside of the proposed Project area or decreasing the flow carrying capacity. Depending on the season, wetlands and floodplain agriculture would be managed to flood or be drawn down. As described in Section 3.10.2, "Environmental Setting," the proposed Project area is located at the southern end of the Yolo Bypass, a flood control facility. Under existing conditions, flood inundation in the Yolo Bypass can last for as short a period as 5 days and as long as 4 months (Opperman et al. 2017; Yolo Bypass Working Group et al. 2001). During high-flow events, the Toe Drain spills out of bank and onto adjacent floodplains. Once flows recede, floodwaters on the proposed Project area currently flow back to the Toe Drain through the irrigation and drainage system. Although the long-term effects of the proposed Project's constructed restoration elements on existing drainage patterns and flood flows are anticipated to be beneficial or neutral, the floodplain grading, improvements to drainage and irrigation infrastructure, and minor land use changes could alter the existing drainage patterns in a way that could increase the rate or amount of surface runoff or impede or redirect flood flows.

Hydraulic modeling was conducted to quantify changes in water surface elevation under the 1 percent-annual-chance-of-exceedance (100-year) design storm event, used as a conservative analysis of potential changes with the proposed Project. In summary, the hydraulic modeling results suggest that the proposed Project would result in negligible changes to water levels across the proposed Project area and within the Yolo Bypass (see Table 3.10-7; see also Appendix H to this Draft SEIR, "Tide's End Multibenefit

Restoration Project Hydraulic Impacts Assessment") during high-flow events. Because the hydraulic impacts of the proposed Project would be localized and would generally result in small decreases in water levels for the 100-year design storm, the proposed Project's potential to transfer risk from one part of the system to another would be negligible. During frequent, less intense winter operating conditions, the proposed Project would lower water surfaces upstream up to 0.39 feet (ESA 2025b).

With regard to changes in tidal range in the Delta, changes in tidal range also have the potential to affect intertidal habitats by determining the extent of the zone and the intensity of environmental conditions that organisms experience. The spatial extent of marsh colonization is also closely tied to intertidal elevations, which, if reduced, can adversely affect the hydrology of intertidal wetland habitat. A larger tidal range creates a wider intertidal zone, exposing organisms to a greater range of conditions like wave action, temperature fluctuations, and desiccation. This, in turn, influences the types of species that can survive and thrive in these dynamic environments (Delta Stewardship Council 2022). The hydrodynamic modeling using RMA's Bay-Delta model demonstrates that the proposed Project's effects on water surface elevation would be only a fraction of the total tide range and its natural variations during the entire tidal cycle. Thus, the proposed Project would contribute little to no change in tidal range (changes less than 0.05 foot) in areas outside of the northwest Delta. Therefore, the proposed Project's constructed restoration elements would not alter the existing drainage patterns in a manner which would result in a substantial increase in the rate or amount of surface runoff or impede or redirect flood flows.

Create or Contribute Runoff Water

As described in Section 3.10.2, "Environmental Setting," the proposed Project area receives and routes drainage from neighboring properties, which combines with agricultural runoff from the proposed Project area and ultimately flows back to the Toe Drain through culverts and drainage swales. Depending on the season, the existing irrigation and drainage system may be operated to drain the site or convey irrigation water; therefore, the proposed Project area is accustomed to varying rates and amounts of surface runoff. The long-term effects of the proposed Project's constructed restoration elements on existing drainage patterns are anticipated to be beneficial or neutral compared to existing conditions. The long-term operation of the proposed Project would not add impervious surfaces that would create or contribute runoff water compared to existing conditions. Additionally, once construction is completed, no pollutants are associated with the constructed restoration elements. Therefore, the proposed Project's constructed restoration elements would not create or contribute runoff water that would exceed the capacity of the improved irrigation and drainage systems or provide substantial additional Sources of polluted runoff.

Impact Conclusion

The long-term effects of the proposed Project's constructed restoration elements on existing drainage patterns are anticipated to be neutral or beneficial compared to existing conditions. In summary, the hydraulic analysis demonstrates that the proposed Project's alterations would result in no adverse impacts on flood stages in the system. Because the hydraulic impacts of the proposed Project would be localized, the proposed Project's potential to transfer risk from one part of the system to another is also considered negligible. Importantly, as shown in Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment," the increased conveyance associated with the proposed Project during low-flow conditions would result in more efficient (i.e., faster) drainage of the Yolo Bypass in the latter stages of flooding (i.e., on the receding limb of the hydrograph). This more efficient drainage would benefit agricultural operations upstream, which rely on timely access for field drying and preparation

prior to planting, and recreational hunting in the area, which relies heavily on access to duck blinds in the low-lying marsh areas of the east side of the Yolo Bypass.

As described in Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment," although localized changes in velocity are expected, the maximum velocities in and around the proposed Project area would remain low enough that channel erosion and scour potential would not differ substantially from existing conditions along existing Sacramento River Deep Water Ship Channel levee facilities, which have been shown to not be prone to erosion for the range of flows analyzed.

The proposed Project's habitat elements would work collectively as a wind-wave buffer to provide additional protection to portions of the Sacramento River Deep Water Ship Channel levee, which protects the city of West Sacramento. Adjustments to the amount and orientation of managed wetland, marsh riparian forest and scrub, and tidal wetland vegetation along the eastern side of the Capitol Oil parcel would increase the attenuation of wave energy generated by wind over open water during periods when the Yolo Bypass is flooded, thereby reducing erosion on the levee and enhancing ecological resilience. The alignments of the perimeter berms that form the agricultural fields and managed wetlands throughout the site would also act as wave breaks during periods of shallow flooding in the Yolo Bypass, providing additional wind-wave reduction benefits.

As detailed in Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment," the most significant contributions to hydraulic roughness in the floodway for both existing and with-Project conditions are agricultural berms and vegetation. The proposed Project would reduce flood risk in the Yolo Bypass by creating a network of tidal channels connected to adjacent floodplain areas that facilitates and increases flow conveyance, reducing localized flood stages. Specifically, changes in grading and land cover through restoration of tidal wetlands, active management of managed wetlands and the agricultural floodplain, and lowering of existing berms would decrease overall hydraulic roughness and improve the conveyance capacity within this portion of the Yolo Bypass relative to existing conditions. The increased conveyance associated with these changes during low-flow scenarios is expected to result in more efficient (i.e., faster) drainage of the Yolo Bypass in the latter stages of flooding (i.e., on the receding limb of the hydrograph) that is beneficial to ecological, recreation, and agricultural functions. Additionally, the proposed Project's habitat elements would work collectively as a wind-wave buffer to provide additional protection against localized wind-wave erosion to portions of the Sacramento River Deep Water Ship Channel levee, which protects the city of West Sacramento. Consistent with the Final SRGO Program EIR, the constructed restoration elements would not alter the existing drainage patterns in a manner that would result in substantial on or off-site erosion and siltation; result in a substantial increase in the rate or amount of surface runoff which would result in on or off-site flooding; create or contribute runoff water which would exceed the capacity of the existing or planned irrigation and drainage system or provide substantial additional Sources of polluted runoff; or impede or redirect flood flows. Therefore, this impact would be ***less than significant***.

The effects of the proposed Project's constructed restoration elements are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-39 and 3.11-40). The Final SRGO Program EIR adequately addresses the effects of the constructed restoration elements on existing drainage patterns.

Effects of Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO. These impacts included the potential for operations, monitoring, and maintenance activities to change drainage patterns that could increase the rate and amount of surface runoff in a manner that would exceed the capacity of existing or planned stormwater drainage systems, result in flooding, or impede or redirect flood flows.

The Final SRGO Program EIR evaluated operations, monitoring, and maintenance activities necessary to support the successful establishment of natural conditions and support the functionality of artificial/ constructed infrastructure, including the following: mechanical and chemical weed control; control of invasive and other nonnative species, including predatory and nuisance species; replanting and reseeding; installation of fencing and signage; adjustments to grading or soils composition; installation and operation of monitoring equipment, including fish counters, flow gages, depth gages, cameras, stakes, and similar equipment; maintenance and repair of instream structures installed to improve or manage habitat or hydrologic function (e.g., grade control structures); maintenance and cleaning of fish screens; removal of debris and sediment from stream crossings; and maintenance and operation of fishways. The Final SRGO Program EIR found the impacts of operations, monitoring, and maintenance activities to be less than significant. The Final SRGO Program EIR does not include any general protection measures applicable to this impact (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-40).

As described in Chapter 2, “Project Description,” once construction is complete, operations, monitoring, and maintenance of the proposed Project would include active management of managed floodplain features (i.e., managed wetlands and floodplain agriculture) and more traditional operations, restoration monitoring, and maintenance of the proposed Project area as a whole. Operations and maintenance activities required for the proposed Project would include ongoing water management and agricultural practices related to flood-up and drawdown, irrigation, vegetation management (e.g., disking, mowing), grading, fertilizing, and planting. Some of these activities would require the use of heavy equipment; however, these activities are similar to those currently occurring for the agricultural fields and managed waterfowl ponds in the proposed Project area. Additional monitoring and maintenance activities would be consistent with those evaluated under the Final SRGO Program EIR, including potential activities such as the following: periodic dredging of sediment from tidal channels and irrigation and drainage canals; mechanical or chemical weed control and control of invasive species; manual vegetation management (e.g., replanting, watering, mowing); and maintenance, cleaning, and/or repair of berms, equipment, and infrastructure. Physical and biological monitoring would be conducted at the completion of proposed Project construction as needed for regulatory compliance, to evaluate project efficacy, and to inform operations and maintenance.

The analysis of potential effects of construction activities provides a conservative analysis for the potential effects on operations, monitoring, and maintenance activities, as many of these types of activities and potential equipment are the same. The operations, monitoring, and maintenance activities would be lesser in magnitude and duration than the construction activities. Given the nature and anticipated frequency of these activities, they would not alter the existing drainage patterns in a manner that would result in substantial on- or off-site erosion and siltation; substantially increase the rate or amount of surface runoff in a manner which would result in on or off-site flooding; create or contribute runoff water which would exceed the capacity of the existing or planned irrigation and drainage system or

provide substantial additional Sources of polluted runoff; or impede or redirect flood flows. Therefore, this impact would be ***less than significant***.

The effects of the proposed Project's operations, monitoring, and maintenance activities are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-39 and 3.11-40). The Final SRGO Program EIR adequately addresses operations, monitoring, and maintenance impacts of the proposed Project on existing drainage patterns.

Impact 3.10-2: Implementation of the proposed Project could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the proposed Project may impede sustainable groundwater management of the basin or obstruct implementation of a sustainable groundwater management plan.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO. These impacts included the potential for construction activities for restoration projects to substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the restoration project may impede sustainable groundwater management of the basin or obstruct implementation of a sustainable groundwater management plan.

Related to the proposed Project, the Final SRGO Program EIR evaluated the following construction activities: installation of infrastructure such as culverts, fish screens, and other water control structures to improve water management capabilities; removal of legacy structures; creation of depressions, berms, and drainage features; and the installation of cofferdams during construction. Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials (see Final SRGO Program EIR: Section 3.11.4, p. 3.11-35; see also Section 2.7.1, pp. 2-24 through 2-26).

The Final SRGO Program EIR determined that these activities could reduce groundwater levels and alter groundwater recharge and therefore could obstruct implementation of a sustainable groundwater management plan. However, as explained in the Final SRGO Program EIR, any reductions or alterations would be localized and temporary, and preconstruction conditions would be expected to resume, or to be improved upon, after construction. Therefore, the Final SRGO Program EIR determined this impact to be less than significant (see Final SRGO Program EIR: Section 3.11.4, p. 3.11-36). To further reduce impacts, the Final SRGO Program EIR included the following general protection measure when applicable to a given project: IWW-6: Dewatering/Diversion.

As discussed in Impact 3.10-1, construction activities for the proposed Project would be consistent with those analyzed in the Final SRGO Program EIR. Construction of the proposed Project's restoration elements would require temporary dewatering to prepare for earthwork, facilitate excavation or placement of fill, or perform facilities improvements. Earthwork for the tidal wetland habitat area would begin when soils in the work areas are sufficiently dry to support construction equipment access and operations. Although the proposed Project area would be expected to naturally dry out during the late spring/early summer months through passive (gravity-driven) operation of the existing water control structures

draining to the Toe Drain, it may be necessary to use temporary pumps to accelerate drying of the site in low-lying and deeper ponded areas and for the new tidal channels as the areas are being excavated.

Construction work could include compaction of soil or other activities that would temporarily increase impervious land surfaces. Other construction methods, such as vegetation clearing, land grading/leveling, or temporary placement of excavated earthen or dredged materials, could alter drainage patterns during construction, which could result in changes to groundwater recharge. However, these reductions would be localized and temporary, and preconstruction conditions would be expected to resume, or to be improved upon, after construction.

Consistent with the Final SRGO Program EIR, the localized and temporary nature of the groundwater changes associated with construction of the proposed Project are not anticipated to substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the restoration project may impede sustainable groundwater management of the basin or obstruct implementation of a sustainable groundwater management plan (i.e., the Yolo Subbasin GSP). To further reduce impacts, the proposed Project would include implementation of general protection measure IWW-6, included in the Final SRGO Program EIR. See Appendix A, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection measure. Therefore, this impact would be ***less than significant with implementation of general protection measures***.

The effects of the proposed Project's construction activities are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-35 and 3.11-36). The Final SRGO Program EIR adequately addresses construction impacts of the proposed Project on groundwater supplies and groundwater recharge.

Effects of Constructed Restoration Elements

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO. These impacts included the potential for constructed facilities (natural and artificial infrastructure) to substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the restoration project may impede sustainable groundwater management of the basin or obstruct implementation of a sustainable groundwater management plan.

The Final SRGO Program EIR evaluated constructed facilities including natural infrastructure such as floodplain habitat, tidal wetland habitat, and riparian habitat, as well as artificial infrastructure such as culverts, fish screens, and other water control structures that improve water management capabilities. The Final SRGO Program EIR determined that the long-term effects of restoration projects permitted under the SRGO would be beneficial (or neutral) because restoration projects typically improve groundwater recharge. Given the size or impervious land surfaces, any alterations of, or interference with, groundwater recharge would likely be negligible. Therefore, the Final SRGO Program EIR found that the constructed restoration elements would not reduce groundwater supplies, impair groundwater recharge, or obstruct implementation of a sustainable groundwater management plan, and determined this impact to be less than significant. The Final SRGO Program EIR does not include any general protection measures applicable to this impact (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-36 and 3.11-37).

The constructed restoration elements and facilities improvements would not require the use of groundwater; therefore, they would not substantially deplete groundwater supplies. The groundwater well serving the existing clubhouse would not change under the proposed Project. Consistent with the Final SRGO Program EIR, the long-term effects of the proposed Project's constructed restoration elements on groundwater supplies and recharge would be neutral or potentially beneficial (e.g., floodplain restoration projects typically would improve groundwater recharge). For example:

- Restoring tidal wetland and floodplain habitats, while also preserving flood conveyance and improve drainage patterns, would allow groundwater recharge because floodplains, when inundated with water, allow floodwaters to infiltrate the ground.
- Improving the connectivity between the Toe Drain and the proposed floodplain habitats in the bypass to absorb managed flood flows from the Big Notch Project would allow for improved groundwater recharge.
- Relocating several managed wetlands that could be inundated by natural flood events or from supplemental water for waterfowl hunting would sustain groundwater recharge.

Some of the facilities improvements would involve concrete work (e.g., to install culverts or control structures on the irrigation canal) or installation of structural foundations (e.g., to create pump stations). However, these improvements would not create impervious surfaces that would lead to permanent decreases in groundwater recharge compared to existing conditions. Therefore, alterations of or interference with groundwater recharge as a result of facilities improvements would likely be negligible. Groundwater recharge would still occur around these facilities. Given that the constructed restoration elements and facilities improvements would not deplete groundwater supplies or interfere with groundwater recharge, the constructed restoration elements would not impede sustainable groundwater management of the basin or obstruct implementation of a sustainable groundwater management plan (i.e., Yolo Subbasin GSP). Therefore, this impact would be ***less than significant***.

Consistent with the Final SRGO Program EIR, the constructed restoration elements would not be anticipated to deplete groundwater resources, interfere with groundwater recharge, or obstruct with implementation of a sustainable groundwater management plan. The effects of the proposed Project's constructed restoration elements are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-36 and 3.11-37). The Final SRGO Program EIR adequately addresses the effects of the constructed restoration elements on groundwater supplies and groundwater recharge.

Effects of Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO. These impacts included the potential for operations and maintenance activities of constructed facilities to substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the restoration project may impede sustainable groundwater management of the basin or obstruct implementation of a sustainable groundwater management plan (the Yolo Subbasin GSP).

The Final SRGO Program EIR evaluated operations, monitoring, and maintenance activities necessary to support the successful establishment of natural conditions and support the functionality of artificial/

constructed infrastructure. The Final SRGO Program EIR found that these activities would not reduce groundwater supplies, impair groundwater recharge, or obstruct the implementation of a sustainable groundwater management plan. Therefore, the Final SRGO Program EIR determined this impact to be less than significant. The Final SRGO Program EIR does not include any general protection measures applicable to this impact (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-36 and 3.11-37).

As described in Chapter 2, "Project Description," once construction is complete, operations, monitoring, and maintenance of the proposed Project would include active management of managed floodplain features (i.e., managed wetlands and floodplain agriculture) and more traditional operations, restoration monitoring, and maintenance of the proposed Project area as a whole. Operations and maintenance activities required for the proposed Project would include ongoing water management and agricultural practices related to flood-up and drawdown, irrigation, vegetation management (e.g., disking, mowing), grading, fertilizing, and planting. Additional monitoring and maintenance activities would be consistent with those evaluated under the Final SRGO Program EIR, including potential activities such as the following: periodic dredging of sediment from tidal channels and irrigation and drainage canals; mechanical or chemical weed control and control of invasive species; manual vegetation management (e.g., replanting, watering, mowing); and maintenance, cleaning, and/or repair of berms, equipment, and infrastructure. Physical and biological monitoring would be conducted at the completion of proposed Project construction and periodically after construction (i.e., at years 1, 3, 5, and 10) to inform operations and maintenance.

The analysis of potential effects of construction activities provides a conservative analysis for the potential effects on operations, monitoring, and maintenance activities, as many of these types of activities and potential equipment are the same. The operations, monitoring, and maintenance activities would be lesser in magnitude and duration than the construction activities. Given the nature and anticipated frequency of these activities, they would not substantially deplete groundwater supplies, interfere with groundwater recharge, impede sustainable groundwater management, or obstruct implementation of a sustainable groundwater management plan. Therefore, this impact would be ***less than significant***.

The effects of the proposed Project's operations, monitoring, and maintenance activities are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-36 and 3.11-37).

Impact 3.10-3: Implementation of the proposed Project could result in the release of pollutants into surface water and/or groundwater that could violate water quality standards or waste discharge requirements, substantially degrade water quality, or obstruct implementation of a water quality control plan.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO. These impacts included the potential for construction activities for restoration projects to result in a release of pollutants into surface water and/or groundwater that could violate water quality standards or waste discharge requirements, substantially degrade water quality, or obstruct implementation of a water quality control plan. Related to the proposed Project, the Final SRGO Program EIR evaluated the installation of infrastructure such as culverts, fish screens, and other water control structures to improve water management capabilities; removal of legacy structures; creation of depressions, berms, and drainage features; and the installation of cofferdams during

construction. Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials. The analysis presented in the Final SRGO Program EIR assumes that project proponents would comply with applicable federal, State, and local regulations and ordinances (e.g., the State Water Board and the regional water boards, which are the NPDES permitting authorities in California). However, because the potential exists for adverse impacts on water quality as a result of construction, the Final SRGO Program EIR indicates that impacts would be potentially significant (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-30 through 3.11-32).

The Final SRGO Program EIR identified the general protection measures to reduce construction impacts on surface water and groundwater quality: GPM-10: Equipment Maintenance and Materials Storage, GPM-11: Material Disposal, GPM-12: Fugitive Dust Reduction, WQHM-1, WQHM-2, WQHM-3, WQHM-4: Hazardous Materials Management and Spill Response Plan, WQHM-5: In-Water Concrete Use, WQHM-6: Accidental Discharge of Hazardous Materials, IWW-1: Appropriate In-Water Materials, IWW-2: In-Water Vehicle Selection and Work Access, IWW-3: In-Water Placement of Materials, Structures, and Operation of Equipment, IWW-4: In-Water Staging Areas and Use of Barges, IWW-6, IWW-10: In-Water Pile Driving Methods, IWW-11: Sediment Containment during In-Water Pile Driving, IWW-12: Pile-Driving Monitoring, IWW-13: Dredging Operations and Dredging Materials Reuse Plan, VHDR-2: Native and Invasive Vegetation Removal Materials and Methods, VHDR-3: Revegetation Materials and Methods, VHDR-4, VHDR-6: General Herbicide Use, VHDR-7: Herbicide Application Planning, and VHDR-8: Herbicide Application Reporting (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-32 and 3.11-33).

Construction activities, equipment, and materials used for the proposed Project would be consistent with those analyzed in the Final SRGO Program EIR. Construction of the proposed Project's restoration elements would require site preparation and mobilization/demobilization; use of staging areas, access routes, and haul routes; vegetation clearing; earthmoving involving excavation and grading; and dewatering. As described above under Impact 3.10-1, excavation ranging from 0 to 3 feet below the existing grade would be required for leveling and grading the ponds and fields, to replace or install water control devices, and to create tidal and floodplain habitat areas. Channel excavation would range between 5 and 10 feet below the existing grade in localized areas. Improvements also include improvements to and relocation of pump stations that would require up to 18 feet of excavation. Construction associated with the proposed facilities improvements would involve the removal and salvage and/or disposal of existing pumps, pipes, and other water control structures and utility lines that would be no longer needed under proposed Project conditions; installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; reconfiguration and modification of irrigation and drainage features, such as canals, ditches, and berms; and installation of temporary cofferdams. Various types of construction equipment would be used to prepare the proposed Project area, construct the restoration elements, and finalize/stabilize habitat (see Table 2-6 of Chapter 2, "Project Description," for a list of proposed construction equipment). Construction materials and equipment would be stored in and distributed from temporary staging areas located within an existing graveled parking lot.

Construction activities could introduce pollutants into surface water or groundwater through the use of equipment (e.g., oils, lubricants, hydraulic fluids), earth disturbance (e.g., soil and sediment), and use of materials (e.g., concrete). For example, clearing, excavation, and grading for the managed floodplain

restoration element could expose and release contaminated sediments, resulting in water quality impacts on receiving waters. The proposed Project area lies within a flood hazard zone, but construction activities would not occur during the flood season. Therefore, inundation of the construction area and/or staging areas, resulting in a release of these pollutants, is unlikely.

Should any hazardous materials be discharged to the land surface or surface waters during construction, they could travel to shallow groundwater. If the discharge volume were large enough, the hazardous materials could degrade local groundwater quality to a sufficient degree to impair its continued use. (Section 3.10, "Hazards and Hazardous Materials," includes more information regarding hazardous materials.)

Dewatering operations may contain elevated levels of suspended sediment, turbidity, or other constituents (e.g., metals, construction materials) that could degrade water quality when discharged into surface waters. Additionally, grading and excavation during proposed Project construction could disturb sediments and mobilize mercury. Although the time to construct the proposed Project's restoration elements would be short term (up to two construction seasons), temporary construction could result in effects on water quality that could persist throughout the construction period.

Consistent with the Final SRGO Program EIR, the proposed Project would comply with applicable federal and State regulations to reduce potential impacts of construction on water quality (DWR is not subject to local regulations and ordinances). As described in Section 3.10.3, "Regulatory Setting," the federal Clean Water Act prohibits any stormwater discharge from a construction project unless the discharge is in compliance with an NPDES permit. Because construction would disturb 1 or more acres of soil, the contractor would be required to obtain and comply with the General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit, Order 2022-0057-DWQ) from the Central Valley Regional Water Board before initiating earth-disturbing activities to ensure that construction activities would not degrade surface water and groundwater quality. Requirements of the Construction General Permit include developing a SWPPP and implementing BMPs that would (1) prevent increases in water turbidity, (2) control surface erosion, (3) control stormwater flows, (4) retain sediment within the construction site, and (5) restore vegetation. Conditions of the permit would include:

- Preparation of a hazardous material spill control and countermeasure program.
- Stormwater quality sampling, monitoring, and compliance reporting.
- Development and adherence to a Rain Event Action Plan.
- Mandatory training under a specific curriculum.
- Mandatory implementation of BMPs.

BMPs could include but would not be limited to (1) conducting major construction activities involving excavation and spoils haulage during the dry season, to the extent possible; (2) using straw bales, sandbags, gravel traps, and filters; (3) implementing erosion control measures such as vegetation and physical stabilization; and (4) incorporating sediment control measures such as fences, dams, barriers, berms, traps, and basins. The specific BMPs and water quality constituent–specific monitoring (e.g., for turbidity) to be implemented would be determined before issuance of the Construction General Permit, as determined by the Central Valley Regional Water Board.

As mentioned previously, dewatering may also occur (up to 18 feet below grade; see Chapter 2, "Project Description") to facilitate construction. The water from the dewatering likely either would be discharged onto an existing agricultural field or into a managed wetland or would be released to existing ditches. The water would then drain back to the Toe Drain via the existing drainage ditch network. Alternatively, the ditches could be blocked if release into the Toe Drain is not permitted. With implementation of the SWPPP, water discharged from the work area would meet water quality thresholds established by the Central Valley Regional Water Board. As part of this process, the proposed Project would obtain and comply with a General Waste Discharge Requirements/NPDES Permit for Limited Threat Discharges to Surface Waters for the testing and disposal of groundwater or other water dewatered during construction.

Adherence to the NPDES regulations would ensure that construction of the proposed Project would not result in the release of pollutants into surface water and/or groundwater that could violate water quality standards or waste discharge requirements, substantially degrade water quality, or obstruct implementation of a water quality control plan. Additionally, the proposed Project would include implementation of general protection measures GPM-10, GPM-11, GPM-12, WQHM-1, WQHM-2, WQHM-3, WQHM-4, WQHM-5, WQHM-6, IWW-1, IWW-2, IWW-3, IWW-4, IWW-6, IWW-1, IWW-11, IWW-12, IWW-13, VHDR-2, VHDR-3, VHDR-4, VHDR-6, VHDR-7, and VHDR-8 included in the Final SRGO Program EIR to reduce construction impacts. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection measure. Therefore, this impact would be ***less than significant with implementation of general protection measures***.

The effects of the proposed Project's construction activities are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-30 through 3.11-33). The Final SRGO Program EIR adequately addresses construction impacts of the proposed Project on surface water and groundwater quality.

Effects of Constructed Restoration Elements

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO. These impacts included the potential for constructed facilities (natural and artificial infrastructure) to result in the release of pollutants into surface water and/or groundwater that could violate water quality standards or waste discharge requirements, substantially degrade water quality, or obstruct implementation of a water quality control plan. The Final SRGO Program EIR evaluated constructed facilities including natural infrastructure such as floodplain habitat, tidal wetland habitat, and riparian habitat, as well as artificial infrastructure such as culverts, fish screens, and other water control structures that improve water management capabilities. The Final SRGO Program EIR determined that the long-term effects on water quality of constructed facilities from restoration projects permitted under the SRGO would be beneficial or neutral (in the case of fish screens). The specific purpose of these projects would be to correct existing conditions that contribute to resource degradation and/or counteract risks associated with environmental factors that contribute to water quality degradation.

As described in the Final SRGO Program EIR, establishment, restoration, and enhancement of tidal wetland habitats would provide numerous ecological benefits, including water quality improvements. Floodplain restoration would also improve water quality because floodplains, when inundated with water, act as natural filters by removing excess sediment and nutrients. However, depending on the size,

location, and types of constructed facilities, there could be substantial degradation to existing surface water quality conditions such as turbidity, salinity, water temperature, or CHABs. The Final SRGO Program EIR stated that because the potential exists for adverse impacts on water quality as a result of constructed restoration elements, impacts would be potentially significant. The Final SRGO Program EIR stated that the general protection measures listed above for construction activities would reduce impacts from constructed restoration elements on water quality to a less-than-significant level (see Final SRGO Program EIR: Section 3.11.4, pp. 3.11-33 through 3.11-35).

The proposed Project's constructed restoration elements would be consistent with the constructed facilities analyzed in the Final SRGO Program EIR. As described in Chapter 2, "Project Description," the proposed Project would restore tidal wetland and adjacent floodplain, providing suitable habitat for delta smelt (*Hypomesus transpacificus*), salmonids, and other native fish and wildlife species, while maintaining and enhancing compatible recreational and agricultural uses within the proposed Project area. The proposed Project was sited in this area to take advantage of existing land elevations and amplify the habitat benefits of seasonal flows through the Yolo Bypass (see Figure 2-3 in Chapter 2, "Project Description," for existing elevations at the proposed Project area). The restored and enhanced tidal wetland and floodplain habitats would mimic the historic shallow, long-duration flood patterns of the region that support underlying ecological processes necessary for productive aquatic ecosystems and would be expected to provide long-term water quality improvements.

However, the possibility remains that constructed restoration elements could result in changes to water quality. For example, reconnected tidal wetland habitats would reintroduce daily tidal flows and could change flow patterns that could affect regional salinity levels and other water quality constituents (e.g., DO, water temperature, mercury geochemical processes), and in turn could affect other water quality constituents that are influenced by these constituents or changing hydrologic conditions (e.g., bromide). Salinity increases alone are an issue for various municipalities, industrial and agricultural interests, and resources agencies that depend on the availability of fresh water to maintain existing beneficial uses.

The following presents an analysis of the potential effects of the constructed restoration elements on water quality constituents in the vicinity of the proposed Project area introduced in Section 3.10.2, "Environmental Setting." These constituents include salinity, bromide, turbidity, DOC, methylmercury, organic chemicals, boron, water temperature, DO, and HABs.

Salinity

The primary issue for the proposed Project related to salinity is the increased tidal prism inherent in the design. The excavation of tidal channels and tidal wetlands and the hydraulic connection of the proposed Project area to the Toe Drain would increase the tidal prism, although the amount is expected to be insignificant compared to the overall tidal prism of the Delta. Though small, these changes could nonetheless alter the salinity regime in the Delta. Increased Delta salinity could negatively affect drinking water quality by affecting water treatment plant operations; could affect agricultural water users by limiting the amount of water used during a tidal cycle (e.g., irrigation water that is more saline can negatively affect crop yields); could affect water quality for in-Delta agricultural irrigation users by increasing salinity concentrations at agricultural diversion intakes; and could affect fish and wildlife populations and result in changes to their habitats.

As described previously, numerical modeling of salinity (EC) was conducted with the RMA Bay-Delta model to analyze potential salinity impacts of the proposed Project. A quantitative evaluation of changes in salinity were provided by comparing EC for the Baseline conditions with the proposed Project to the Baseline conditions without the proposed Project. The salinity modeling results indicate little to no effect on the regional salinity field for with-Project conditions, as measured by X2 location and compliance with D-1641 salinity objectives for drinking water, agricultural water use, and fish and wildlife at in-Delta compliance stations. As described in more detail below, the salinity modeling results found that the proposed Project would not result in compliance issues, new compliance issues, and times of increased likelihood of noncompliance under any of the modeled configurations or time periods.

With regard to drinking water, the salinity modeling predicted increased EC at the Barker Slough NBA intake (increases up to 0.29 percent) and the City of Vallejo intake at Cache Slough (increases up to 0.23 percent) with the proposed Project compared to the without-Project scenario. All other compliance stations were predicted to have either no change or very slight decreases in EC (i.e., percent changes were all within 0.10 percent). The salinity modeling indicates that even for intakes that would experience a slight increase in salinity (Table 3.10-9) as a result of the proposed Project, the level of salinity would remain in compliance with D-1641 standards.

With regard to agricultural water use, in comparing the Baseline conditions with the proposed Project to the Baseline conditions without the proposed Project, the salinity modeling found that EC levels at the D-1641 stations for agricultural beneficial uses (presented in Table 3.10-5) would be the same or slightly reduced for most of the year at all stations (i.e., percent changes all within 0.40 percent). EC levels were always in compliance with D-1641 standards.

With regard to fish and wildlife, in comparing the Baseline conditions with the proposed Project to the Baseline conditions without Project, the salinity modeling found that EC levels at the D-1641 stations for fish and wildlife beneficial uses (listed in Table 3.10-5) would be the same or slightly reduced for most of the year at all stations (i.e., percent changes all within 0.15 percent) under the proposed Project. EC levels were always in compliance with D-1641 standards.

Lastly, in comparing the Baseline conditions with the proposed Project to the Baseline conditions without the proposed Project, the salinity modeling found a very slight shift in the position of X2 seaward for all months with the proposed Project (seaward direction of X2 shift is correlated with improved habitat conditions for many native Delta species, as described in Section 3.10.3). The shift was not predicted to cause or exacerbate noncompliance with X2 objectives.

Bromide

The primary issues for the proposed Project related to bromide are similar to those for salinity, namely that alteration of the salinity regime in the Delta could increase bromide concentrations and negatively affect drinking water quality because of the increased prevalence of DBPs. As stated previously, no water quality standards are in effect for bromide, and the potential for the proposed Project to result in increased concentrations of bromide at drinking water intakes is exceedingly negligible. Analytically, bromide is often empirically estimated using EC (DWR 2001; Reclamation 2015). In these relationships, bromide is calculated as composing a small percentage of EC, typically in the range of 0.05 percent to 0.09 percent. These scaling relationships can be applied to the salinity modeling conducted for the proposed Project to

provide bookends for expected changes in bromide at relevant drinking water intakes that would result from implementation of the proposed Project.

The largest simulated increase in salinity occurred at the Barker Slough NBA intake at the City of Vallejo intake at Cache Slough (Table 3.10-9). Applying the most conservative of the EC-to-bromide regression relationships from DWR (2001)[14] to the salinity modeling results indicates that increases in bromide concentrations at these locations associated with implementation of the proposed Project would all be less than 0.0011 mg/l. This magnitude of change is well below the detection limits of 0.01 mg/l of most analytical tests for bromide and constitutes an essentially negligible change from without-Project conditions. Further, simulated reductions of salinity at other drinking water intakes suggest that the proposed Project would result in reductions in bromide concentrations at these locations (Table 3.10-9).

Turbidity

The constructed restoration elements of the proposed Project could affect the turbidity and water quality of waters outside the proposed Project area. Particles contributing to turbidity may originate from such Sources as sediment erosion and resuspension, and from sediment-disturbing activities like dredging, algae, and other microorganisms, and these particles may contain residual amounts of herbicides or pesticides from past farming activities. Hydraulic investigation, modeling, and analyses for the proposed Project indicate that the proposed Project area's underlying sediments and soils provide stable conditions under various flow conditions (Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment"). Specifically, proposed Project–specific hydraulic modeling evaluated a Yolo Bypass flow event for a range of conditions and found that such an event would not be anticipated to erode the existing material or to differ substantially from erodibility under existing conditions (see Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment"). Such flows represent high-flow conditions that may be experienced in the proposed Project area and have the potential to increase turbidity. Post-construction natural recruitment of emergent marsh vegetation would provide additional stability to sediments and soils and dampening of shear stresses.[15] For this reason, increases in turbidity from the constructed restoration elements of the proposed Project is expected to be negligible.

As discussed previously in Section 3.10.2, "Environmental Setting," the proposed Project area has historically included rice and alfalfa farming, and possibly some hay. The proposed Project would include long-term floodplain agriculture operations where fields are anticipated to be used primarily for rice cultivation; however, other crops may also be grown during certain years as part of planned crop rotations. The proposed long-term agricultural operations would generally follow standard practices for rice production in the Yolo Bypass, consistent with current operations; modifications would be targeted toward fish and waterfowl food production and juvenile salmonid rearing, starting in the late fall/early winter (November–December) and running through early spring (March). Such activities would involve ongoing ground disturbance in the form of grading and tilling, which would have the potential to result in erosion and affect turbidity. The spatial extent of proposed agriculture is a reduction compared to what historically occurred on-site (i.e., under the NOP baseline without-Project).

[14] Bromide = 0.00098*EC – 0.18535027 from DWR (2001), where bromide is in mg/l and EC is in µS/cm.

[15] "Shear stress" is the force of moving water against the bed of the channel and is the principal metric for assessing erosion potential.

Given the reduction in agricultural acreage and the consistency of proposed agricultural operations with existing conditions, increases in turbidity from the agricultural component of the proposed Project's constructed restoration elements would not be expected. Over the long term, especially with the establishment of marsh vegetation, it is likely that the proposed Project would provide benefits in the form of reduced turbidity.

Dissolved Organic Carbon

Land cover substantially influences DOC production, and although agricultural lands are known to contribute to elevated DOC concentrations, tidal wetlands have also been shown to be potential Sources of DOC (Menendez et al. 2022). The primary issues for the proposed Project related to DOC are possible increased DOC concentration produced in the newly created tidal wetland areas as compared to the DOC production from the existing land uses. Increased DOC is most relevant as a potential impact on drinking water production due to the influence on production of DBPs. Although some types of DBPs have a greater propensity to form when DOC is produced by tidal wetland vegetation, the changes in DBP in response to wetland-sourced DOC are uncertain. Tidal wetlands with higher residence times have been shown to reduce DOC concentrations by environmental processing (Kraus et al. 2008), thereby reducing the potential to form DBPs. Thus, the effect of tidal wetlands on DOC and DBP concentrations is not straightforward.

The nearest drinking water supply intake to the proposed Project area, the NBA, is located more than 15 river miles downstream. The proposed Project area would have notches that would connect the land to tidal flows via the Toe Drain and would be expected to increase the tidal prism in the Toe Drain by up to 400 acre-feet. Comparatively, the downstream Lookout Slough increased the tidal prism to the Delta by approximately 8,000 acre-feet. A particle tracking model developed for Lookout Slough found that less than 1 percent of particles originating from that project were predicted to reach the NBA intake (DWR 2020b). Lookout Slough is located approximately 10 river miles from the NBA intake, approximately 5 miles closer than the proposed Project area. Applying the conservative estimate that the same number of particles, 1 percent, from the proposed Project area would reach the NBA intake, the proposed Project could be assumed to contribute approximately 5 percent of that of Lookout Slough, which was found to have less-than-significant impacts on DOC (DWR 2020b). The State & Federal Contractors Water Agency (2013) made similar conclusions that the Lower Yolo Restoration Project, located immediately south of the proposed Project, would not cause a substantial increase in DOC/TOC levels.

Based on data compiled by DWR.(2020c) on biomass production for different Yolo Bypass land use types, wetlands were found to produce less cumulative annual biomass than pasture and rice. Reduced biomass production in turn reduces the potential for DOC production and supports findings from other studies that natural land uses, including wetlands, would be expected to contribute less to DOC concentrations than agricultural land uses (Chen and Driscoll 2009; Oh et al. 2013). As discussed previously, the spatial extent of proposed agriculture is a reduction compared to what historically occurred on-site, thus providing anecdotal evidence that the proposed Project would not constitute a new substantial source of DOC.

Currently there is no regulatory standard for DOC. In light of existing studies and environmental analyses (ESA PWA 2010; PWA 2008; State & Federal Contractors Water Agency 2013; DWR 2020b) and the above information, the proposed Project would not be expected to result in a substantial increase in DOC concentrations on- or off-site or to affect the quality of water treated at water treatment plants, for the following reasons: the lack of observed and simulated impacts from similar nearby restoration projects;

the limited potential for water particles from the proposed Project reaching the NBA intake; and the potential environmental processing of DOC in the proposed Project area.

Methylmercury

The primary issue for the proposed Project related to methylmercury is the possibility of increased production of methylmercury in the newly created wetland areas and associated loading to the Delta.

The interaction of tidal wetland mercury and methylmercury dynamics is currently not well understood. According to some studies, tidal wetlands may be Sources or sinks of methylmercury (Fleck et al. 2007; Marvin-DiPasquale et al. 2022; DWR 2020d). This differs from research on Delta freshwater wetlands, which have been found to be net Sources of methylmercury (Fleck et al. 2007; Stephenson et al. 2008). Regional studies recently completed by DWR that represent the current best available science of methylmercury dynamics in tidal wetlands showed that none of the sites studied were significant Sources of methylmercury to adjacent water bodies and methylmercury concentrations entering and leaving wetlands were not significantly different (DWR 2020d; Robbins et al. 2024). Among other factors, methylmercury imports and exports are heavily influenced by flow and by whether a wetland is associated with a floodplain. Overall, the effect of tidal wetlands on methylmercury concentrations and bioaccumulation is not straightforward and not readily quantified, especially when considered in relation to the conversion of existing land uses that include managed wetlands and rice production to tidal wetlands in a managed floodplain environment.

As mentioned in Section 3.9.2, given present water quality impairments for methylmercury in the Delta, it is expected that methylmercury will be produced in the Yolo Bypass regardless of proposed Project activities (Reclamation and DWR 2019). Results of a study by DWR (2020d) from three existing tidal wetland restoration sites in the Delta—the Yolo Bypass Wildlife Area Tidal Wetland, the North Lindsey Slough Tidal Wetland, and the Westervelt Cosumnes River Tidal Wetland[16]—found that those sites did not appear to be significant Sources of methylmercury to adjacent water bodies; that the sites generally did not export mercury or methylmercury in large amounts annually; and that methylmercury concentrations leaving the wetlands were not significantly higher than those entering the wetlands. Although the sites in this study did not contain managed wetlands or managed floodplain agriculture like those planned for this proposed Project, the findings from this study and more generally those compiled by Robbins et al. (2024) are the best available understanding of methylmercury dynamics for the region. While uncertainty remains regarding the degree to which tidal wetlands encourage increased methylation, the consensus of recent studies and best available regulatory guidance support the conclusion that tidal wetlands can be sinks of methylmercury and generally are expected to yield less methylmercury than other land uses currently present across the proposed Project area (DWR 2020c, 2020d; Robbins et al. 2024).

The anecdotal findings summarized in the paragraph above can be additionally supported by leveraging data on land use–based methylmercury production rates compiled by DWR (2020c) and Robbins et al. (2024) to compare with- and without-Project conditions, as presented in **Table 3.10-11**. These data were used to provide first-order estimates of with- and without-Project annual methylmercury production.

[16] Relative to the proposed Project area, the Yolo Bypass Wildlife Area Tidal Wetland is located 4 miles to the north, the North Lindsey Slough Tidal Wetland is located 12.5 miles to the southwest, and the Westervelt Cosumnes River Tidal Wetland is located 16 miles to the southeast.

Table 3.10-12 shows that with-Project conditions would be expected to provide a reduction in methylmercury production compared to without-Project conditions.

TABLE 3.10-11
SUMMARY OF LAND USE–BASED METHYLMERCURY PRODUCTION RATES

Land Use	Methylmercury Flux ($ng/m^2/d$)[a]
DWR 2020c	
Irrigated Pasture	55.3
Fallow	28.6
Undisked Wetland	25.8
Disked Wetland	25.7
Dry Pasture	12.1
White Rice	8.9
Mixed/Other Farmland	3.57
Wild Rice	2.97
Tidal Wetland	-3.65
Open Water	-10.9
Robbins et al. 2024	
Open Water	4.5
Wetland (non-tidal including rice and managed wetlands)	2.89
Agriculture excluding rice	0.24
Tidal Wetland	-3.88

Notes: DWR = California Department of Water Resources; $ng/m^2/d$ = nanograms per square meter per day

a. Mean values from Table 3.8 of DWR (2020c)
b. Mean values derived from Tables 6.11, 6.12, 6.21, and 6.42 of Robbins et al. (2024)

Source: Data compiled by Environmental Science Associates in 2025

TABLE 3.10-12
SUMMARY OF WITH- AND WITHOUT-PROJECT ESTIMATED METHYLMERCURY PRODUCTION

Restoration Element/ Habitat Type	Land Use (DWR 2020c)[a]	Land Use (Robbins et al. 2024)[a]	Existing Conditions—Approximate Area (ac)	Proposed Conditions—Approximate Area[b] (ac)	Methylmercury Flux (DWR 2020c) (g/d)[c]		Methylmercury Flux (Robbins et al. 2024) (g/d)[c]	
					Existing Conditions	Proposed Conditions	Existing Conditions	Proposed Conditions
Nontidal Wetland Habitat (unmanaged)	Undisked Wetland	Wetland (nontidal including rice and managed wetlands)	27	37	0.0028	0.0039	0.0003	0.0004
Tidal Wetland Habitat (unmanaged)	Tidal Wetland	Tidal Wetland	61	511	-0.0009	-0.0075	-0.0010	-0.0080
Transition Zone Habitat	Dry Pasture	Agriculture excluding rice	0	152	0.0000	0.0074	0.0000	0.0001
Grassland	Dry Pasture	Agriculture excluding rice	10	7	0.0005	0.0003	0.0000	0.0000
Floodplain Habitat	Undisked Wetland	Wetland (nontidal including rice and managed wetlands)	300	217	0.0313	0.0227	0.0035	0.0025
Managed Wetlands	Undisked Wetland	Wetland (nontidal including rice and managed wetlands)	573	557	0.0598	0.0582	0.0067	0.0065
Managed Floodplain Agriculture	White Rice	Wetland (nontidal including rice and managed wetlands)	1,205	720	0.0434	0.0259	0.0141	0.0084
Nontidal Open Water	Open Water	Open Water	36	11	-0.0016	-0.0005	0.0007	0.0002
Total			***2,212***	***2,212***	***0.14***	***0.11***	***0.02***	***0.01***

Notes: ac = acres; DWR = California Department of Water Resources; g/d = grams per day

a. Reclassified land use based on best professional judgment from Table 3.10-12.
b. The distribution of habitats or land use types displayed is approximate; some areas may switch from one type to another as the design is finalized, but the total acreage would remain the same.
c. Methylmercury flux estimated based on area multiplied by the land use–based fluxes from Table 3.10-12. These estimates are first-order, based on best available data, and are for comparative purposes only; they should not be interpreted as absolute.

Source: Data compiled by Environmental Science Associates in 2025

Based on the approach described above, concentrations of methylmercury within the proposed tidal wetlands would be expected to be less than currently generated by the agricultural, seasonal, and perennial wetlands on the proposed Project area (see the preceding discussion) (DWR 2020c; Robbins et al. 2024); however, the net methylmercury load to Delta waters from the proposed Project area and the volume of water discharged (or exchanged) from the restored tidal wetland on an annual basis would be greater than the volume discharged from agricultural lands and existing managed wetlands. The net benefit in the decrease in methylmercury concentrations coupled with an increase in hydrologic loading to the system could result in either a decrease or no net change in methylmercury loading from existing conditions on an annual basis. The proposed restoration of tidal wetlands would also lead to a reduction in the severity of high-concentration methylmercury discharges to the Delta, due to discrete agricultural drainage discharges. During years in which the Yolo Bypass is flood-inundated and thus generating flood-induced mercury methylation in addition to the irrigation-season methylation, the existing loadings may be similar to or greater than what would occur with the restored tidal wetlands (e.g., State & Federal Contractors Water Agency 2013). Managed wetlands and floodplain agriculture (e.g., rice production) features associated with the proposed Project would be expected to behave similar to existing conditions relative to methylmercury production in the Yolo Bypass and loading to the Delta.

In regard to bioaccumulation of methylmercury in fish, Henry et al. (2010) found that mercury uptake is higher for smoltifying salmon in the Yolo Bypass than uptake in the Sacramento River. Fish in the Yolo Bypass also grew more rapidly than their counterparts in the Sacramento River, and both methylmercury production and greater consumption of contaminated food may play a role in observed higher tissue concentrations in fish from the Yolo Bypass. This conclusion is supported by the lack of greater growth and methylmercury accumulation in caged fish that would be unable to pursue food items over a wide area (Reclamation and DWR 2017).

Further, it is not clear from available information whether methylmercury in tissues of juvenile salmon from the Yolo Bypass may cause adverse effects. Juvenile salmon in the Yolo Bypass appear to grow more rapidly than their counterparts in the adjacent river, suggesting that habitat in the Yolo Bypass is more favorable than river habitat (Reclamation and DWR 2017). Studies in the literature suggest that non-lethal neurological effects might occur when fish tissue concentrations exceed 0.1 to 0.3 nanograms of methylmercury per gram (wet weight) (Beckvar et al. 2005; Depew et al. 2012; Eagles-Smith et al. 2016; Niimi and Kissoon 1993). Juvenile salmon from the Yolo Bypass showed methylmercury concentrations in tissue 1/5th to 1/10th of these thresholds (Henry et al. 2010).

Shallow, slow-moving water is an important habitat characteristic for juvenile salmon during their growth and smoltification stage of their migration to the Pacific Ocean (Reclamation and DWR 2017). Thus, the same factors that may promote methylmercury production may also provide the anticipated benefits associated with implementation of proposed Project.

Additionally, in 2016–2022 the Delta Regional Monitoring Program implemented a mercury monitoring program to assess methylmercury concentrations in fish and water, along with a suite of ancillary parameters (Davis et al. 2025). The assessment focused on black bass and included monitoring stations in the Sacramento River (region) and southern Yolo Bypass (region) in the vicinity of the proposed Project area, including multiple restoration sites (Lookout Slough, Yolo Flyway Farms, Lindsey Slough). Mean concentrations in the southern Yolo Bypass region stations were in the middle of the overall distribution

of all stations sampled, ranging from 0.47 ppm at Cache Slough to 0.71 ppm at Lookout Slough. For the Sacramento River region stations, the mean concentration at Sacramento River at Freeport (0.60 ppm) was in the middle of the range of station means, while the mean at McCormack-Williamson Tract (0.87 ppm) was the third highest among all stations monitored. These findings indicate that methylmercury production in the southern Yolo Bypass, including at restoration sites, is comparable to (or slightly less than) that which occurs in the mainstem Sacramento River.

Given the foregoing discussion, based on the best available and up-to-date science, it is expected that restored tidal wetlands, managed wetlands, and floodplains, such as the proposed Project's constructed restoration elements, would not increase methylmercury production relative to without-Project conditions and would not substantively increase methylmercury loading in the Delta.

Organic Chemicals

The proposed Project could contribute to increased turbidity levels and mobilization of organic chemicals (e.g., herbicides or pesticides) in the adjacent water bodies from erosion from the proposed Project area through the constructed channels and notches and restored tidal connection. The potential for such mobilization and delivery of significant quantities of organic chemicals would be diminished or otherwise controlled because of several proposed Project area–specific factors or elements of the proposed Project's design. As described above under "Turbidity," hydraulic investigation, modeling, and analyses for the proposed Project indicate that the underlying soils provide stable conditions under various flow conditions that would not be anticipated to erode or to differ substantially from existing conditions in terms of erodibility. As discussed in the "Surface Hydraulics and Hydrology" section above, Toe Drain water is currently diverted into the proposed Project area and managed for both agriculture and seasonal wetlands habitat for waterfowl. A portion of this water, in the form of agricultural runoff, along with drainage from properties to the west and north ultimately flows back to the Toe Drain. This drainage water likely conveys some volume of sediment bound and dissolved organic chemicals. Under the proposed Project, such practices would continue, but the proposed reduction in agricultural acreage would presumably lead to less agricultural runoff and an associated reduction in organic chemical delivery. Lastly, a Phase II soil sampling investigation conducted in 2021 in the proposed Project area indicated that pesticides and herbicides either are not detected above reporting limits or are present at concentrations below screening criteria, meaning that the proposed Project area does not represent a "hot spot" for organic chemicals (see the Phase II Soil Sampling Investigation in Appendix F to this Draft SEIR, "Tides End Multibenefit Restoration Project Phase II Soil Sampling Investigation (Phase II Soil Sampling Investigation").

Although the proposed Project would include long-term floodplain agriculture operations, the spatial extent of proposed agriculture is a reduction compared to what historically occurred on-site (i.e., under the without-Project NOP baseline). These fields are anticipated to be used primarily for rice cultivation; however, other crops may also be grown during certain years as part of planned crop rotations. General agricultural practices would be implemented to minimize the need for application of pesticides and herbicides but would not preclude their use. Given the reduction in agricultural lands for constructed restoration elements, applications of pesticides and herbicides would be consistent with or less than historical amounts applied in the proposed Project area. In addition to agricultural application, localized use of herbicide may be employed, if highly invasive species and/or HABs become present in the proposed Project area. The use of herbicide is discussed further in the "Effects of Operations, Monitoring, and

Maintenance Activities" section. Ultimately, increases in the production and transport of organic chemicals from the constructed restoration elements of the proposed Project would be negligible.

Boron

As discussed in Section 3.10.2, "Environmental Setting," boron is an inorganic compound that is naturally occurring and found in rocks, soil, and watershed sediments, and it can be transported in dissolved form in river inflows. The proposed Project area does not represent a substantial source of boron relative to regional conditions. The primary issues for the proposed Project related to boron are possible increased boron concentrations in water that would be used for regional agricultural purposes, caused by modification of local water flows. Given that the primary Sources of boron to the Yolo Bypass are more than 5 river miles from the proposed Project area (i.e., Bear Creek and Cache Creek) and the tidal prism added by the proposed Project would be small, restoration at the proposed Project area is not anticipated to affect boron concentrations in the Toe Drain or other parts of the Delta.

Water Temperature

The primary issue for the proposed Project related to water temperature is the possibility for increased water temperatures caused by solar radiation to interact with the newly created wetland areas. The addition of tidal channels and wetlands to the proposed Project area would increase the surface area of water exposed to solar radiation, which has the potential to raise water temperatures. However, although emergent marsh absorbs more solar radiation than open waters, the presence of vegetation reduces water temperatures (e.g., DWR 2020b). In a study conducted by Hemes et al. (2018), restored emergent marsh reduced surface water temperatures by as much as 5°C. This cooling effect was largely attributed to the shade offered by the vegetative canopy structure, which minimizes heat absorption during the day, and subsequent enhanced nighttime latent heat flux. Thus, once restored wetlands in the proposed Project area are mature, they are expected to provide some daytime cooling, which would benefit coldwater fish species in the long term.

Enright et al. (2013) also document the long-term cooling effects of natural tidally influenced sloughs and marshes. Although the proposed Project area may see slight increases in localized daytime temperature before vegetation matures and fully covers the marshplain, tidal exchange is expected to move water into and out of the area at sufficient volume and frequency to mitigate any small temporary increases in temperature due to solar exposure.

Lookout Slough provides another point of comparison for assessing the proposed Project's potential to affect water temperature. Comparison of mean monthly water temperature observations at the USGS Cache Slough at South Liberty Island gage (#11455315), located immediately downstream of Lookout Slough, from before implementation of this project (i.e., 2013–2022) to after (i.e., 2024) show either a decrease in average temperatures or an increase of less than 0.8°C following project implementation. The comparison is based on a relatively short post-project dataset, but it does provide preliminary support that this similarly situated tidal wetland project has not resulted in increased water temperatures and is more likely to support beneficial temperature reductions.

The proposed Project would restore the area to historic conditions to which native species are adapted. Given the information presented above, water temperature impacts would be negligible and would not be expected to increase water temperature in excess of a standard or recommendation set forth in the relevant water quality control plans (Table 3.10-8).

Dissolved Oxygen

The primary issues for the proposed Project related to DO are the addition of tidal wetland and associated fluctuations in DO concentrations. As described in Section 3.9.2, processes controlling DO concentrations are complex and highly variable in space and time. Wetland habitats can promote healthy DO concentrations for fish and other aquatic species (Bergamaschi et al. 2012) and are also at risk for periodic algal blooms (harmful or not), which can create temporary conditions of low DO. As described in the next section, the proposed Project's design seeks to avoid conditions that promote growth of HABs to the extent feasible.

Organic matter loads to the Delta from restored tidal wetland also could be an issue, given the potential for increased biological oxygen demand (BOD) of these waters. However, the following lines of evidence support that high-BOD and low-DO conditions would not result from the proposed Project.

- Firstly, separate hydraulic modeling results of the tidal channels in the vicinity of the proposed Project area indicate that there is adequate tidal circulation and exchange to prevent the formation of stagnant areas, which could become high-BOD/low-DO hot spots (State and Federal Contractors Water Agency 2013). Hydraulic modeling of exposure time for the proposed Project by Environmental Science Associates (ESA 2025b) further supports that water would not remain stagnant and susceptible to high BOD/low DO.
- Secondly, the newly created tidal wetlands on the proposed Project area would be designed to drain properly toward newly constructed tidal channels, and subsequently through notches in the agriculture berms along the Toe Drain, increasing tidal exchange, and would therefore not be prone to developing stagnant backwater areas, which can be low-DO hot spots.

One of the proposed Project's objectives is to restore tidal wetland habitat for migratory salmonids and other aquatic organisms, including delta smelt. Overall, it is unlikely that the organic matter exported from the proposed restored tidal wetland into the Toe Drain (via notches in the agricultural berm) would cause a decrease in DO levels that could affect beneficial uses within the Delta.

Lookout Slough provides a final point of comparison for assessing the proposed Project's potential to affect DO levels. Comparison of mean monthly DO observations at the USGS Cache Slough at South Liberty Island gage (#11455315), located immediately downstream of Lookout Slough, from before implementation of this project (i.e., 2013–2022) to after (i.e., 2024) show either an increase in average DO or a decrease of less than 0.1 mg/l following project implementation. The comparison is based on a relatively short post-project dataset but does provide preliminary support that this similarly situated tidal wetland project has not resulted in decreased DO and is more likely to support beneficial DO increases.

Therefore, based on these lines of evidence, persistently low DO concentrations are not anticipated as a result of the proposed Project, and the proposed Project would not be expected to cause DO concentrations to fall below a standard or recommendation set forth in the relevant water quality control plans (Table 3.10-8).

Harmful Algal Blooms

The primary issue for the proposed Project related to HABs is the increased inundation of the proposed Project area with the connection of the site to the Toe Drain. Should regions of the proposed Project area hold warm water and remain stagnant for prolonged periods, conditions could promote HABs or

CHABs.[17] The highest risk for HABs and CHABs occurs during the warmest months (July–September). Although at present there are no documented, persistent nearby HABs or CHABs, the Delta region is considered at risk for these in the future (e.g., Lehman et al. 2022).

Overall, and as discussed in the preceding sections, the proposed Project would not increase conditions that would give rise to HABs with regard to environmental factors including turbidity, salinity, temperature, or nutrients[18] that would trigger the emergence and subsequent growth of HABs (DWR 2020b; City of Vallejo vs. State of California State Department of Water Resources 2022). The emergence of increased concentrations of HABs is indicative of potential problems with water stagnation. The proposed Project would reintroduce tidal influence on the proposed Project area, reducing water stagnation. Further, the proposed Project is expected to have a positive influence on water quality by reducing agricultural and managed wetland inputs that contribute to HABs and other aquatic invasive species and by increasing water circulation and potentially reducing water temperature, which serve to decrease the potential for growth of HABs.

Invasive species and HAB control, monitoring, and long-term management actions are also included as part of the proposed Project (Section 2.4.2, "Tidal Wetlands, Transition Zones, and Floodplains") and would adhere to general protection measure VHDR-2. The proposed Project would reduce the overall cover of invasive species within the proposed Project area, resulting in improvements to water quality[19] and habitat integrity (see Impact 3.6-4 in Section 3.6, "Biological Resources—Terrestrial").

Impact Conclusion

Based on the best available and up-to-date science, the proposed Project would not be a substantial source of turbidity, DOC, methylmercury, organic chemicals, or boron. The proposed Project would not substantively increase off-site export of these constituents or increase their concentrations in adjacent water bodies, including the Delta. Wetland habitats generally promote healthy DO concentrations and, along with invasive species and HAB control, monitoring, and long-term management actions, the proposed Project would not be expected to generate or contribute to persistently low DO concentrations. Although the proposed Project area may result in slight increases in localized daytime temperature before vegetation matures, these increases would be mediated by tidal exchange facilitated by the proposed Project, thus rendering potential water temperature impacts as negligible.

Modeling results for hydrodynamics and water quality constituents support that the proposed Project would result in negligible changes in salinity levels across the proposed Project area and within the Yolo Bypass and Delta and would have negligible effects on drinking water quality, water quality for in-Delta agricultural irrigation, and water quality for fish and wildlife populations. With respect to D-1641 water quality standards, the proposed Project was found to result in no compliance issues, no new compliance issues, and no times of increased likelihood of noncompliance. Similarly, the proposed Project was found

[17] Other factors such as water temperatures warmer than 19°C, low flows and channel velocities resulting in low turbulence and long residence time, water column irradiance and clarity, sufficient availability of nitrogen and phosphorus, and salinity below 10 ppt are also generally needed for the growth of HABs.

[18] Nutrients were not explicitly discussed in the sections above. Suspended sediments (i.e., turbidity) and organic chemicals are common sources of nutrients and the proposed Project's potential to increase nutrient loading is like its potential to increase loading of these constituents.

[19] Invasive plant species are documented to degrade water quality through various processes such as increasing erosion, raising stream temperatures, increasing nutrient loading, reducing DO levels, and contributing to HABs (McCormick et al. 2010).

to result in no violations of the water quality objectives at any drinking water intakes and would not be expected to cause or exacerbate noncompliance with X2 objectives.

Therefore, the constructed restoration elements would not result in a release of pollutants into surface water and/or groundwater that could violate water quality standards or waste discharge requirements, substantially degrade water quality, or obstruct implementation of a water quality control plan. Therefore, this impact would be ***less than significant***.

The effects of the proposed Project's constructed restoration elements are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR Section 3.11.4, pp. 3.11-33 through 3.11-35). The Final SRGO Program EIR adequately addresses the effects of the constructed restoration elements on surface water and groundwater quality.

Effects of Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO. These impacts included the potential for operations and maintenance activities of constructed facilities to affect water quality. The Final SRGO Program EIR evaluated operations, monitoring, and maintenance activities necessary to support the successful establishment of natural conditions and support the functionality of artificial/constructed infrastructure (see Final SRGO Program EIR Section 3.11.4, p. 3.11-34 through 3.11-35).

The Final SRGO Program EIR found that these activities could result in adverse impacts on water quality, which would be a potentially significant impact. The Final SRGO Program EIR states that the potential for adverse effects on water quality as a result of operations and maintenance would be a potentially significant impact. The Final SRGO Program EIR stated that the general protection measures listed above for construction activities would reduce impacts of operations and maintenance activities on water quality (see Final SRGO Program EIR Section 3.11.4, pp. 3.11-34 and 3.11-35).

As described in Chapter 2, "Project Description," once construction is complete, operations, monitoring, and maintenance of the proposed Project would include active management of managed floodplain features (i.e., managed wetlands and floodplain agriculture) and more traditional operations, restoration monitoring, and maintenance of the proposed Project area as a whole. Operations and maintenance activities required for the proposed Project would include ongoing water management and agricultural practices related to flood-up and drawdown, irrigation, vegetation management (e.g., disking, mowing), grading, fertilizing, and planting. Some of these activities would require the use of heavy equipment, but these activities are similar to those currently occurring in the agricultural fields and managed waterfowl ponds in the proposed Project area. Additional monitoring and maintenance activities would be consistent with those evaluated under the Final SRGO Program EIR, including activities such as the following: periodic dredging of sediment from tidal channels and irrigation and drainage canals; mechanical or chemical weed control and control of invasive species; manual vegetation management (e.g., replanting, watering, mowing); and maintenance, cleaning, and/or repair of berms, equipment, and infrastructure. Physical and biological monitoring would be conducted at the completion of proposed Project construction and periodically after construction (i.e., at years 1, 3, 5, and 10) to inform operations and maintenance. With the scope of operations, monitoring, and maintenance that would occur under the proposed Project,

and assuming that herbicide application would be needed as part of long-term vegetation management, the following general protection measures included in the Final SRGO Program EIR would be implemented: VHDR-2, VHDR-3, VHDR-4, VHDR-6, VHDR-7, and VHDR-8. See Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project," for a complete description of each general protection measure.

The analysis of potential effects of construction activities provides a conservative analysis for the potential effects on operations, monitoring, and maintenance activities, as many of these types of activities and potential equipment are the same. The operations, monitoring, and maintenance activities would be lesser in magnitude and duration than the construction activities. Given the nature and anticipated frequency of operations, monitoring, and maintenance activities, they would not result in a release of pollutants into surface water and/or groundwater that could violate water quality standards or waste discharge requirements, substantially degrade water quality, or obstruct implementation of a water quality control plan. The proposed Project would include implementation of the general protection measures included in the Final SRGO Program EIR to further reduce impacts on surface water and groundwater quality. Therefore, this impact would be ***less than significant with implementation of general protection measures***.

The effects of the proposed Project's operations, monitoring, and maintenance activities are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR Section 3.11.4, pp. 3.11-33 through 3.11-35). The Final SRGO Program EIR adequately addresses operations, monitoring, and maintenance impacts of the proposed Project on surface water and groundwater quality.

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3.11 Recreation

3.11.1 Introduction

This Draft SEIR supplements the previously certified Final SRGO Program EIR and addresses proposed modifications, changed circumstances, and new information not described in that prior environmental document. This section of the Draft SEIR discusses the potential for the proposed Project to result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR related to recreation (see Final SRGO Program EIR: Section 3.16.4, pp. 3.16-8 through 3.16-16). The environmental setting and evaluation of impacts on recreation are based on a review of existing, publicly available literature and data, and the "Tide's End Multibenefit Restoration Project Recreation Analysis" (Appendix J to this Draft SEIR).

Comments were received in response to the NOP regarding recreation. See Appendix B, "Tide's End Multibenefit Restoration Project Notice of Preparation and Comment Letters," for the NOP comment letters.

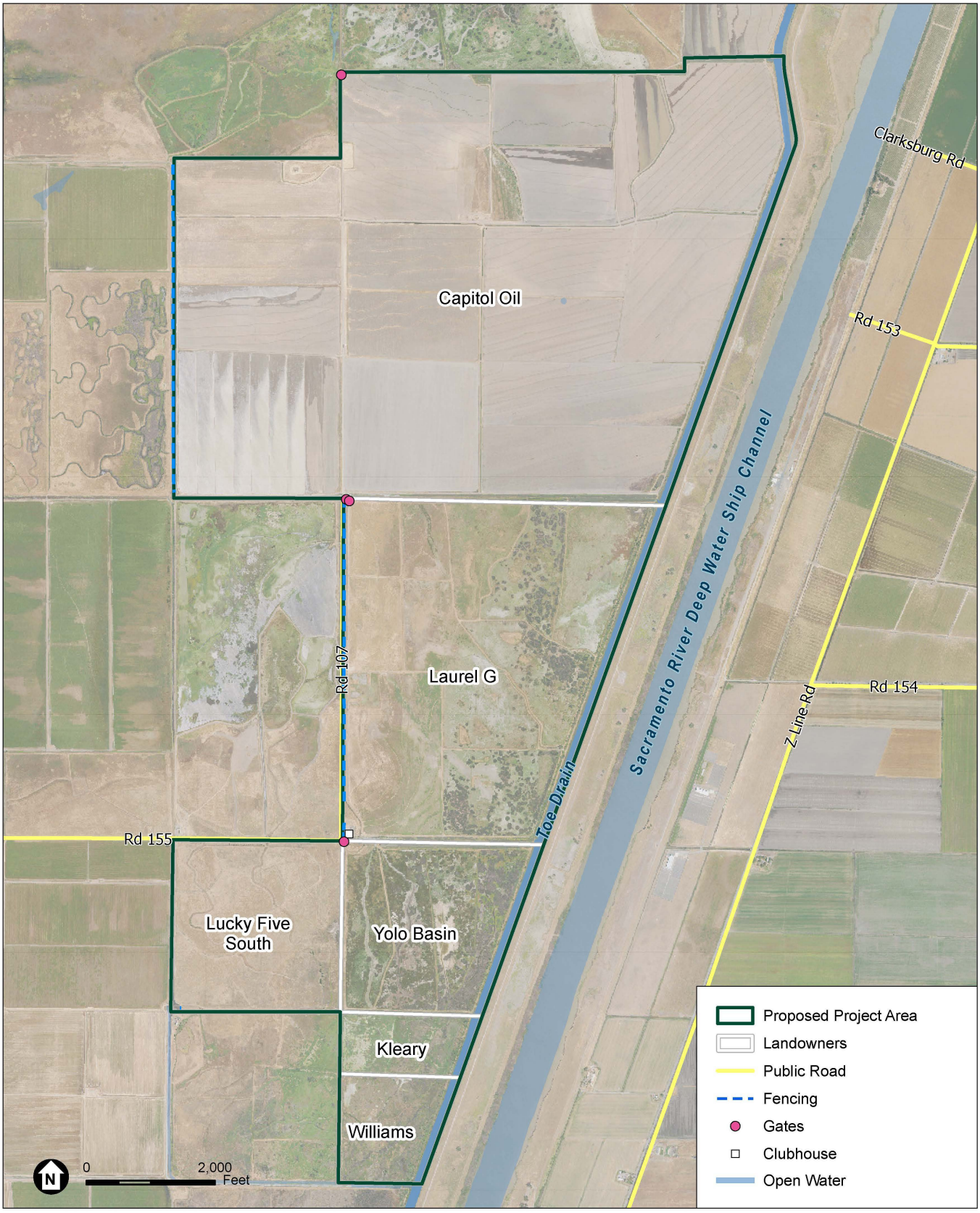
These comments were considered during preparation of this Draft SEIR. The impact analysis in this section evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities on recreation in the proposed Project area. This impact analysis concludes that implementation of the proposed Project would have less-than-significant impacts on recreation in the proposed Project area.

3.11.2 Environmental Setting

This section describes existing recreational resources and areas with recreational opportunities in the Yolo Bypass and within the proposed Project area. There are no designated public recreational facilities such as parks, playgrounds, or sports fields within the Yolo Bypass or in the proposed Project area, so these are not discussed further.

As described below, within the Yolo Bypass, public recreational opportunities (e.g., bird-watching, wildlife viewing, hiking, hunting, boating, and fishing) occur within the Yolo Bypass Wildlife Area (YBWA, including the Vic Fazio Yolo Bypass Wildlife Area), the Liberty Island Ecological Reserve (LIER), and the Toe Drain. In addition to public hunting opportunities within the areas mentioned above, additional wildlife hunting opportunities are available through the California Department of Fish and Wildlife (CDFW) Shared Alliance for Recreational Enhancement (SHARE) Program (CDFW 2025) and private duck clubs on private lands within the Yolo Bypass.

Within the proposed Project area, the Toe Drain allows for public boating (and associated fishing), CDFW manages a public duck hunting blind, and private duck clubs offer wildlife hunting opportunities. Other than the SHARE Program site managed by CDFW and the Toe Drain, no other public hunting opportunities exist within the proposed Project area. While there is no designated bird-watching or wildlife viewing areas in the proposed Project area, wildlife viewing could potentially occur along public roads adjacent to the proposed Project area, such as along County Road 155 and/or County Road 107 (see **Figure 3.11-1**). However, the proposed Project area is currently fenced off from public access and has locked gates and signage posted to prevent public trespassing outside of the County Road boundary and onto the proposed Project area.



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Figure 3.11-1
Public Access in the Proposed Project Area

Prepared by: ESA

* Fencing and gate locations depicted on this graphic are not comprehensive for all fencing and gates located in the field of view and are depicted to convey access limitations along public rights of way.

SOURCE: NAIP, 2022; USCB, 2021; EIP, 2025; ESA, 2025

Existing Conditions for Recreation in the Yolo Bypass

The Yolo Bypass is located on the western floodplain of the Sacramento River, historically referred to as the Yolo Basin (see Figure 2-1). This low-lying area was subject to the seasonal inundation of floodwaters from the nearby Sacramento River and its numerous tributaries (CDFG 2008). The Yolo Bypass was established as the primary flood risk reduction mechanism in the Sacramento River Basin and acts as a relief valve for floodwaters in the Sacramento River. Hydrology and operations of the Yolo Bypass are described in further detail in Section 3.10, "Hydrology and Water Quality." Additional land uses within the Yolo Bypass provide multiple benefits including flood protection, agricultural production, and fish and wildlife habitat.

Figure 3.11-2 depicts various protected habitat areas that support waterfowl hunting as a recreational use throughout the vicinity of the proposed Project area and the greater Yolo Bypass, including the YBWA.[1] As shown, lands throughout the Yolo Bypass are commonly used to benefit waterfowl and other wildlife while supporting active agricultural production.

The Yolo Bypass is located in the Balance of State Waterfowl Zone (CDFW 2024).[2] Waterfowl hunting in the Yolo Bypass begins in October and extends through February, depending on the extent of flooding. Flooding generally starts in late December and lasts until late February, although peak hunting does not begin until January. Seasonal flooding of wetlands is the primary wetland management strategy in the Yolo Bypass for migratory waterfowl which reside in the area during the winter each year. Grazing, upland cover plantings, and maintenance of properly spaced brood ponds are also wetland management strategies used for nesting waterfowl. In addition, agricultural activities result in high-quality foraging habitat for some waterfowl species. As a result, hunting is one of the main forms of recreation currently available within the Yolo Bypass due to the abundance of migratory species (CDFG 2008).

For more information on recreational opportunities in the Yolo Bypass, see Appendix J, "Tide's End Multibenefit Restoration Project Recreation Analysis."

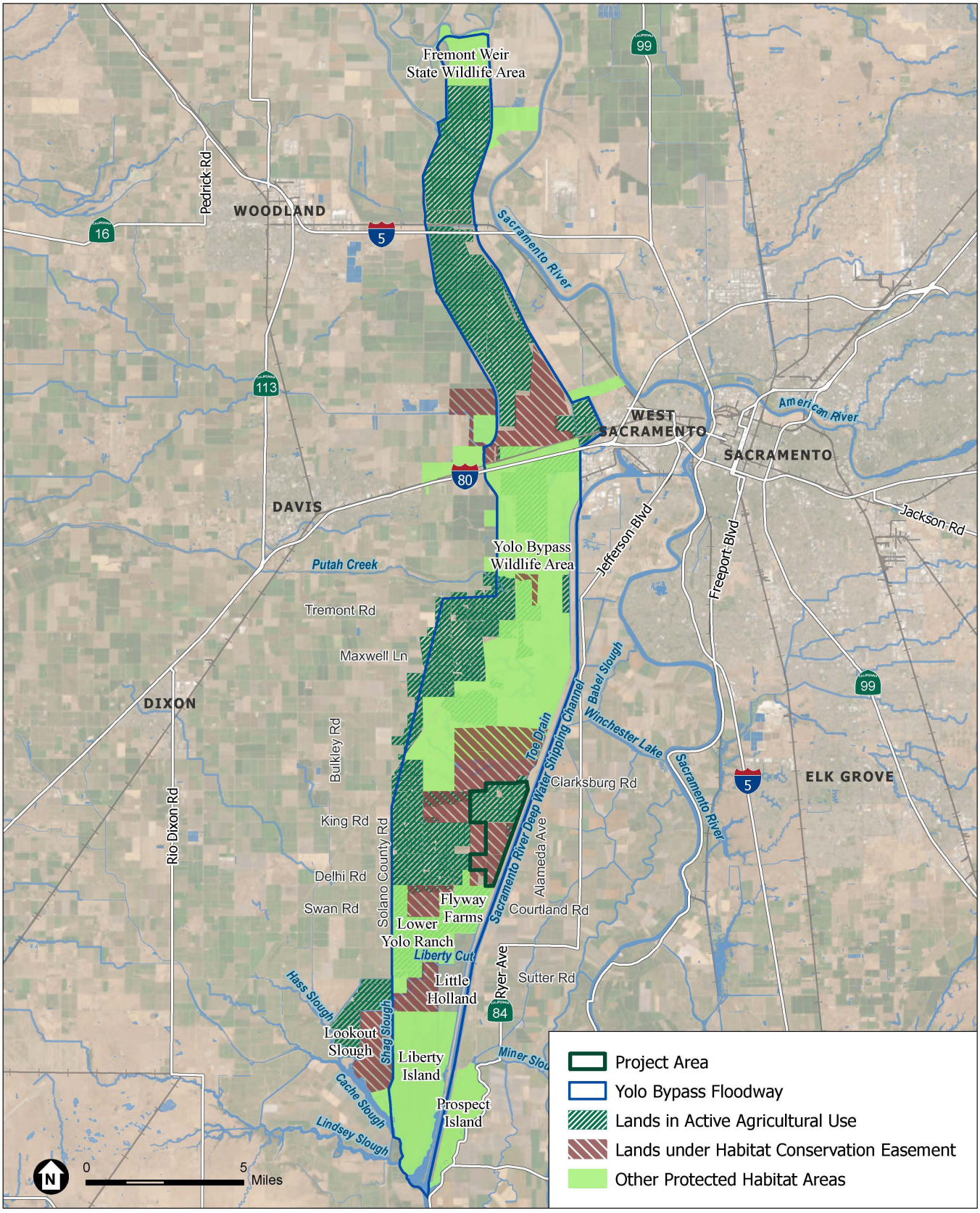
Yolo Bypass Wildlife Area

Within the Yolo Bypass, public recreational opportunities (e.g., bird-watching, hiking, wildlife viewing, fishing, hunting) are provided in the YBWA (CDFG 2008). Hunting is one of the main forms of recreation currently available within the YBWA. Waterfowl and pheasant hunting are the most popular; however, visitors also hunt other upland game species, including dove and deer.

The YBWA is located just north of the proposed Project area and covers approximately 16,771 acres of land, 8,000 acres of which have been restored to wetlands and other associated habitats. CDFW manages the YBWA to promote an increase in waterfowl and other bird populations, among other uses.

[1] Figure 3.11-2 displays lands held under easement or otherwise protected as habitat (by a variety of agencies and nonprofits) that supports waterfowl or may contribute to waterfowl food production. Data were sourced from the California Protected Areas Database. The figure also displays lands used for active agricultural production, based on crop type data from the most recent 2022 Land IQ dataset.

[2] There are five waterfowl hunting zones in California, regulated by the CDFW. Each zone has specific rules and regulations for each hunting season.



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Figure 3.11-2
Regional Lands Supporting Recreational and Multibenefit Use within the Yolo Bypass

SOURCE: NAIP, 2022; GreenInfo Network, 2024; LandIQ, 2022; EIP, 2025; ESA, 2025

Prepared by: ESA

* Lands in active agricultural use were identified using crop types data from LandIQ. This figure is not intended to display farmlands designated by the Farmland Mapping and Monitoring Program.

For more information on the YBWA, see Appendix J, "Tide's End Multibenefit Restoration Project Recreation Analysis."

Hunting

The YBWA maintains 16 duck blinds and two fully accessible blinds for hunters with disabilities on the approximately 6,500 acres available for waterfowl hunting. CDFW currently allows 75 hunters to free-roam the area, plus up to 19 parties in designated blinds, on any given hunting day. Nine designated parking lots are available for use by hunters. Hunters are allowed to use shotguns and archery for hunting (CDFW 2008).

Fishing

Fishing is another popular recreational use of the YBWA. Favored game species present include sturgeon, carp, catfish, black bass, and striped bass (CDFW 2008). Popular fishing locations in the YBWA include the East Toe Drain and Putah Creek near the Los Rios Check Dam. Access can be obtained through parking Lot F (Toe Drain) and Lot G (Putah Creek), there are currently no boat launches within the YBWA (see **Figure 3.11-3**).

Wildlife Viewing

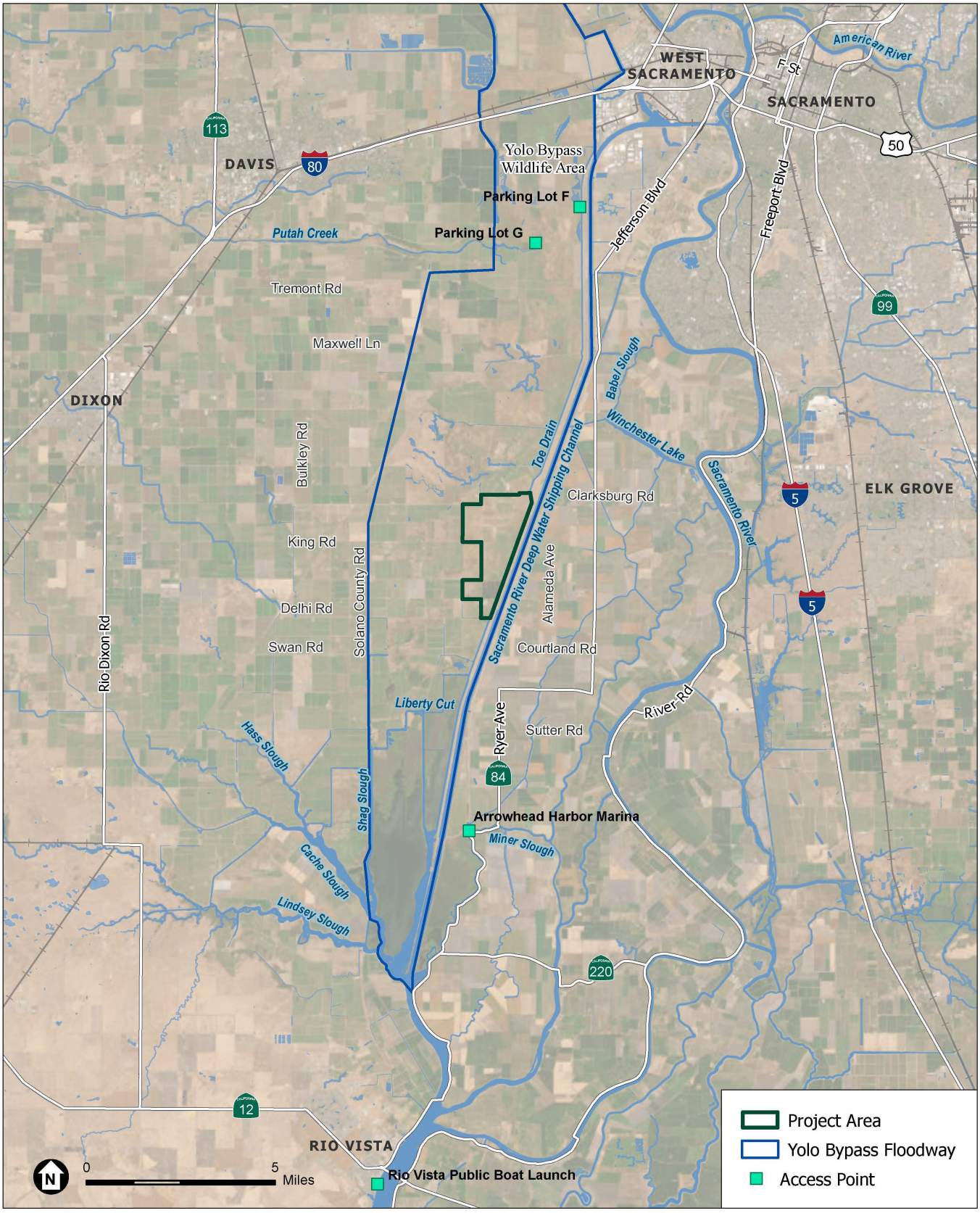
Visitors may see a multitude of birds of prey, shorebirds, waterfowl, and other migratory birds in the YBWA. More than 200 species having been identified within the area. Typical species include ibis, pelicans, cormorants, great blue herons, orioles, blue grosbeaks, and western kingbirds. Mammals that can be seen in the area include coyotes, raccoons, gray foxes, mule deer, beavers, minks, and river otters. The extensive water system maintained in the YBWA also harbors large numbers of fish, amphibians, and invertebrates. Public wildlife viewing is currently allowed along an existing auto tour route and along a few existing trails seven days per week from sunrise to sunset (closed on Christmas Day), as well as through scheduled tours and educational programs. Wildlife viewing, fishing, and hiking are also permitted in designated hunting areas during non-hunting seasons, mid-February through early October (CDFW 2008), and vehicle access is open after March.

Hiking Trails

The YBWA offers approximately 20 miles of designated hiking trails that provide opportunities for wildlife viewing, as well as walking, running, hiking, and the trails serve as on-foot access for recreational activities within the YBWA discussed above. These trails traverse a variety of habitats, including seasonal and permanent wetlands, riparian zones, and upland areas, supporting diverse wildlife species throughout the year. The trail system enhances public access to the natural landscape while promoting environmental education and appreciation of the region's ecological resources. Most of these trails are closed to the non-hunting public during hunting season (mid-October – mid-February); however, there are also several trails that are open year-round (CDFW 2021).

Liberty Island Ecological Reserve

The Liberty Island Ecological Reserve (LIER) is comprised of approximately 4,450 acres located in Solano County, encompassing the southern majority of Liberty Island. Most of the ecological reserve is inundated and contains tidal wetland habitat. Common wildlife includes ducks, geese, herons, American bittern, red-tailed hawk, northern harrier, marsh wren, various shorebirds and songbirds, beavers, and raccoons.



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Figure 3.11-3
Boating and Fishing Access in the Proposed Project Area

Prepared by: ESA

SOURCE: NAIP, 2022; CDFW, 2024; EIP, 2025; ESA, 2025

Recreational opportunities at the Reserve include fishing and boating, waterfowl hunting, and wildlife viewing. The LIER is accessible via boat and non-motorized watercraft can be launched in Shag Slough off of Liberty Island Road.

Hunting

Waterfowl hunting is one of the major uses of LIER from October through February. The area is open to the public and there is no fee for hunting. There is a history of hunters leaving floating duck blinds in place year-round at LIER, which provides the blind owners with preferential access to parts of LIER and CDFW is currently evaluating whether a public option should be installed. Waterfowl hunting is the primary form of hunting at LIER, but the California Fish and Game Code (see Section 502, Title 14 CCR) specifies that coots, moorhens, pheasants, doves, and rabbits may also be hunted. Hunters typically boat into the northern portion of the Island with specialized boats designed for shallow water (CDFW 2015). Hunting only occurs via water access.

Fishing and Boating

Fishing occurs year-round at LIER. Fishing for striped bass is most popular in the fall, winter, and spring, coinciding with the fish migration, but also occurs year-round. Fishing for white sturgeon also occurs on the LIER, primarily in the winter and early summer. Most sturgeon fishermen fish from the west bank of Shag Slough. Fishermen for striped bass also fish along Shag Slough and from boats in the interior of LIER.

Boating occurs within the southern portion of LIER; however, even in the deepest parts LIER, there are boating hazards such as snags, submerged debris, floating objects, old piers and pylons, and remnant submerged structures. Because of its shallow depth, the northern portion of LIER is limited to kayaking, canoeing, and use by small boats during high tide. From the north, boats can be launched from Arrowhead Harbor Marina on Miner Slough. The Rio Vista public boat launch is a popular launching site south of LIER (see Figure 3.11-3 above) and as mentioned previously non-motorized watercraft can be launched in Shag Slough off of Liberty Island Road. (CDFW 2015).

Wildlife Viewing

LIER provides opportunities for wildlife observation and photography, both from land within the northern portion of the LIER and from the water. The significant habitat that LIER provides makes it an ideal place for bird-watching and wildlife viewing (CDFW 2015).

Additional Recreational Hunting in the Yolo Bypass

Toe Drain Boating and Fishing

The Toe Drain flows along the eastern edge of the Yolo Bypass and empties into Prospect Slough; Prospect Slough ultimately drains into the Cache Slough Complex. The Toe Drain is publicly accessed from various points along the Yolo Bypass and provides various opportunities for boating and fishing within the greater Yolo Bypass. See Figure 3.11-3 above; see also Appendix J, “Tide’s End Multibenefit Restoration Project Recreation Analysis.”

Other Recreational Hunting and Fishing Opportunities

As stated previously, managed wetland habitat for waterfowl (i.e., private duck clubs) is a prominent land use in the Yolo Bypass, particularly within the local vicinity of the proposed Project area. Duck clubs within the Yolo Bypass are privately managed and used for private recreational hunting (e.g., waterfowl

hunting). Duck clubs manage waterfowl habitat and govern hunting within the club; they are all subject to rules and regulations for waterfowl hunting. Duck clubs can have lifetime memberships with annual maintenance fees, or they may operate purely on annual membership fees (Brennan, J., pers. comm., 2024). Recreational fishing is limited to members of the private duck clubs, who are permitted to fish the private properties (Brennan, J., pers. comm., 2024), and to public fishing while boating along the Toe Drain. However, CDFW manages one public duck blind located on private lands operated as part of the SHARE Program, this site is located within the proposed Project area and is discussed in detail below (CDFW 2025).

Although there are a variety of privately managed duck clubs in the Yolo Bypass, **Table 3.11-1** focuses on the five clubs located on properties neighboring the proposed Project area. For more information on these duck clubs, see Appendix J, "Tide's End Multibenefit Restoration Project Recreation Analysis."

TABLE 3.11-1
DUCK HUNTING SITES WITHIN THE YOLO BYPASS NEIGHBORING THE PROPOSED PROJECT AREA

Duck Club	Approximate Acreage within the Yolo Bypass	Public/Private
Skyrakers	340	Private
Senator Outing	480	Private
Glide-in Ranch	1,160	Private
H Pond	34	Private
Channel Ranch	191	Private
Pope Ranch	397	Private
Mound Farms	715	Private
YBWA[a]	6,500[b]	Public

Notes:
a. YBWA = Yolo Bypass Wildlife Area
b. This value is approximate
Source: CDFG 2008; data compiled by Environmental Science Associates in 2025

Existing Conditions for Recreation in the Proposed Project Area

Toe Drain Boating and Fishing

The Toe Drain is the eastern boundary of the proposed Project area. As mentioned above, the Toe Drain flows along the eastern edge of the Yolo Bypass and empties into Prospect Slough, approximately 5.8 miles downstream of the proposed Project area.

There are currently no boating or fishing public access points to the Toe Drain within the proposed Project area itself (see Appendix J, "Tide's End Multibenefit Restoration Project Recreation Analysis").

Other Recreational Hunting and Fishing Opportunities

Similar to the duck clubs in the Yolo Bypass, the duck clubs in the proposed Project area are managed by Deer and Tule Partnership, are used for private recreational hunting (e.g., waterfowl hunting), and have the same waterfowl hunting season as the larger region. Managed wetlands are currently operated by three

duck clubs within the proposed Project area which use a system of irrigation and drainage channels and water control infrastructure throughout the properties.

CDFW offers a public wildlife hunting opportunities on private land, and manages site access, as part of its SHARE Program. The SHARE Program includes a 100-acre portion of the Tide's End Property operated by CDFW, and landowners receive monetary compensation and liability protection for providing limited public access to, or through, their land for recreational use and enjoyment of wildlife. The portion of the SHARE Program within the proposed Project area includes one four-person blind. The location of this blind moves from year to year. The SHARE Program is supported by application fees paid by hunters to access the site on select waterfowl hunting dates; these fees are then used to operate the program and as monetary incentive to landowners (CDFW 2017, 2025).

Figure 3.11-4 provides a map of the duck clubs and duck blinds in the proposed Project area, and **Table 3.11-2** lists the number of duck blinds and access status of the duck clubs. For more information on these duck clubs, see Appendix J, "Tide's End Multibenefit Restoration Project Recreation Analysis."

TABLE 3.11-2
PRIVATE DUCK CLUBS WITHIN THE PROPOSED PROJECT AREA

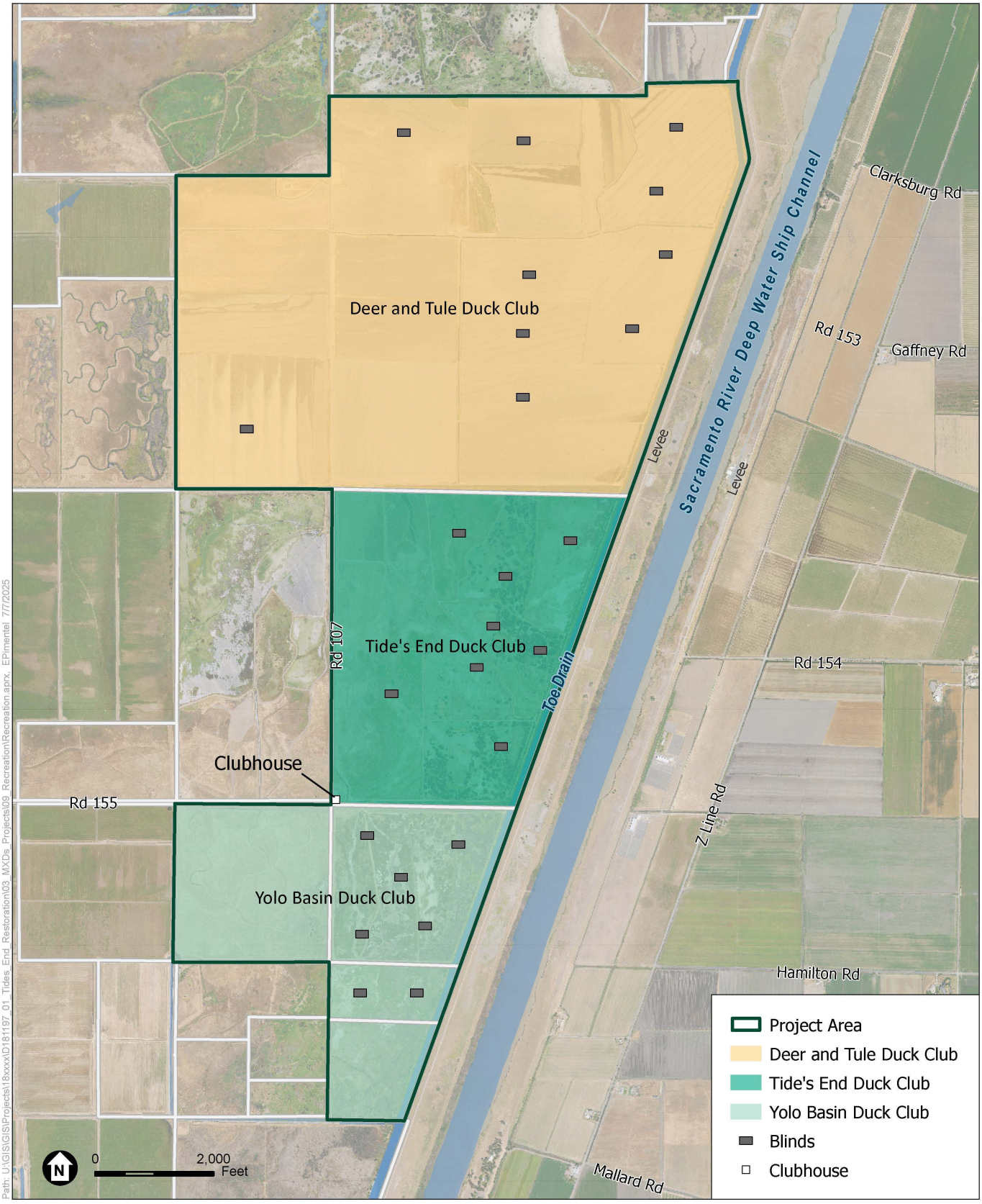
Duck Club	Number of Duck Blinds	Public/Private
Deer and Tule	10	Private
Tide's End	8	Private
Yolo Basin	7	Private
Total	**25**	**-**

Source: Data compiled by Environmental Science Associates in 2025

Though not as prevalent as waterfowl hunting, other forms of hunting occur within the proposed Project area as well. The northwestern side of the Lucky Five South property is managed by the Yolo Basin Duck Club as upland game habitat for pheasant hunting, and members of the private duck clubs are permitted to hunt upland game species. As mentioned above, recreational fishing within the proposed Project area is limited to members of the private duck clubs, who are permitted to fish the private properties (Brennan, J., pers. comm., 2024), and to public fishing while boating along the Toe Drain.

3.11.3 Regulatory Setting

Federal and State regulations discussed in Section 3.16.3, "Regulatory Setting," of Section 3.16, "Recreation," of the Final SRGO Program EIR were reviewed for relevance to the proposed Project and are identified below as appropriate, along with any applicable new or updated policies since certification of the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.16.3, pp. 3.16-6 through 3.16-8). As a statewide, program-level document, the Final SRGO Program EIR did not discuss regional and local regulations; this Draft SEIR provides project-specific regional and local goals and policies to supplement the regulatory setting information provided in the Final SRGO Program EIR.



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Figure 3.11-4
Duck Clubs and Associated Infrastructure of the Proposed Project Area

Prepared by: ESA

SOURCE: NAIP, 2022; ESA, 2025

Federal

Federal Water Project Recreation Act

Under the Federal Water Project Recreation Act (United States Code Title 16, Sections 460[L][12] through 460[L][21]), recreation and fish and wildlife enhancement are to be given full consideration as purposes of federal water development projects if non-federal public bodies agree to do all of the following:

- Bear no less than half the separable costs allocated for recreational purposes or 25% of the cost for fish and wildlife enhancement.
- Administer project land and water areas devoted to these purposes.
- Bear all costs of operations, maintenance, and replacement.

Where federal lands or authorized federal programs for fish and wildlife conservation are involved, cost-sharing is not required.

The Federal Water Project Recreation Act also authorizes using federal water project funds for land acquisition to establish refuges for migratory waterfowl when recommended by the Secretary of the Interior. The law authorizes the Secretary to provide facilities for outdoor recreation and fish and wildlife at all reservoirs under their control, except within national wildlife refuges. This regulation applies to lands held under existing federal easements in the proposed Project area, including easements held by the United States Fish and Wildlife Service (USFWS) and the Natural Resource Conservation Service (NRCS).

Federal Land and Water Conservation Fund Act

The Land and Water Conservation Fund, created by Congress in 1964, provides money to federal, state, and local governments to purchase land, water, and wetlands for the benefit of all Americans. Lands and waters purchased through the Land and Water Conservation Fund do all of the following:

- Provide recreational opportunities.
- Provide clean water.
- Preserve wildlife habitat.
- Enhance scenic vistas.
- Protect archaeological and historical sites.
- Maintain the pristine nature of wilderness areas.

This regulation applies to lands held under existing federal easements in the proposed Project area, including restoration easements held by the USFWS and the NRCS.

North American Waterfowl Management Plan

The North American Waterfowl Management Plan (NAWMP) was originally adopted in 1986 and subsequently amended in 2012 and 2014. The NAWMP was established by Canada and the United States in 1986 and later expanded to include Mexico in 1994. In the United States, the NAWMP is administered by the USFWS. The NAWMP provides a broad framework for waterfowl conservation and management in North America. The plan identified population objectives for key species and established habitat goals

to sustain these populations. The plan sets forth three overarching goals for waterfowl conservation (NAWMP Committee 2012):

> **Goal 1:** Abundant and resilient waterfowl populations to support hunting and other uses without imperiling habitat.
>
> **Goal 2:** Wetlands and related habitats sufficient to sustain waterfowl populations at desired levels while providing places to recreate and ecological services that benefit society.
>
> **Goal 3:** Growing numbers of waterfowl hunters, other conservationists, and citizens who enjoy and actively support waterfowl and wetlands conservation.

U.S. Fish and Wildlife Service's Recreational Fisheries Policy

This policy defines the USFWS's stewardship role in the management of the recreational fishery resources. The policy was designed to unify the agencies, organizations, and individuals throughout the United States to enhance the vitality of the recreational fisheries at the local, State, and national levels. Specifically, the policy is to (USFWS 1989):

1. Protect, restore, and enhance fish populations and their habitats
2. Promote recreational fishing on USFWS and other lands to provide the public with a high-quality recreational experience
3. Ensure that recommendations about recreational fisheries potentials and opportunities are included as part of appropriate field studies and management assistance efforts performed by USFWS on non-USFWS waters
4. Serve as an active partner with other federal governmental agencies, states, tribes, conservation organizations, and the public in developing recreational fisheries programs
5. Promote the conservation and enhancement of the nation's recreational fisheries through USFWS's grant and aid program
6. Improve and expand quantifiable economic valuations of the nation's recreational fisheries to demonstrate the importance of this resource to the health and welfare of society and the nation's economy

State

California Constitution – Article I, Section 25: Right to Fish

Article one of the California Constitution declares the rights of people within the State of California which are outlined in Section 1 through Section 32. This section of the California Constitution (Article 1. Section 25) establishes the public's right to fish upon and from the public lands of the State and in the waters in California, except in areas designated as fish hatcheries. It prohibits the sale or transfer of state-owned lands without reserving this right. Additionally, it bars laws that would criminalize public access to such lands for fishing in waters stocked by the State. However, the legislature retains authority to regulate fishing seasons and conditions for taking different fish species.

California Harbors and Navigation Code Div.1 Article 1. Administration

The California Division of Boating and Waterways, part of the California Department of Parks and Recreation, is mandated by the California Harbors and Navigation Code to provide safe and convenient public access to California's waterways and leadership in promoting the public's right to safe, enjoyable, and environmentally sound recreational boating. The California Division of Boating and Waterways endorses boating safety and education, assists local boating law enforcement agencies, ensures uniformity in boating regulations, and licenses boat operators and brokers. The division is also responsible for reviewing, updating, and adopting State boating regulations to reflect changes in federal and State boating laws, and planning and designing state boating facilities.

California Department of Parks and Recreation – Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh

The California Department of Parks and Recreation (California State Parks) issued the Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh in May 2011 to comply with the Delta Reform Act that required California State Parks to develop recommendations to expand State recreation areas in the region. The document represents California State Parks' vision for the region and recommends the following (California State Parks 2011):

- A network of recreation areas, including parks, resorts, boating facilities, historic communities, agritourism attractions, and other visitor-oriented businesses. These areas would be connected by scenic driving routes, boating trails, or bicycling and hiking trails.
- Working cooperatively with other State agencies, including DWR.
- Providing residents and visitors with authentic outdoor experiences rooted in the unique and enduring character of the Delta and Suisun Marsh.

California State Lands Commission Regulations

The California State Lands Commission has jurisdiction over lands that underlie navigable and tidal waterways (sovereign lands). Such lands occur under the Sacramento River adjacent to the proposed Project area. The California State Lands Commission has entered into a memorandum of understanding with DWR to allow DWR access to sovereign lands required for the development, operations, and maintenance of the State Water Project and its related activities and projects.

2015 Statewide Comprehensive Outdoor Recreation Plan

The Statewide Comprehensive Outdoor Recreation Plan (SCORP) was prepared by California State Parks and functions as a statewide master plan for State and local parks and outdoor recreational open space areas. The SCORP also provides policy guidance to outdoor recreation providers, including federal, State, local, and special district agencies throughout California. The SCORP is the result of broad public input and an assessment of existing statewide park and recreation lands. The critical element of the SCORP that relates to recreation needs and goals is the Survey on Public Opinions and Attitudes on Outdoor Recreation in California 2012 (SPOA). Specifically, the SPOA provides focused recreational user feedback that can be applied to the proposed Project area and vicinity.

California Civil Code Sections 815 and 816

California Civil Code Sections 815 et seq. defines conservation easements in California, requiring them to be voluntary, perpetual interests in real property and detailing who may legally hold them. This statute applies to lands held under existing conservation easements in the proposed Project area, for easements held under CDFW.

Regional and Local

The following regional and local policies relevant to the proposed Project based on location, project type, and/or environmental setting have been included for context; however, DWR, as a State agency, is not subject to local ordinances.

Yolo County 2030 Countywide General Plan

The Public Facilities and Services Element of the Yolo County General Plan provides information and policy guidance to ensure that infrastructure and services will be sufficient to support existing and new development in Yolo County (Yolo County 2009). The Yolo County General Plan's Conservation and Open Space Element includes goals and policies intended to connect an accessible open space system with communities separated by agriculture and natural spaces, linked by a network of trails (Yolo County 2009).

The following policies in Section C, "Natural Open Space," of the Conservation and Open Space Element are relevant to the proposed Project:

> **Goal CO-1: Natural Open Space.** Provide a diverse, connected and accessible network of open space, to enhance natural resources and their appropriate use.
>
> > ***Policy CO-1.1:*** Expand and enhance an integrated network of open space to support recreation, natural resources, historic and tribal resources, habitat, water management, aesthetics, and other beneficial uses.
> >
> > ***Policy CO-1.3:*** Create a network of regional parks and open space corridors that highlight unique resources and recreational opportunities for a variety of users.
> >
> > ***Policy CO-1.7:*** Support efforts by willing landowners and non-profit groups to provide new opportunities for outdoor recreation. (Policy CO 1.29)
> >
> > ***Policy CO-1.8:*** Encourage responsible stewardship of private lands. Promote increased opportunities for public access to waterways and other natural areas.
> >
> > ***Policy CO-1.9:*** Promote the conservation of environmental resources in new and existing park and open space facilities.
> >
> > ***Policy CO-1.11:*** Coordinate the development of recreation areas and public open space with regional trail planning.
> >
> > ***Policy CO-1.12:*** Create opportunities for ecotourism.
> >
> > ***Policy CO-1.13:*** Within the Delta Primary Zone, ensure compatibility of permitted land use activities with applicable, natural open space policies of the Land Use and Resource Management Plan of the Delta Protection Commission.

Policy CO-1.14: Support the preservation of open space consistent with this General Plan, via acquisition of fee title or easement interest by land trusts, government agencies, and conservancies from willing landowners.

Policy CO-1.15: Support efforts to acquire either fee title or easements on additional open space areas adjoining existing protected natural resource areas to increase the size, connectivity, and buffering of existing habitat.

Policy CO-1.16: Coordinate open space acquisition with habitat acquisition that occurs pursuant to the Yolo Natural Heritage Program.

Policy CO-1.21: Emphasize the use of native grasses, shrubs and trees as the primary focus of restoration within resource parks and other open spaces.

Policy CO-1.23: Increase public access and recreational uses along waterways wherever feasible, particularly Cache Creek, Lower Putah Creek, the Yolo Bypass, and the Sacramento River.

Policy CO-1.28: Balance the needs of agriculture with recreation, flood management, and habitat, within the Yolo Bypass.

3.11.4 Impact Analysis and Mitigation Measures

Significance Criteria

In accordance with Appendix G of the CEQA Guidelines, an impact related to recreation is considered significant if the proposed Project would do either of the following:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

In addition, the Final SRGO Program EIR considered that a significant impact would occur if the types of projects permitted under the Order would:

- Impair, degrade, or eliminate recreational facilities and opportunities (see Final SRGO Program EIR: Section 3.16.4, p. 3.16-9).

Methodology and Assumptions

As discussed in Chapter 1, "Introduction," the proposed Project is a "restoration project" as defined in Section V of the SRGO (State Water Board 2022a); therefore, this Draft SEIR supplements and incorporates by reference the Final SRGO Program EIR, including its appendices (State Water Board 2022b). As provided by CEQA Guidelines Section 15163(b), a supplement to an EIR need contain only the information necessary to make the previous EIR adequate for the project as revised. This means that only those project-specific activities that would introduce new significant environmental effects or cause a substantial increase in the severity of significant effects identified in the Final SRGO Program EIR need to be evaluated. Where existing information and analysis in the Final SRGO Program EIR are considered sufficient to evaluate the impacts of the proposed Project, no additional environmental review is provided.

As outlined further in Chapter 1, this Draft SEIR incorporates by reference the general protection measures and species protection measures outlined in the Final SRGO Program EIR Appendices E and F, which are intended to avoid and minimize impacts on sensitive resources. Consistent with the Final SRGO Program EIR, the impact analysis for each resource area assumes that applicable general protection measures and species protection measures would be implemented and enforced in the same way as mitigation measures, consistent with Section 15126.4 of the CEQA Guidelines, and that the proposed Project would be constructed and operated in compliance with relevant federal and State statutes, regulations, and ordinances. Therefore, if the analysis has determined that incorporating one or more general protection measures and/or species protection measures into the proposed Project would reasonably mitigate an impact, then the impact conclusion is less than significant. If the analysis has determined that an impact would remain significant after the incorporation of appropriate general protection measures and species protection measures, then mitigation measures from the Final SRGO Program EIR and/or project-specific mitigation measures have been included in this Draft SEIR to further reduce the magnitude of the impact. All mitigation measures are from the Final SRGO Program EIR unless specifically stated otherwise.

The following impact analysis considers the potential impacts related to recreational resources associated with implementation of the proposed Project. The impact analysis evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities. The proposed Project area and components were reviewed relative to the locations and types of recreational facilities within the Yolo Bypass and proposed Project area to determine whether Project-caused changes to the physical environment would be significant.

Impacts and Mitigation Measures

Table 3.11-3 summarizes the impact conclusions presented in this section for reference.

TABLE 3.11-3
SUMMARY OF IMPACT CONCLUSIONS—RECREATION

Impact Statement	Construction Activities	Constructed Restoration Elements	Operations, Monitoring, and Maintenance Activities
3.11-1: Implementation of the proposed Project could directly impair, degrade, or eliminate recreational resources, facilities, and opportunities.	LTS	LTS	LTS
3.11-2: Implementation of the proposed Project could alter recreational resources or facilities or require the construction or expansion of recreational facilities that could result in environmental impacts.	LTS	LTS	LTS
3.11-3: Implementation of the proposed Project could increase the use of existing recreational resources and facilities such that substantial physical deterioration would occur or be accelerated.	LTS	LTS	LTS

Notes: LTS = less than significant;

Impact 3.11-1: Implementation of the proposed Project could directly impair, degrade, or eliminate recreational resources, facilities, and opportunities.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of construction activities for restoration projects to impair, degrade, or eliminate recreational resources, facilities, and opportunities. Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials (see Final SRGO Program EIR: Section 3.16.4, p. 3.16-10).

The Final SRGO Program EIR found that these activities could result in temporary impairment, degradation, or elimination of recreational resources, facilities, and opportunities. However, these impacts would be temporary, as the land could be returned to recreational use after construction. This impact was therefore determined to be less than significant. The Final SRGO Program EIR does not include any general protection measures applicable to this impact (see Final SRGO Program EIR: Section 3.16.4, p. 3.16-11).

Consistent with the types of construction activities evaluated by the Final SRGO Program EIR, construction of the proposed Project would require the following: site preparation and mobilization/demobilization; use of staging areas, access routes, and haul routes; grading and excavation; the installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; removal and salvage and/or disposal of existing pumps, pipes, and other water control structures and utility lines that are no longer needed under proposed Project conditions; reconfiguration and modification of irrigation and drainage features, such as canals, ditches, and berms; and installation of temporary cofferdams.

These construction activities would temporarily impair recreational features within the proposed Project area, such as duck blinds and managed wetlands, that may be relocated or removed during proposed Project construction. Construction activities are likely over two construction seasons, spanning April 1 to November 1 each year. However, following construction activities the amount and quality of managed wetlands and duck blinds would generally be consistent with pre-Project conditions, discussed below. While there is no designated bird-watching or wildlife viewing areas in the proposed Project area, wildlife viewing could potentially occur along public roads adjacent to the proposed Project area, such as along County Road 155 and/or County Road 107. However, as described in Chapter 2, “Project Description,” both roads would remain accessible to the public throughout construction. Heavy equipment entering and exiting the proposed Project area could temporarily disrupt traffic; however, the proposed Project would not result in street closures or lane blockages that could reduce the number of travel lanes and require rerouting of traffic because of the limited number of vehicle trips due to the rural nature of the surrounding area. Therefore, during the construction period, public bird-watching or wildlife viewing along County Road 155 and/or County Road 107 would not be disrupted. Recreation access to proposed Project area private duck clubs (and the hunting and fishing opportunities they provide) would be limited during the 1- to 2-year construction period to accommodate ingress and egress by construction equipment. Existing managed wetlands for waterfowl may not be operated during construction activities; however, any closures would be coordinated with USFWS, NRCS and CDFW to ensure that all work during the construction period conforms to requirements of the existing easement or of a compatible use authorization.

Public boating along the Toe Drain would not be affected during construction activities, so there would be no impact on public boating (and associated fishing) opportunities in the proposed Project area. Further, the proposed Project would allow for public access to tidal channels accessed from the Toe Drain via small boat, kayak, or paddle board allowing for additional recreational opportunities.

As mentioned previously, there are a variety of private duck clubs within the Yolo Bypass, and directly adjacent to the proposed Project area, that would still be operational during construction activities. However, the proposed Project area is currently fenced off from public access and has locked gates and signage posted to deter public trespassing. Further, construction activities would generally occur outside of hunting season which extends from October through February. The Deer and Tule Partnership would also maintain communication with adjacent landowners during construction and notify them if construction activities extend into hunting season. In addition, the Yolo Bypass Wildlife Area would not be affected and would still be available for bird-watching, hunting, and wildlife viewing during the proposed Project's construction activities.

Therefore, although impacts on recreational features and activities may occur during construction activities for the proposed Project, these activities would impair or prevent access to recreational resources, facilities, and opportunities only temporarily during construction, and would not substantially impair, degrade, or eliminate them. After construction is complete, the type, area, and quality of existing recreational use (e.g., waterfowl and upland game hunting, fishing, bird-watching, and wildlife viewing) would be returned similar to existing conditions. In addition, the proposed Project would allow for public access of the tidal channels through the Toe Drain via small boat, kayak, or paddle board allowing for additional recreational opportunities, including fishing and birdwatching. This impact would be ***less than significant*** and therefore Mitigation Measure REC-1 is not applicable to the proposed Project. Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.16.3, pp. 3.16-10 and 3.16-11), and the Final SRGO Program EIR adequately addresses the potential for construction of the proposed Project to impair, degrade, or eliminate recreational resources, facilities, and opportunities.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including the potential for constructed restoration elements and operations, monitoring, and maintenance of restoration projects to impair, degrade, or eliminate recreational resources, facilities, and opportunities. The Final SRGO Program EIR determined that infrastructure may be removed or relocated along streams and in riparian areas that could include long-term and permanent changes to recreational resources. This impact was therefore determined to be potentially significant (see Final SRGO Program EIR: Section 3.16.4, p. 3.16-11).

As part of the State Water Board or a regional water board's issuance of a notice of applicability (NOA) for a restoration project under the Order, compliance with *Mitigation Measure REC-1: Minimize Impairment, Degradation, or Elimination of Recreational Resources* would be required when applicable to a given project. The Final SRGO Program EIR found this impact to be less than significant with implementation

of Mitigation Measure REC-1, if applicable. The Final SRGO Program EIR does not include any general protection measures applicable to this impact (see Final SRGO Program EIR: Section 3.16.4, p. 3.16-12).

Constructed restoration elements for the proposed Project would include restored tidal wetlands where existing elevations are most suitable and floodplain habitats where existing grades are higher. Tidal inundation would be restored by hydrologically connecting the proposed Project area to the Toe Drain via a series of berm openings, berm lowering, and tidal channel construction. The restored habitats would be designed to enhance aquatic production and export for food web support and would facilitate volitional fish passage of juvenile salmonids and other native fishes accessing the proposed Project area's floodplain during high-flow events. The combination of tidal wetlands and adjacent sloped floodplain would create a landscape that would be adaptable to sea-level rise and allow for upslope migration of habitats as water levels rise. Proposed Project elements would be optimized for and would function in concert with seasonal Yolo Bypass flood flows.

Managed wetlands for waterfowl under the proposed Project would serve the dual purpose of duck habitat and floodplain habitat, providing waterfowl hunting opportunities and enhanced food web productivity to benefit native fishes in adjacent aquatic habitats. Duck clubs would have the ability to add supplemental water to inundate the managed ponds in dry years and increase the duration of inundation. Although the wetlands would not be managed specifically for fish rearing, water management regimes for duck hunting are compatible with juvenile salmon rearing and have the potential to enhance food web productivity (Phillips et al. 2024; Aha et al. 2021). The proposed Project design includes relocating and restructuring the managed wetland habitat across the Capitol Oil, Laurel G, and Lucky Five South properties, and improving these facilities with fish-passable culverts and weir boxes. The amount and quality of constructed wetlands currently managed for waterfowl in the proposed Project area would not be impaired or degraded, nor would the recreational duck and other wildlife hunting opportunities provided by these facilities be eliminated. Further, the amount and quality of duck blinds in the proposed Project area would remain consistent with pre-Project conditions following development (see Table 3.11-2); this includes the CDFW SHARE Program duck blind which would continue to be managed by CDFW following completion of the proposed Project. Recreational opportunities provided by these facilities would continue and would be managed by an entity for private or public use such as through expanding the CDFW SHARE Program which currently operates in the proposed Project area.

Operations and maintenance required for the proposed Project include ongoing water management and agricultural practices related to flood-up and drawdown, irrigation, vegetation management (e.g., disking, mowing), grading, fertilizing, and planting. Some of these activities would require the use of heavy equipment, but these activities are similar to those occurring under existing conditions for the agricultural fields and managed waterfowl ponds currently located in the proposed Project area. Additional monitoring and maintenance activities would be consistent with those evaluated under the Final SRGO Program EIR, including activities such as the following: periodic dredging of sediment from tidal channels and irrigation and drainage canals; mechanical or chemical weed control and control of invasive species; manual vegetation management (e.g., replanting, watering, mowing); and maintenance, cleaning, and/or repair of berms, equipment, and infrastructure. Recreational resources may be temporarily affected during these maintenance repairs; however, operations and maintenance activities would not affect the entire property, and would not remove, replace, or degrade any recreational activities or opportunities on-site.

Therefore, the constructed restoration elements and operations, monitoring, and maintenance activities would not directly impair, degrade, or eliminate recreational resources, facilities, and opportunities. This impact would be ***less than significant***. Because this impact would be less than significant, Mitigation Measure REC-1 is not applicable to the proposed Project.

Constructed restoration elements and operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.16.4, pp. 3.16-11 and 3.16-12), and the Final SRGO Program EIR adequately addresses the potential for the proposed Project to impair, degrade, or eliminate recreational resources, facilities, and opportunities.

Impact 3.11-2: Implementation of the proposed Project could alter recreational resources or facilities or require the construction or expansion of recreational facilities that could result in environmental impacts.

Effects of Construction Activities, Constructed Restoration Elements, and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including the potential for construction activities, constructed restoration elements, and operations, monitoring, and maintenance for restoration projects to facilitate or require the construction or expansion of recreational facilities that could result in environmental impacts. The Final SRGO Program EIR evaluated the potential for restoration projects to result in permanent closure or alteration of recreational use (e.g., closure of roads to recreational trails), and to require the use of other recreational facilities or restoration projects, resulting in upgraded or expanded recreation facilities (such as trails or wildlife-oriented recreation) that could result in environmental impacts. This impact was therefore determined to be potentially significant (see Final SRGO Program EIR: Section 3.16.4, pp. 3.16-12 and 3.16-13).

As part of the State Water Board or a regional water board's issuance of an NOA for a restoration project under the Order, compliance with *Mitigation Measure REC-1: Minimize Impairment, Degradation, or Elimination of Recreational Resources* and *Mitigation Measure NOISE 2: Minimize Operations and Maintenance Noise Conflicts* would be required when applicable to a given project. The Final SRGO Program EIR found this impact to be less than significant with implementation of Mitigation Measures REC-1 and NOISE-2, and the general protection measures listed below, if applicable. (see Final SRGO Program EIR: Section 3.16.4, p. 3.16-14). The Final SRGO Program EIR includes the following general protection measures to reduce these impacts: GPM-6: Work Area and Speed Limits, GPM-7: Environmentally Sensitive Areas and/or Wildlife Exclusion, GPM-10: Equipment Maintenance and Materials Storage, GPM-11: Material Disposal, GPM-12: Fugitive Dust Reduction, GPM-13: Trash Containment and Removal, GPM-14: Project Cleanup after Completion, GPM-15: Revegetate Disturbed Areas, WQHM-1: Staging Areas and Stockpiling of Equipment, WQHM-2: Storm Water Pollution Prevention Plan, WQHM-4: Hazardous Materials Management and Spill Response Plan, WQHM-5: In-Water Concrete Use, WQHM-6: Accidental Discharge of Hazardous Materials, IWW-1: Appropriate In-Water Materials, IWW-2: In-Water Vehicle Selection and Work Access, IWW-3: In-Water Placement of Materials, Structures, and Operation of Equipment, IWW-5: Cofferdam Construction, IWW-6: Dewater/Diversion Restrictions, IWW-8: Removal of Diversion and Barriers to Flow, IWW-13: Dredging Operations and Dredging Materials Reuse Plan, VHDR-1: Avoidance of Vegetation Disturbance, VHDR-2:

Native and Invasive Vegetation Removal Materials and Methods, VHDR-3: Revegetation Materials and Methods, VHDR-4: Revegetation Erosion Control Materials and Methods, and VHDR-6: General Herbicide Use.

As discussed previously, access to recreational features on the proposed Project area (i.e., duck blinds, managed wetlands, the private duck clubhouse, and bird and wildlife viewing along County Roads 155 and/or 107) would be temporarily impaired or prohibited during the one-to-two-year construction period but would not cause these recreational resources to be altered or expanded. Once the proposed restoration elements have been constructed, the acreage of the managed wetlands within the proposed Project area as compared to managed wetland acreage under the pre-Project conditions would decrease slightly (557 acres with the proposed Project versus 573 acres under existing conditions). However, after construction is complete, the type, area, and quality of existing recreational use (e.g., waterfowl and upland game hunting, fishing, bird-watching, and wildlife viewing) would be returned similar to existing conditions. In addition, the amount and quality of duck blinds in the proposed Project area would remain consistent with pre-Project conditions following development (see Table 3.11-2); this includes the CDFW SHARE Program duck blind which would continue to be managed by CDFW following completion of the proposed Project. Further, recreational opportunities provided by these facilities would continue and would be managed by an entity for private or public use such as through expanding the CDFW SHARE Program which currently operates in the proposed Project area.

In addition, there are five private duck clubs immediately adjacent to the proposed Project area that offer similar recreational opportunities as the duck clubs on the proposed Project area, but as they are privately managed, access is controlled and there would not be an increase in demand that would alter or could require expansion of these clubs. The YBWA also provides additional public recreational hunting and other recreational opportunities in the Yolo Bypass.

Public boating along the Toe Drain would not be affected by construction activities or constructed restoration elements, or during operations, monitoring, and maintenance activities; thus, there would be no impact on public boating (and associated fishing) opportunities in the proposed Project area. Further, the proposed Project would allow for public access to tidal channels accessed from the Toe Drain via small boat, kayak, or paddle board allowing for additional recreational opportunities.

Therefore, the proposed Project would not substantially alter recreational resources or facilities or require the construction or expansion of recreational facilities that could result in environmental impacts, nor would the proposed Project require operations, monitoring, or maintenance of these facilities. This impact would be ***less than significant***. Because this impact would be less than significant, Mitigation Measure REC-1 and NOISE-2, as well as general protection measures are not applicable to the proposed Project.

Construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.16.4, pp. 3.16-12 through 3.16-14), and the Final SRGO Program EIR adequately addresses the potential for construction of the proposed Project to alter recreational resources or facilities or require the construction or expansion of recreational facilities.

Impact 3.11-3: Implementation of the proposed Project could increase the use of existing recreational resources and facilities such that substantial physical deterioration would occur or be accelerated.

Effects of Construction Activities, Constructed Restoration Elements, and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including increasing the use of existing recreational resources and facilities such that substantial physical deterioration would occur or be accelerated. The Final SRGO Program EIR evaluated projects that would establish, restore, or enhance stream, riparian, or tidal habitats that may permanently relocate or decommission existing recreational facilities. This displacement may increase the use of other existing recreational resources or facilities, potentially leading to substantial physical deterioration. This impact was therefore determined to be potentially significant (see Final SRGO Program EIR Section 3.16.4, pp. 3.16-14 and 3.16-15).

As part of the State Water Board or a regional water board's issuance of an NOA for a restoration project under the Order, compliance with *Mitigation Measure REC-2: Minimize Impacts on Existing Recreational Resources* would be required when applicable to a given project. The Final SRGO Program EIR found this impact to be less than significant with implementation of Mitigation Measure REC-2. The Final SRGO Program EIR does not include any general protection measures applicable to this impact (see Final SRGO Program EIR: Section 3.16.4, p. 3.16-15).

As discussed previously, access to recreational features on the proposed Project area (i.e., duck blinds, managed wetlands, the private duck clubhouse, and bird and wildlife viewing along County Roads 155 and/or 107) would be temporarily impaired or prohibited during the one to two year construction period. In addition, once the proposed restoration elements have been constructed, the overarching acreage of the managed wetlands within the duck clubs resulting from the proposed Project would decrease slightly as compared to existing conditions (557 acres with the proposed Project versus 573 acres under existing conditions). However, this temporary impairment of access to recreational opportunities, as well as the less than 5% change in the area of managed wetlands after construction is complete, would not increase the use of existing recreational resources and facilities. There are five private duck clubs immediately adjacent to the proposed Project area that offer similar recreational opportunities as the duck clubs on the proposed Project area, but as they are privately managed, access is controlled and there would not be an increase in demand or use of these clubs such that physical deterioration would occur or be accelerated. The YBWA also provides additional public recreational hunting and other recreational opportunities in the Yolo Bypass.

Public boating along the Toe Drain would not be affected during construction activities, construction restoration elements, or during operations, monitoring, and maintenance; thus, there would be no impact on public boating (and associated fishing) opportunities in the proposed Project area. Further, the proposed Project would allow for public access to tidal channels accessed from the Toe Drain via small boat, kayak, or paddle board allowing for additional recreational opportunities.

Therefore, the proposed Project would not increase the use of existing recreational resources or facilities such that substantial physical deterioration would occur or be accelerated. This impact would be ***less than significant*** and therefore Mitigation Measure REC-2 is not applicable to the proposed Project.

Construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.16.4, pp. 3.16-14 and 3.16-16), and the Final SRGO Program EIR adequately addresses impacts of the proposed Project related to the increased use of existing recreational resources and facilities such that substantial physical deterioration would occur or be accelerated.

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3.12 Tribal Cultural Resources

3.12.1 Introduction

This Draft SEIR supplements the previously certified Final SRGO Program EIR and addresses proposed modifications, changed circumstances, and new information not described in that prior environmental document. This section of the Draft SEIR discusses the potential for the proposed Project to result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR related to Tribal cultural resources (see Final SRGO Program EIR: Section 3.18.4, pp. 3.18-9 through 3.18-15). The environmental setting and evaluation of potential impacts on Tribal cultural resources, including indigenous archaeological resources, relies in part on the information and findings presented in the confidential "Tide's End Multibenefit Restoration Project Cultural Resources Inventory Report" (Confidential Appendix G to this Draft SEIR) as well as information gathered during Tribal consultation for the proposed Project.

Much of the background context and methods used for the analysis of potential impacts from the proposed Project are the same for Tribal cultural resources and cultural resources. Therefore, to avoid redundancy, this information, which is presented in Section 3.8, "Cultural Resources," of this document, is not repeated here. No comments identifying or addressing Tribal cultural resources were received in response to the NOP. Tribal consultation completed according to the requirements of California Public Resources Code (PRC) Sections 21080.3.1, 21080.3.2, and 21082.3 is described below in Section 3.12.2. See Appendix B, "Tide's End Multibenefit Restoration Project Notice of Preparation and Comment Letters," for NOP comment letters.

The impact analysis in this section evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities in the proposed Project area. This impact analysis concludes that implementation of the proposed Project would result in a less-than-significant impact with mitigation incorporated on Tribal cultural resources.

For this analysis, the term "Tribal cultural resource" is defined as follows:

> A site, feature, place, cultural landscape, sacred place, or object with cultural value to a California Native American Tribe that are [sic] listed, or determined to be eligible for listing, in the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), or a local register of historical resources. A Tribal cultural resource may also qualify as an historical resource, pursuant to PRC Section 21084.1, a unique archaeological resource, as defined in PRC Section 21083.2, or non-unique archaeological resource, as defined in PRC Section 21083.2.

3.12.2 Environmental Setting

Data Sources

Environmental Science Associates (ESA) reviewed publicly available data, cultural resource data, and proposed Project area–specific information. The following data sources assisted in this analysis:

- Tribal consultation conducted for the proposed Project according to the requirements of PRC Sections 21080.3.1, 21080.3.2, and 21082.3.

Ethnographic Literature Research

ESA conducted a review of ethnographic literature for the proposed Project area and vicinity (0.5 mile) to gather information on potential Native American villages, place-names, or documented use of the area. ESA consulted the following sources:

- Handbook of the Indians of California *(*Kroeber 1976 [1925]).
- The Patwin and Their Neighbors (Kroeber 1932).
- Handbook of North American Indians*,* Vol. 8 (*California*) (Heizer 1978).
- The Ethnogeography of the Plains Miwok (Bennyhoff 1977).

ESA contacted the California Native American Heritage Commission (NAHC) in November 2023, in request of a search of the NAHC's Sacred Lands File (SLF) and a list of Native American representatives who may have interest in the proposed Project. The NAHC provided the results of the SLF search and list of Native American representatives to ESA on December 14, 2023. See the section below regarding Native American correspondence for the proposed Project.

The surveys conducted within the proposed Project area are summarized in the "Tide's End Multibenefit Restoration Project Cultural Resources Inventory Report" (Confidential Appendix G), as described further below.

Regional Existing Conditions for Tribal Cultural Resources

Ethnographic Context

Archaeological and anthropological context for the proposed Project area is included in Section 3.8, "Cultural Resources."

At the time of Euro-American contact, the proposed Project area was a region inhabited and used by the Plains Miwok and the Patwin (Johnson 1978; Levy 1978). Linguistic evidence suggests that the Plains Miwok descend from a Penutian-language speaking population that arrived in California 4000 to 4500 years before present (BP). The archaeological evidence for both Patwin and Miwok populations suggests that they had a subsistence focused on Delta and riparian environments and may have been in regular contact with each other (Moratto 2004 [1984]:553; Rosenthal et al. 2007:156–158). Depopulation and relocation of Central Valley Native Americans in the 19th century resulted in conflicting and incomplete information about Tribal locations.

Patwin

The Patwin territory was an extensive region within north-central California and included the lower portion of the west side of the Sacramento Valley west of the Sacramento River from about the location of the town of Princeton in the north to Benicia in the south (Kroeber 1976 [1925]). Within this large territory, the Patwin have traditionally been divided into River, Hill, and Southern groups; in actuality, a more complex set of linguistic and cultural differences existed than is indicated by these three geographic divisions (McCarthy et al. 1985).

The Patwin subsistence strategy focused largely on riparian habitat—fishing for salmon, perch, trout, pike, and other fish, through the use of nets and weirs. Hunting focused on elk, deer, antelope, bear, and a

variety of waterfowl and gamebirds, and freshwater mussel and turtle were also collected. Sunflower, clover, wild oats, and a host of other edible seeds were utilized for food, with valley oak acorns a food staple (Johnson 1978:355). Many of the Patwin residential buildings were permanent, constructed from wood timber and built largely belowground (Johnson 1978:357–358).

The introduction of Euro-American culture negatively affected Patwin culture and peoples. By 1871–1872, when Stephen Powers surveyed California gathering ethnographic information, the Patwin culture appeared to him to be virtually extinct. Euro-American influences within Patwin territory increased dramatically as ranching and farming became popular in the area. Euro-American settlers, especially within the Sacramento Valley, quickly made inroads into lands occupied by Native Americans. Conflicts grew in number, and Patwin populations continued to decline from disease, military skirmishes, vigilante raids, and other causes. In 1972, the Bureau of Indian Affairs listed only 11 remaining Patwin descendants (Johnson 1978:352). Despite the massive decline in population, the Patwin still reside in Solano County are represented locally by the Yocha Dehe Wintun Nation (Johnson 1978:352).

Plains Miwok

The Plains Miwok are part of the larger Eastern Miwok language group who form one of two major divisions of the Miwokan subgroup of Utian speakers. The Plains Miwok lived in the Central Valley along the Sacramento, Cosumnes, and Mokelumne rivers. Homes were built on high ground, with principal villages concentrated along major drainages (Levy 1978:408–409). Seasonality defined Plains Miwok subsistence strategies, and their economy was based on the use of natural resources from the grasslands and riparian corridors adjacent to the area's many drainages. As with many California Native American groups, the Plains Miwok relied heavily on acorns for food. Other non-animal foods consisted of nuts, seeds, roots, greens, berries, and mushrooms. The Plains Miwok hunted tule elk, pronghorn antelope, rabbit, squirrel, beaver, quail, and waterfowl. Like the Patwin, the Plains Miwok subsistence strategy largely focused on riparian environments. Salmon was the principal animal food for the Plains Miwok, ranking above other river resources such as sturgeon. Salt, nuts, basketry, and obsidian were obtained through trade with the Sierra Miwok (Levy 1978:402–405).

As with other California Native American groups, Euro-American exploration and settlement of the area, particularly the gold rush of 1849, had a devastating effect on the Plains Miwok. The flood of miners who came to the area in search of gold brought diseases with them that decimated the populations. Those who survived were subjected to violence and prejudice at the hands of the miners, and the groups were eventually pushed out of their ancestral territory (Castillo 1978). Although this contact with settlers had a profound negative impact on the group's populations through disease and violent actions, the Plains Miwok peoples survived and maintained strong communities and action-oriented organizations (Castillo 1978). The Plains Miwok find membership amongst several State- and federally recognized Tribes and continue to maintain their cultures.

Existing Conditions for Tribal Cultural Resources in the Proposed Project Area

Field Survey

In 2024, ESA archaeologists conducted an intensive pedestrian surface survey of all accessible portions of the proposed Project area. The survey methods entailed walking parallel transects of no more than 20

meters apart throughout the proposed Project area and recording, via field notes and photographs, the landscape attributes, surface soil and geological conditions, degree and types of disturbance, and general cultural resources sensitivity factors. The entire proposed Project area was covered by the survey. During the survey, no archaeological resources (including any indigenous) or indicators thereof were observed within the proposed Project area and all survey objectives were satisfactorily achieved.

California Historical Resources Information System and Survey Results for the Proposed Project Area

The California Historical Resources Information System (CHRIS) has record of nine previous cultural resources studies that were conducted within 0.5 mile of the proposed Project area. Five of these covered some portion of the proposed Project area, with an estimated 25% of the current proposed Project area having been covered. Despite the nine previous cultural resource studies and partial coverage of the proposed Project area, CHRIS has no record of any previously recorded cultural resource in or within 0.5 mile of the proposed Project area.

Ethnographic Literature Research Results for the Proposed Project Area

The review of ethnographic literature for the proposed Project did not identify any Native American villages or place-names in or immediately adjacent to the proposed Project area, although it did identify two Native American villages within 5 miles of the proposed Project area. Both villages are associated with the Plains Miwok, with *Siusumne* and *Ylamne* documented approximately 2.5 miles southeast and 3.5 miles east of the proposed Project area, respectively (Bennyhoff 1977:Map 3). Bennyhoff (1977:68) explains that *Siusumne* "lived close by the Ylamne," and that they were likely along or near Elkhorn Slough in the vicinity of Courtland and were still resisting missionization in 1836. Bennyhoff (1977:66) described the *Ylamne* as also likely along or near Elkhorn Slough, allied with the *Siusumne*, and that most survivors of the 1833 plague likely moved to Mission San José.

Native American Correspondence for the Proposed Project Area

As stated above, ESA contacted the NAHC in November 2023. On December 14, 2023, the NAHC replied to ESA's initial outreach regarding the proposed Project. The NAHC reply stated that the SLF has no record of any sacred sites in or in the vicinity of the proposed Project area; the reply also included a list of 15 representatives representing seven California Native American Tribes that are culturally and geographically affiliated with the proposed Project area and vicinity.

In support of required Native American consultation for the proposed Project pursuant to PRC Section 21080.3, and in accordance with the California Natural Resources Agency's (CNRA) *Final Tribal Consultation Policy (2012)* and DWR's *Tribal Engagement Policy (2016)*, DWR sent letters via certified mail on July 19, 2024, to the following California Native American Tribes:

- Ione Band of Miwok Indians.
- Shingle Springs Band of Miwok Indians.
- United Auburn Indian Community of the Auburn Rancheria.
- Wilton Rancheria.
- Yocha Dehe Wintun Nation.

The letters provided information on the proposed Project and requested that the Tribes notify DWR if they would like to consult pursuant to PRC Section 21080.3. On August 29, 2024, Kara Perry of the Shingle Springs Band of Miwok Indians sent a letter to DWR stating that the Tribe is not aware of any cultural resources in the proposed Project area, but that the Tribe would like to be provided with updates through the life of the proposed Project. The letter from the Shingle Springs Band of Miwok Indians also requested the CHRIS records searches and cultural resources survey reports completed for the proposed Project. On August 30, 2024, Yvonne Perkins of the Yocha Dehe Wintun Nation, sent a letter to DWR stating that the Tribe would like to consult on the proposed Project.

Also, in accordance with the *Final Tribal Consultation Policy* and *Tribal Engagement Policy*, DWR sent letters via certified mail on July 19, 2024, to each Tribe whose contact information was provided in the NAHC reply for the proposed Project other than those who received the correspondence detailed above:

- Cachil DeHe Band of Wintun Indians–Colusa Indian Community.
- Calaveras Band of Mi-Wuk Indians.
- California Valley Miwok Tribe (Sheep Ranch Rancheria of Me-Wuk).
- Chicken Ranch Rancheria of Me-Wuk Indians.
- Cortina Rancheria–Kletsel Dehe Wintun Nation.
- Grindstone Indian Rancheria of Wintun-Wailaki Indians.
- Jackson Rancheria Band of Miwuk Indians.
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe.
- Pakan'yani Maidu of the Strawberry Valley Rancheria.

The letters provided information on the proposed Project and requested that the Tribes provide information on cultural resources that may be affected by the proposed Project, if they would like to do so.

A summary of responses and consultation meetings are presented below:

- Shingle Springs Band of Miwok Indians
  - On August 29, 2024, Kara Perry of the Shingle Springs Band of Miwok Indians sent a letter to DWR stating that the Tribe is not aware of any cultural resources in the proposed Project area, but that the Tribe would like to be provided with updates through the life of the proposed Project. The letter from the Shingle Springs Band of Miwok Indians also requested the CHRIS records searches and cultural resources survey reports completed for the proposed Project.
- Yocha Dehe Wintun Nation
  - On August 30, 2024, Yvonne Perkins of the Yocha Dehe Wintun Nation sent a letter to DWR stating that the Tribe would like to consult on the proposed Project.
  - DWR hosted a consultation meeting with representatives of Yocha Dehe Wintun Nation on October 16, 2024. During this meeting, the Tribe did not identify any resources within the immediate Project area but shared an interest in heightened cultural sensitivity.

To date, no other comments or communications with any Tribes regarding the proposed Project have occurred, and no Tribe has provided any comment or identified any site containing cultural resources. Documentation of the correspondence with Tribes regarding the proposed Project to date is included in the confidential "Tide's End Multibenefit Restoration Project Cultural Resources Inventory Report" (Confidential Appendix G).

Summary of Tribal Cultural Resources Identified in the Proposed Project Area

Through a records search, background research, field survey, and Native American outreach, no Tribal cultural resources have been identified that could be affected by the proposed Project. Consistent with CNRA's *Tribal Consultation Policy* and DWR's *Tribal Engagement Policy*, DWR is committed to ongoing coordination with actively consulting Tribes to identify potential Tribal cultural resources that may be encountered throughout the duration of the proposed Project.

3.12.3 Regulatory Setting

Federal and State regulations discussed in Section 3.18.3, "Regulatory Setting," of Section 3.18, "Tribal Cultural Resources," of the Final SRGO Program EIR were reviewed for relevance to the proposed Project and identified below, as appropriate, along with any applicable new or updated policies since certification of the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.18.3, pp. 3.18-6 through 3.18-9).

Federal

National Historic Preservation Act

Historic properties are considered through compliance with the National Historic Preservation Act (NHPA), as amended (United States Code [USC] Title 54, Section 307103 [54 USC Section 307103]) and its implementing regulations (54 USC Section 307103; Code of Federal Regulations [CFR] Title 36, Section 800; 36 CFR Section 60; and 36 CFR Section 63). The NHPA establishes the federal government's policy on historic preservation and the programs, including the NRHP, through which that policy is implemented. Under the NHPA, historic properties include "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the [NRHP]" (54 USC Section 300308).

When a project implemented under the Order requires a federal permit, compliance with Section 106 of the NHPA (Section 106) is also required. Under Section 106, generally, it is the responsibility of the lead federal agency—in this case, USACE—to consider the effects of a proposed undertaking on historic properties. The federal agency must consult with the State Historic Preservation Officer, federally recognized Indian Tribes, and other interested parties before granting a permit, funding, or other authorization. The agency must also afford the Advisory Council on Historic Preservation and the State Historic Preservation Officer a reasonable opportunity to comment on any undertaking that would adversely affect a property eligible for listing in the NRHP. Section 101(d)(6)(A) of the NHPA allows properties of traditional religious and cultural importance to an Indian Tribe or a Native Hawaiian organization to be determined eligible for inclusion in the NRHP.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (Public Law 101-601; 25 USC Section 3001 et seq.) is a federal law that describes the process for federal agencies to return certain Native American cultural items (human remains, funerary objects, sacred objects, and objects of cultural patrimony) to linear descendants, Indian Tribes, and Native Hawaiian organizations. NAGPRA includes regulations for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on federal and Tribal lands, and penalties for noncompliance and illegal trafficking. All federal agencies are subject to NAGPRA. The excavation and inadvertent discovery of provisions of NAGPRA apply only to federal and Tribal lands.

American Indian Religious Freedom Act

The American Indian Religious Freedom Act, enacted in August 1978 and as amended (42 USC Section 1996), protects and preserves American Indians' inherent right of freedom to believe, express, and exercise the traditional religions of American Indian, Eskimo, Aleut, and Native Hawaiians. This includes but is not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rights (Public Law 95–341, Section 1, Aug. 11, 1978, 92 Stat. 469). The American Indian Religious Freedom Act requires policies of all governmental agencies to eliminate interference with the free exercise of Native religion and to accommodate access and use of religious sites to the extent that is practicable and consistent with an agency's essential functions.

State

California Environmental Quality Act

CEQA (PRC Section 21000 et seq.) is the principal statute governing environmental review of projects in California. CEQA requires lead agencies to determine whether a given project would have a significant effect on the environment, including a significant effect on Tribal cultural resources. Under CEQA (PRC Section 21084.2), a project that may cause a substantial adverse change in the significance of a Tribal cultural resource is a project that may have a significant effect on the environment.

Assembly Bill 52 and Tribal Cultural Resources

Assembly Bill (AB) 52, enacted in September 2014, recognizes that Tribes have expertise with regard to their Tribal history and practices. The law established a new category of resources in CEQA—Tribal cultural resources—to consider Tribal cultural values when determining the impacts of projects (PRC Sections 21080.3.1, 21084.2, and 21084.3).

PRC Section 21074(a) defines a "Tribal cultural resource" as any of the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are either of the following:
  - Included or determined to be eligible for inclusion in the CRHR.
  - Included in a local register of historical resources, as defined in PRC Section 5020.1(k).
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying these

criteria, the lead agency would consider the significance of the resource to a [California Native American] Tribe.

A cultural landscape that meets the criteria of PRC Section 21074(a) is also a Tribal cultural resource if the landscape is geographically defined in terms of the size and scope. A historical resource as described in PRC Section 21084.1, a unique archaeological resource as defined in PRC Section 21083.2, or a non-unique archaeological resource as defined in PRC Section 21083.2 may also be a Tribal cultural resource under CEQA if it meets the criteria identified in PRC Section 21074(a).

AB 52 requires CEQA lead agencies to analyze the impacts of projects on Tribal cultural resources separately from impacts on archaeological resources (PRC Sections 21074 and 21083.09) because Tribal cultural resources have cultural values beyond their ability to yield data important to prehistory or history. AB 52 also defines Tribal cultural resources in a new code section (PRC Section 21074; see above). Lead agencies must engage in additional consultation with California Native American Tribes (PRC Sections 21080.3.1, 21080.3.2, and 21082.3).

California Register of Historical Resources

The CRHR is "an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for eligibility for the CRHR are based on the criteria for listing on the NRHP (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined eligible for, or listed in, the NRHP.

To be eligible for the CRHR, a cultural resource must be significant at the federal, State, and/or local level under one or more of the following four criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. Is associated with the lives of persons important in our past.
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. Has yielded, or may be likely to yield, information important in prehistory or history.

A resource eligible for the CRHR must be of sufficient age and retain enough of its historic character or appearance (integrity) to convey the reason for its significance. The CRHR consists of resources that are listed automatically and those that must be nominated through an application and public hearing. The CRHR automatically includes the following resources:

- California properties listed in the NRHP and those formally determined eligible for the NRHP.
- California Registered Historical Landmarks from No. 770 onward.
- California Points of Historical Interest that have been evaluated by the California Office of Historic Preservation and have been recommended to the State Historical Commission for inclusion in the CRHR.

The following other resources may be nominated to the CRHR:

- Historical resources with a significance rating of Category 3, 4, or 5 (properties identified as eligible for listing in the NRHP, the CRHR, and/or a local jurisdiction register).
- Individual historic resources.
- Historic resources contributing to historic districts.
- Historic resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

California Public Resources Code Section 5097.99

PRC Section 5097.99 prohibits obtaining or possessing Native American artifacts or human remains that are taken from a Native American grave or cairn. Knowingly or willfully obtaining or possessing Native American artifacts or human remains is a felony punishable by imprisonment. Similarly, unlawful removal of any such items with an intent to sell or dissect or with malice or wantonness is a felony punishable by imprisonment.

California Native American Historic Resource Protection Act

The California Native American Historic Resources Protection Act of 2002 imposes civil penalties, including imprisonment and fines up to $50,000 per violation, on persons who unlawfully and maliciously excavate upon, remove, destroy, injure, or deface a Native American historic, cultural, or sacred site that is listed or may be listed in the CRHR.

California Health and Safety Code Section 7050.5

Section 7050.5 of the California Health and Safety Code protects human remains by prohibiting the disinterment, disturbance, or removal of human remains from any location other than a dedicated cemetery. PRC Section 5097.98 (reiterated in CEQA Guidelines Section 15064.59[e]) also identifies steps to follow if human remains are accidentally discovered or recognized in any location other than a dedicated cemetery.

Regional and Local

The following regional and local policies relevant to the proposed Project based on location, project type, and/or environmental setting have been included for context; however, DWR, as a State agency, is not subject to local ordinances or policies. The Yolo County 2030 General Plan (Yolo County 2009) outlines goals and policies intended to protect Tribal cultural resources countywide. Relevant goals and policies from this planning document include the following:

Goal CO-4: Cultural Resources. Preserve and protect cultural resources within the County.

Policy CO-4.1: Identify and safeguard important cultural resources.

Policy CO-4.10: Encourage voluntary landowner efforts to protect cultural resources consistent with State law.

Policy CO-4.11: Honor and respect local tribal heritage.

Policy CO-4.12: Work with culturally affiliated tribes to identify and appropriately address cultural resources and tribal sacred sites through the development review process.

Policy CO-4.13: Avoid or mitigate to the maximum extent feasible the impacts of development on Native American archaeological and cultural resources.

Policy CO-4.14: Avoid or mitigate to the maximum extent feasible the impacts of development on Native American archaeological and cultural resources.

3.12.4 Impact Analysis and Mitigation Measures

Significance Criteria

In accordance with Appendix G of the CEQA Guidelines, an impact related to Tribal cultural resources is considered significant if the proposed Project would do any of the following:

- Cause a substantial adverse change in the significance of a Tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:
  - Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k); or
  - A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.

Methodology and Assumptions

As discussed in Chapter 1, "Introduction," the proposed Project is a "restoration project" as defined in Section V of the SRGO (State Water Board 2022a: Section V, p. 2); therefore, this Draft SEIR supplements and incorporates by reference the Final SRGO Program EIR, including its appendices (State Water Board 2022b). As provided by CEQA Guidelines Section 15163(b), a supplement to an EIR need contain only the information necessary to make the previous EIR adequate for the project as revised. This means that only those project-specific activities that would introduce new significant environmental effects or cause a substantial increase in the severity of significant effects identified in the Final SRGO Program EIR need to be evaluated. Where existing information and analysis in the Final SRGO Program EIR is considered sufficient to evaluate the impacts of the proposed Project, no additional environmental review is provided.

As further outlined in Chapter 1, this Draft SEIR incorporates by reference the general protection measures and species protection measures outlined in Final SRGO Program EIR Appendices E and F, which are intended to avoid and minimize impacts on sensitive resources. Consistent with the Final SRGO Program EIR, the impact analysis for each resource area assumes that applicable general protection measures and species protection measures would be implemented and enforced in the same way as mitigation measures, consistent with Section 15126.4 of the CEQA Guidelines, and that the proposed Project would be constructed and operated in compliance with relevant federal and State regulations. As such, if the analysis has determined that incorporating one or more general protection

measures and/or species protection measures into the proposed Project would reasonably mitigate an impact, then the impact conclusion is less than significant. If the analysis has determined that an impact would remain significant after the incorporation of appropriate general protection measures and species protection measures, then mitigation measures from the Final SRGO Program EIR and/or project-specific mitigation measures have been recommended to further reduce the magnitude of the impact. All mitigation measures are from the Final SRGO Program EIR unless specifically stated otherwise.

The following impact analysis considers the potential impacts related to Tribal cultural resources associated with implementation of the proposed Project. The impact analysis evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities.

The significance of a Tribal cultural resource is assessed by evaluating the following factors as they apply to the resource:

- Eligibility for listing as a historical resource in the CRHR.
- Eligibility as a unique archaeological resource pursuant to PRC Section 21083.2 (g).
- Listing status in the NAHC's SLF.

In addition, a lead agency can independently determine a resource to be a Tribal cultural resource.

Tribes traditionally and culturally affiliated with a geographic area may have expertise concerning their Tribal cultural resources. Therefore, the analysis of whether proposed Project impacts may result in a substantial adverse change to the significance of a Tribal cultural resource depends heavily on the results of consultation between the lead agency and culturally affiliated Tribes during the CEQA process.

Impacts and Mitigation Measures

Table 3.12-1 summarizes the impact conclusions presented in this section for reference.

TABLE 3.12-1
SUMMARY OF IMPACT CONCLUSIONS—TRIBAL CULTURAL RESOURCES

Impact Statement	Construction Activities	Constructed Restoration Elements	Operations, Monitoring, and Maintenance Activities
3.12-1: Implementation of the proposed Project could cause a substantial adverse change in the significance of a Tribal cultural resource, as defined in PRC Section 21074.	LTSM	LTSM	LTSM

Notes: LTSM = less than significant with implementation of mitigation measures

Impact 3.12-1: Implementation of the proposed Project could cause a substantial adverse change in the significance of a Tribal cultural resource, as defined in PRC Section 21074.

Effects of Construction Activities

Section 3.18*,* "Tribal Cultural Resources," of the Final SRGO Program EIR evaluated the potential impacts of the types of restoration projects that the SRGO would encourage and promote at a programmatic level, including potential impacts of construction activities for restoration projects on Tribal cultural resources (Final SRGO Program EIR Impact 3.18-1, pp. 3.18-11 through 3.18-15). Related to the proposed Project, the Final SRGO Program EIR evaluated the following construction activities: installation of infrastructure such as culverts, fish screens, and other water control structures to improve water management capabilities; removal of legacy structures; creation of depressions, berms, and drainage features; and installation of cofferdams during construction. Project construction work covered by the Final SRGO Program EIR included the following: grading and excavation; use of staging areas, access routes, and haul routes; site preparation; preparation of borrow sites; site restoration and mobilization/demobilization; stockpiling of construction materials; and disposal of excess materials. The Final SRGO Program EIR found that these activities could result in potentially significant impacts on Tribal cultural resources.

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Resources Control Board (State Water Board) or a regional water board's issuance of a notice of applicability (NOA) for a restoration project under the Order, compliance with Mitigation Measures *TCR-1: Conduct Inventory and Significance Evaluation of Tribal Cultural Resources with Tribes that are Culturally and Geographically Affiliated with the Project Vicinity*; *TCR-2: Implement Measures to Protect Tribal Cultural Resources during Project Construction or Operations*; and *CUL-4: Implement Measures to Protect Human Remains during Project Construction or Operations* would be required when applicable to a given project. These measures include but are not limited to those outlined in PRC Section 21084.3. Implementation of these mitigation measures would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

Consistent with the types of construction activities evaluated by the Final SRGO Program EIR, construction of the proposed Project would require the following: site preparation and mobilization/ demobilization; use of staging areas, access routes, and haul routes; grading and excavation; the installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; removal and salvage and/or disposal of existing pumps, pipes, and other water control structures and utility lines that are no longer needed under proposed Project conditions; reconfiguration and modification of irrigation and drainage features, such as irrigation canals, ditches, and berms; and installation of temporary cofferdams.

Through background research review of previously conducted cultural research and reports embracing and partially covering the proposed Project area, and Native American outreach, no Tribal cultural resources as defined in PRC Section 21074 have been identified in the proposed Project area. Therefore, there is no substantial evidence of the presence of any Tribal cultural resources in the proposed Project area, and the proposed Project is not expected to affect any Tribal cultural resources as defined in PRC Section 21074.

Although there is no substantial evidence that any Tribal cultural resources are present in the proposed Project area, construction activities could unearth, expose, or disturb subsurface Tribal cultural resources. If such resources were found to qualify as Tribal cultural resources as defined in PRC Section 21074, impacts of the proposed Project on Tribal cultural resources could be potentially significant.

The proposed Project would apply Mitigation Measure TCR-2, consistent with the Final SRGO Project EIR; however, Mitigation Measure TCR-1 is not applicable to the proposed Project because an NAHC search of the SLF and Native American outreach have been conducted for the proposed Project. Mitigation Measure TCR-2 would protect Tribal cultural resources during construction and operations and maintenance activities. Mitigation Measure CUL-4 would mitigate potential impacts on human remains.

Mitigation Measure TCR-2: Implement Measures to Protect Tribal Cultural Resources during Project Construction or Operation.

These measures include but are not limited to those outlined in PRC Section 21084.3. If tribal cultural resources or indigenous archaeological resources that may qualify as tribal cultural resources are encountered during project construction or operation of any project permitted under the Order, all activity within 100 feet of the find shall cease and the find shall be flagged for avoidance. The lead agency, a qualified archaeologist, defined as one meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology, and California Native American Tribes that are traditionally and culturally affiliated to a project area shall be immediately informed of the discovery. The qualified archaeologist and representatives from the notified Native American Tribes shall inspect the discovery and notify the lead agency of their initial assessment.

a. If the lead agency determines, based on recommendations from the qualified archaeologist and California Native American Tribes that are traditionally and culturally affiliated to a project area, that the resource may qualify as a tribal cultural resource (per PRC Section 21074), then the resource shall be avoided if feasible. If avoidance of the resource is not feasible, the lead agency shall consult California Native American Tribes that are traditionally and culturally affiliated to a project area to determine treatment measures to minimize or mitigate any potential impacts on the resource pursuant to PRC Section 21083.2 and CEQA Guidelines Section 15126.4. If any such resources are on or in the tide and submerged lands of California, this process shall also include coordination with the California State Lands Commission. Once treatment measures have been determined, the lead agency shall prepare and implement a tribal cultural resources management plan that outlines the treatment measures for the resource. Treatment measures typically consist of the following steps:

    - Determine whether the resource qualifies as a tribal cultural resource (per PRC Section 21074) through analysis that could include additional ethnographic research, archaeological investigations, or laboratory analysis.
    - If it qualifies as a tribal cultural resource (per PRC Section 21074) implement measures for avoiding or reducing impacts such as the following:
        - Avoid and preserve the resource in place through measures that include but are not limited to the following:
            - Plan and construct the project to avoid the resource and protect the cultural and natural context.

        - Plan greenspace, parks, or other open space to incorporate the resources with culturally appropriate protection and management criteria.
    - Treat the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, through measures that include but are not limited to the following:
        - Protect the cultural character and integrity of the resource.
        - Protect the traditional use of the resource.
        - Protect the confidentiality of the resource.
    - Implement permanent conservation easements or other interests in real property, with cultural appropriate management criteria for the purposes of preserving or using the resource or place.

Mitigation Measure CUL-4: Implement Measures to Protect Human Remains during Project Construction or Operation.

See Section 3.8.4, "Impacts and Mitigation Measures," in Section 3.8, "Cultural Resources."

With implementation of Mitigation Measure TCR-2 and CUL-4 this impact would be ***less than significant with implementation of mitigation measures***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR and the Final SRGO Program EIR adequately addresses the potential for construction impacts of the proposed Project on Tribal cultural resources.

Effects of Constructed Restoration Elements

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of constructed facilities for restoration projects on Tribal cultural resources (Final SRGO Program EIR Impact 3.18-1, pp. 3.18-11 through 3.18-15). Related to the proposed Project, the Final SRGO Program EIR evaluated the constructed facilities of new infrastructure or modifications to existing infrastructure (e.g., bridges, culverts, fishways and screens, dams, levees, water conveyance features). The Final SRGO Program EIR found that these activities could result in potentially significant impacts on Tribal cultural resources.

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Board or a regional water board's issuance of a NOA for a restoration project under the Order, compliance with Mitigation Measures *TCR-1: Conduct Inventory and Significance Evaluation of Tribal Cultural Resources with Tribes that are Culturally and Geographically Affiliated with the Project Vicinity*; *TCR-2: Implement Measures to Protect Tribal Cultural Resources during Project Construction or Operations*; and *CUL-4: Implement Measures to Protect Human Remains during Project Construction or Operations* would be required when applicable to a given project. These measures include but are not limited to those outlined in PRC Section 21084.3. Implementation of these mitigation measures would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

Consistent with the types of constructed restoration elements evaluated by the Final SRGO Program EIR, constructed restoration elements of the proposed Project would include use of the following: fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; and reconfigured and modified irrigation and drainage features, such as irrigation canals, ditches, and berms.

Through a records search, background research, review of previously conducted cultural research and reports embracing and partially covering the field survey of the proposed Project area, and Native American outreach, no Tribal cultural resources as defined in PRC Section 21074 have been identified in the proposed Project area. Therefore, there is no substantial evidence of the presence of any Tribal cultural resources in the proposed Project area, and the proposed Project is not expected to affect any Tribal cultural resources as defined in PRC Section 21074.

Although there is no substantial evidence that any Tribal cultural resources are present in the proposed Project area, the constructed restoration elements for the proposed Project could unearth, expose, or disturb subsurface Tribal cultural resources. If such resources were found to qualify as Tribal cultural resources as defined in PRC Section 21074, impacts of the proposed Project on Tribal cultural resources could be potentially significant.

The proposed Project would apply Mitigation Measure TCR-2, consistent with the Final SRGO Program EIR; however, Mitigation Measure TCR-1 is not applicable to the proposed Project because an NAHC search of the SLF and Native American outreach have been conducted for the proposed Project. With implementation of Mitigation Measures TCR-2 and CUL-4, impacts on Tribal cultural resources from the constructed restoration elements would be ***less than significant with implementation of mitigation measures***.

Constructed restoration elements associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR and the Final SRGO Program EIR adequately addresses the potential for constructed restoration element impacts of the proposed Project on Tribal cultural resources.

Effects of Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential impacts of operations, monitoring, and maintenance activities on Tribal cultural resources (Final SRGO Program EIR Impact 3.18-1, pp. 3.18-11 through 3.18-15). Related to the proposed Project, the Final SRGO Program EIR evaluated operations, monitoring, and maintenance activities necessary to support the successful establishment of natural conditions and the functionality of artificial/constructed infrastructure. These measures include conducting mechanical and chemical weed control; installing fencing and signage; adjusting grading or soils composition; and installing and operating monitoring equipment such as groundwater wells, flow gages, depth gages, cameras, and stakes. The Final SRGO Program EIR found that these activities could result in potentially significant impacts on Tribal cultural resources.

The Final SRGO Program EIR does not include any general protection measures applicable to this impact. As part of the State Water Board or a regional water board's issuance of an NOA for a restoration project under the Order, compliance with Mitigation Measures *TCR-1: Conduct Inventory and Significance*

Evaluation of Tribal Cultural Resources with Tribes that are Culturally and Geographically Affiliated with the Project Vicinity; TCR-2: Implement Measures to Protect Tribal Cultural Resources during Project Construction or Operations; and CUL-4: Implement Measures to Protect Human Remains during Project Construction or Operations would be required when applicable to a given project. These measures include but are not limited to those outlined in PRC Section 21084.3. Implementation of these mitigation measures would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, the appropriate regional water board, or other authorizing regulatory agency.

Consistent with the types of operations, monitoring, and maintenance activities evaluated by the Final SRGO Program EIR, operations, monitoring, and maintenance activities of the proposed Project would include those associated with the following: fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; and reconfigured and modified irrigation and drainage features, such as canals, ditches, and berms.

Through a records search, background research, review of previously conducted cultural research and reports embracing and partially covering the proposed Project area, field survey, and Native American outreach, no Tribal cultural resources as defined in PRC Section 21074 have been identified in the proposed Project area. Therefore, there is no substantial evidence of the presence of any Tribal cultural resources in the proposed Project area, and the proposed Project is not expected to affect any Tribal cultural resources as defined in PRC Section 21074.

Although there is no substantial evidence that any Tribal cultural resources are present in the proposed Project area, the operations, monitoring, and maintenance activities for the proposed Project could unearth, expose, or disturb subsurface Tribal cultural resources. If such resources were found to qualify as Tribal cultural resources as defined in PRC Section 21074, impacts of the proposed Project on Tribal cultural resources could be potentially significant.

The proposed Project would apply Mitigation Measure TCR-2, consistent with the Final SRGO Program EIR; however, Final SRGO Program EIR Mitigation Measure TCR-1 is not applicable to the proposed Project because an NAHC search of the SLF and Native American outreach have been conducted for the proposed Project. With implementation of Mitigation Measures TCR-2 and CUL-4, impacts on Tribal cultural resources from operations, monitoring, and maintenance activities for the proposed Project would be ***less than significant with implementation of mitigation measures***.

Operations, monitoring, and maintenance activities for the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR and the Final SRGO Program EIR adequately addresses impacts of the proposed Project's operations, monitoring, and maintenance activities on Tribal cultural resources.

3.13 Utilities and Service Systems

3.13.1 Introduction

This Draft SEIR supplements the previously certified Final SRGO Program EIR and addresses proposed modifications, changed circumstances, and new information not described in that prior environmental document. This section of the Draft SEIR discusses the potential for the proposed Project to result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR related to utilities and service systems: water supply and distribution, wastewater collection and treatment, electric power and natural gas, telecommunications, and solid waste service systems (see Final SRGO Program EIR: Section 3.19.4, pp 3.19-11 through 3.19-18). The environmental setting and evaluation of impacts on utilities and service systems is based on a review of existing, publicly available literature and data, and on a site-specific inventory of existing water conveyance and distribution of infrastructure in the proposed Project area (Appendix K to this Draft SEIR, "Tide's End Multibenefit Restoration Project Inventory of Existing Water Conveyance and Distribution Infrastructure Report").

Impacts associated with energy consumption are discussed in Section 3.3.2, "Energy," of Section 3.3, "Environmental Issues Not Requiring Further Analysis." Impacts associated with drainage and flooding are addressed in Section 3.10, "Hydrology and Water Quality."

Comments were received in response to the NOP regarding utilities. See Appendix B to this Draft SEIR, "Tide's End Multibenefit Restoration Project Notice of Preparation and Comment Letters," for NOP comment letters.

The impact analysis in this section evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities related to utilities and service systems in the proposed Project area. This impact analysis concludes that implementation of the proposed Project would not result in any significant impacts related to utilities and service systems in the proposed Project area.

3.13.2 Environmental Setting

This section describes the utilities and service systems located in the proposed Project area that could be affected by the construction, operations, and maintenance of the constructed restoration elements associated with the proposed Project.

Water Supply and Distribution Systems in the Proposed Project Area

Water users in the proposed Project area include agricultural irrigation and managed waterfowl habitat. As described in Section 3.4, "Agriculture," the proposed Project area is adjacent to the southeastern drainage channel for the Yolo Bypass (the Toe Drain). Regional water management for agricultural and other land use activities is facilitated through an expansive system of irrigation and drainage canals that start and end at the Toe Drain. The Toe Drain is the southern continuation of the Tule Canal; together these channels receive water from the Westside Tributaries and agricultural diversions. See Section 3.10, "Hydrology and Water Quality," for details on surface water resources. The existing duck clubhouse is served by a groundwater well that provides water for non-potable uses.

Water supply for the proposed Project would be derived from the *1981 Contract Between State of California Department of Water Resources and North Delta Water Agency for the Assurance of a Dependable Water Supply of Suitable Quality* (NDWA Contract). The NDWA Contract applies to water users within the NDWA boundaries and is supported by annual assessments. Water provided under the NDWA Contract provides water to users year-round. Implementation of the proposed Project would not modify any existing water rights or alter the NDWA Contract water for beneficial use within the proposed Project area.

Water conveyance and distribution infrastructure delivering water in the proposed Project area consists of multiple facilities (see Figure 2-6, "Proposed Project Area Existing Water Supply and Drainage System," in Chapter 2, "Project Description"). A site-specific inventory of existing water conveyance and distribution infrastructure (Appendix K to this Draft SEIR, "Tide's End Multibenefit Restoration Project Inventory of Existing Water Conveyance and Distribution Infrastructure Report") identified 147 individual water features in the proposed Project area. Many features (37 percent of 147 features) identified were "spills," which are structures that allow the flow of water out of a field into a drainage ditch or canal or from a canal into a drainage ditch. Canals in the proposed Project area are supplied by lift pumps, which lift the water from a lower elevation supply source, discharge into the canal, and enable gravity flow within the canal. Water also flows on-site during flood conditions. **Table 3.13-1** summarizes water infrastructure in the proposed Project area, organized by property**.**

TABLE 3.13-1
INVENTORIED WATER INFRASTRUCTURE IN THE PROPOSED PROJECT AREA

Water Conveyance	Control Structures[a]	Culverts[b]	Headings[c]	Lift Pumps[d]	Spills[e]	Turnouts[f]
Capitol Oil						
Highline Canal	---	4	1	1	1	8
Highline Lateral 1	---	1	1	---	---	2
Highline Lateral 2	---	4	1	---	1	4
Capitol Oil West Lateral	1	2	---	---	1	1
Capitol Oil North Drain	---	3	---	---	10	---
Capitol Oil West Drain	---	2	---	---	1	1
Capitol Oil Middle Drain	---	2	---	---	5	---
Capitol Oil East Drain 1	---	3	---	---	3	---
Capitol Oil East Drain 2	---	3	---	---	1	---
Main Drain	1	1	1	---	---	---
Laurel G						
Laurel G Canal	1	1	1	3	1	4
Laurel G Lateral	---	3	---	---	---	3
Laurel G West Drain	---	1	---	---	1	---
Laurel G East Drain 1	1	2	---	---	3	---
Laurel G East Drain 2	---	---	---	---	5	1
Inter-Field Connections[g]	---	---	---	---	9	---

Water Conveyance	Control Structures[a]	Culverts[b]	Headings[c]	Lift Pumps[d]	Spills[e]	Turnouts[f]
Yolo Basin						
Yolo Basin Canal	---	---	1	1	---	1
Yolo Basin Pump	---	---	---	---	---	3
Yolo Basin South Drain	---	---	---	---	4	---
Lucky Five South						
Lucky Five Canal	---	---	1	---	1	---
Lucky Five Pump	---	1	1	1	---	6
Lucky Five South Drain	---	---	---	---	2	---
Lucky Five South East Drain	---	2	--	---	---	---
Kleary						
Inter-field Connections	---	1	---	---	---	---
Williams						
Inter-field Connections	---	---	---	---	4	---
TOTALS	**4**	**36**	**8**	**6**	**53**	**34**

NOTES:

a. Control structures generally have the objective of controlling either the flow of water or the upstream water level.
b. A culvert is a pipe or similar structure to allow the passage of water underneath roads, pathways, or other obstacles that intersect the canal.
c. A heading is the upstream end, and beginning of, a new canal or lateral. A heading structure is typically located at the heading to control the flow of water delivered to the lateral.
d. A lift pump is a pump designed to move (or "lift") water from a lower elevation to a higher elevation.
e. Spills are structures that allow the flow of water out of a field into a drain ditch or from a canal into a drain ditch. Spill structures can be for operational purposes or emergency purposes. For the former, the structures are typically manually manipulated to relieve water from the field or canal. In the latter, the structures operate passively and automatically relieve water from the field or canal if the water level exceeds a preset or established elevation.
f. Turnouts are structures used to divert water from a canal or lateral into individual fields. Turnouts typically consist of gates, valves, or similar control devices that regulate the flow of water into the field.
g. Some infrastructure features do not interact directly with a canal or drain but connect one field to another.

SOURCE: Davids Engineering, Inc. 2024

Wastewater Collection and Treatment Systems in the Proposed Project Area

Wastewater collection and treatment in the proposed Project area consists of one private, individual on-site septic system that serves the existing clubhouse. Waste collected in septic tanks and leach fields undergoes microbial degradation and on-site treatment. Every 10 years, a septic tank company may perform maintenance to remove any inert solids that have accumulated in the system. Collected waste is sorted and inert waste is disposed of at a landfill. No municipal wastewater collection or treatment systems currently service the proposed Project area.

Electric Power Use and Infrastructure in the Proposed Project Area

Pacific Gas and Electric Company (PG&E) supplies electricity to Yolo County. PG&E's power is generated from a variety of sources, such as fossil fuels, natural gas fields, hydroelectric facilities, solar energy, hydrogen fuels, and biofuels. Existing power poles and overhead electrical utility lines are present in the proposed Project area see Figure 2-5, "Existing Infrastructure," in Chapter 2, "Project Description").

Natural Gas Use and Infrastructure in the Proposed Project Area

Yolo County actively produces natural gas from 25 gas fields. The primary natural gas transmission line is aligned along the Capay Hills, approximately 25 miles northwest of the proposed Project area, bringing in natural gas from the northwestern United States and western Canada (Yolo County 2009). A total of 25 plugged and abandoned natural gas wells are present in the proposed Project area. Ten of the wells produced economically viable volumes of natural gas between December 1978 and December 2010 before the available natural gas was depleted and the wells ceased production. Records indicate that all of the natural gas wells were abandoned and plugged before the end of 2012. It is unclear when or whether the other 15 wells ever produced gas before being plugged. See Appendix F: "Tide's End Multibenefit Restoration Project Phase I Environmental Site Assessment (Phase I Environmental Site Assessment) and the Tide's End Multibenefit Restoration Project Phase II Soil Sampling Investigation (Phase II Soil Sampling Investigation." Natural gas is not used in the proposed Project area, other than the clubhouse, which is served by a propane tank.

Telecommunications Use and Infrastructure in the Proposed Project Area

AT&T is the primary provider of landline telephone services throughout the county. Cable TV providers include Wave (Astound Broadband), Comcast, and Cableview Communications (Yolo County 2009). However, no telecommunications facilities exist within the proposed Project area.

Solid Waste Collection and Disposal for the Proposed Project Area

Yolo County operates two public facilities for both solid waste and recycling and one solid waste facility that does not allow public access. The closest waste disposal site is the Yolo County Central Landfill, approximately 12 miles from the proposed Project area; this disposal site would likely serve the proposed Project. The Class III[1] solid waste landfill provides municipal solid waste disposal, recycling, salvaging, and management of household and business hazardous wastes. The Yolo County Central Landfill has a maximum permitted capacity of 49,035,200 tons. The maximum permitted throughput is 3,000 tons per day. Remaining capacity at the landfill (as of 2022) was 33,140,373 tons (approximately 67.5 percent) (CalRecycle 2025). Current uses in the proposed Project area, such as the clubhouse, agriculture, upland habitat (for pheasant hunting), and managed waterfowl habitat, currently generate nominal amounts of solid waste.

3.13.3 Regulatory Setting

Federal and State regulations discussed in Section 3.19.3, "Regulatory Setting," of Section 3.19, "Utilities and Service Systems and Public Services," of the Final SRGO Program EIR were reviewed for relevance to the proposed Project and are identified below as appropriate, along with any applicable new or updated policies since certification of the Final SRGO Program EIR (see Final SRGO Program EIR: Section 3.19.3, pp 3.19-5 through 3.19-11). As a statewide, program-level document, the Final SRGO Program EIR did not discuss regional and local regulations; this Draft SEIR provides project-specific regional and local goals and policies to supplement the regulatory setting information provided in the Final SRGO Program EIR.

[1] "Class III landfills" are non-commercial landfills that accept non-hazardous waste such as household, commercial, and industrial waste. Class III landfills are permitted and regulated by State agencies.

Federal

Resource Conservation and Recovery Act

Subtitle D of the Resource Conservation and Recovery Act (United States Code Title 42, Section 6901 et seq.) outlines regulations for municipal solid waste landfills and requires states to implement their own permitting programs incorporating the federal landfill criteria. The federal regulations address the location, operations, design, groundwater monitoring, and closure of landfills. The U.S. Environmental Protection Agency's waste management regulations are listed in Code of Federal Regulations Volume 40, Parts 239–282. Resource Conservation and Recovery Act Subtitle D is implemented in California through California Code of Regulations Title 27 and approved by the U.S. Environmental Protection Agency.

Safe Drinking Water Act

The Safe Drinking Water Act, the principal federal law intended to ensure the safety of drinking water for the public, was enacted in 1974 and has been amended several times. The law authorizes the U.S. Environmental Protection Agency to set national standards for drinking water, called the National Primary Drinking Water Regulations, to protect against both naturally occurring and human-made contaminants. These standards set enforceable maximum contaminant levels in drinking water and require all water providers in the United States to treat water to remove contaminants, except for private wells serving fewer than 25 people. In California, the State Water Resources Control Board (State Water Board) conducts most enforcement activities. If a water system does not meet standards, it is the water supplier's responsibility to notify its customers.

State

California Government Code Section 4216

Section 4216 of the Government Code requires State and local agencies to contact a regional notification center before excavating subsurface installations to identify and protect existing underground infrastructure, such as pipelines, conduits, ducts, or wires. Under this law, excavators must delineate the planned excavation site and contact their regional notification center at least 2 working days before excavations.

California Department of Conservation Geologic Energy Management Division (CalGEM)

CalGEM regulates drilling, operations, maintenance, and abandonment of oil, gas, and geothermal wells. Plugging and abandonment of oil and gas wells is to be done according to California Code of Regulations, Title 14, Division 2, Chapter 4, Subchapter 1, Article 3, Sections 1723–1723.8. As part of CalGEM's responsibilities for implementing Section 3208.1 of the Public Resources Code, each of the three CalGEM districts have developed the Construction Site Plan Review Program to assist local agencies in identifying and reviewing the status of oil or gas wells near proposed development. The program is aimed at addressing potential issues associated with development near oil or gas wells. CalGEM serves in an advisory role to make relevant information available to local agencies. Additionally, Section 3208.1 authorizes CalGEM to order the re-abandonment of a previously abandoned well "to prevent, as far as possible, damage to life, health, and property" if CalGEM "has reason to question the integrity of the previous abandonment, or if the well is not accessible or visible."

Public Resources Code Section 41780

The California Legislature set a policy goal that, at a minimum, 75 percent of solid waste generated in the state would be source reduced, recycled, or composted starting January 1, 2020. Additionally, a 50 percent diversion rate was to be enforced for local jurisdictions.

California Integrated Waste Management Act

California's Integrated Waste Management (Assembly Bill 939; Public Resources Code Section 40050 et seq.) requires each jurisdiction in the state to divert at least 50 percent of its waste away from landfills through either waste reduction or recycling. The California Department of Resources Recycling and Recovery oversees and assists local governments in developing and implementing plans to comply with this law and subsequent legislation.

Senate Bill 610 and Senate Bill 221

In 2001, the California Legislature enacted two pieces of legislation relevant to environmental review focused on water consumption associated with large development projects. Senate Bill 610 (Chapter 643, Statutes of 2001; Public Resources Code Section 21151.9; and Water Code Section 10910 et seq.) requires the preparation of a water supply assessment for large developments if mandated by the applicable county or city. Government Code Section 66473.7(a)(1) requires an affirmative written verification of sufficient water supply. Senate Bill 221 is designed as a "fail-safe" mechanism to help ensure that collaboration occurs early in the planning process to find the needed water supplies to serve a new large subdivision or development.

Because the proposed Project would not involve the development of any habitable uses, require potable water, or change water use relative to existing conditions, Senate Bill 610 would not apply, and no water supply assessment would be required for the proposed Project.

State Water Board Division of Drinking Water

The State Water Board's Division of Drinking Water is responsible for regulating public water systems; oversees water recycling projects; permits water treatment devices; supports and promotes water system security; and performs a number of other functions. The Division of Drinking Water consists of three branches: The Northern California Field Operations Branch, the Southern California Field Operations Branch, and the Program Management Branch. The Northern California and Southern California Field Operations Branches enforce the federal and California Safe Drinking Water acts and conduct regulatory oversight of public water systems within California. Staff perform field inspections, issue operating permits, review plans and specifications for new facilities, take enforcement actions for non-compliance with laws and regulations, review water quality monitoring results, and support and promote water system security. The Field Operations Branches also fund infrastructure improvements, conduct source water assessments, oversee water recycling projects, and promote public water systems in drought preparation and water conservation.

The proposed Project would not involve the development of a potable water treatment or distribution system and would not use potable water or result in a change in water use over existing conditions, therefore, oversight by the Division of Drinking Water would not be applicable to the proposed Project.

Regional and Local

The following regional and local policies relevant to the proposed Project based on location, project type, and/or environmental setting have been included for context; however, DWR, as a State agency, is not subject to local ordinances and policies.

Yolo County Code of Ordinances Title 6, Chapter 16

Under California law pursuant to the California Waste Management Act, Yolo County is required to implement source reduction and recycling measures to substantially reduce the volume of waste going to landfills. Yolo County Code Title 6, Chapter 16 (Recycling and Diversion of Debris from Construction and Demolition) is applicable to the construction of new agricultural, commercial, industrial, or institutional buildings 5,000 square feet or larger and to the renovation, addition, or alteration of any agricultural, commercial, industrial, institutional, or multi-family building larger than 1,000 square feet (among other construction and demolition projects). Therefore, this code provision does not apply to proposed Project activities.

Yolo County 2030 Countywide General Plan

The Yolo County 2030 General Plan (Yolo County 2009) Outlines goals and policies intended to ensure that infrastructure and services will be sufficient to support existing and new development in Yolo County. Consistent with these goals and policies, the proposed Project will include maintenance of existing infrastructure to support the proposed uses. The following goals and policies related to utilities and service systems are relevant to the proposed Project:

Goal PF-9: Solid Waste and Recycling. Provide safe, cost-efficient, and environmentally responsible solid waste management.

Policy PF-9.8: Require salvage, reuse, or recycling of construction and demolition materials and debris at all construction sites.

Policy PF-9.9: Encourage use of salvaged and recycled materials in construction.

Goal PF-11: Utilities and Communications. Support a flexible network of utility services to sustain state-of-the-art community livability and economic growth.

Policy PF-11.5: Increase the availability and reliability of power to the rural areas, including underserved communities.

3.13.4 Impact Analysis and Mitigation Measures

Significance Criteria

In accordance with Appendix G of the CEQA Guidelines, an impact related to utilities and service systems is considered significant if the proposed Project would do any of the following:

- Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.

- Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.
- Result in a determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of soil waste reduction goals.
- Fail to comply with federal, State, and local management and reduction statutes and regulations related to solid waste.

Issues Not Analyzed Further in this Draft SEIR

Require or result in the relocation or construction of new or expanded wastewater collection and treatment facilities or result in a determination by the wastewater treatment provider that it does not have adequate capacity to serve proposed Project demand.

As discussed in the Final SRGO Program EIR, construction of new wastewater systems (e.g., collection, treatment, and discharge facilities) or expansion of existing wastewater systems is prompted by increased customer demand. Such demand typically results from new land development (such as development that transitions land use from a rural to more urban use) or population growth (see SRGO Final Program EIR: Section 3.19.4, p. 3.19-12).

The proposed Project area is currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat. The proposed Project involves the restoration and enhancement of tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) in the proposed Project area. No municipal wastewater collection or treatment systems serve the proposed Project area. Wastewater collection and treatment in the proposed Project area consists of a private, individual on-site septic system that would not change with proposed Project implementation; therefore, the proposed Project would not affect wastewater treatment capacity.

Furthermore, as described in Section 3.2, "Issues Not Addressed Further," the proposed Project would not include new land development or induce substantial population growth that would include development of occupied structures that would result in any an increase in demand for wastewater treatment. In addition, the proposed Project would not require relocation of new or expanded wastewater treatment facilities.

Therefore, implementation of the proposed Project would not cause significant environmental effects because of relocation or construction of new or expanded wastewater treatment or result in a determination by a wastewater provider that inadequate capacity exists to serve proposed Project demand. No impact would occur and this issue is not discussed further in this Draft SEIR.

Require or result in the relocation or construction of new or expanded natural gas facilities, the construction or relocation of which could cause significant environmental effects.

As discussed in the Final SRGO Program EIR, construction of new natural gas facilities or expansion of existing natural gas facilities is prompted by increased customer demand, typically as a result of new land

development (such as development that transitions land use from a rural to more urban use) or population growth (see SRGO Final Program EIR: Section 3.19.4, p. 3.19-14).

The proposed Project area is currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat. The proposed Project involves the restoration and enhancement of tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) in the proposed Project area. Natural gas is not currently used and would not be used for proposed Project uses. As discussed previously, 25 plugged and abandoned natural gas wells are located in the proposed Project area. The California Department of Conservation, Geologic Energy Management Division (known as CalGEM) recommends against building structures directly over abandoned wells. The proposed Project would avoid construction directly over any of the abandoned wells located in the proposed Project area and would avoid construction within 25 feet of the natural gas wells. Therefore, no impact on natural gas utilities would occur during construction. Furthermore, as described in Section 3.2, "Issues Not Addressed Further," and Section 5.1, "Growth-Inducing Impacts," the proposed Project would not include new land development or induce substantial population growth that would include development of occupied structures that would result in any increase in demand for natural gas facilities.

Therefore, implementation of the proposed Project would not cause significant environmental effects because of relocation or construction of new or expanded natural gas facilities. No impact would occur and this issue is not discussed further in this Draft SEIR.

Require or result in the relocation or construction of new or expanded telecommunications facilities, the construction or relocation of which could cause significant environmental effects.

As discussed in the Final SRGO Program EIR, construction of new telecommunications facilities or expansion of existing telecommunications facilities is prompted by increased customer demand, typically resulting from new land development (such as development that transitions land use from a rural to more urban use) or population growth (see SRGO Final Program EIR: Section 3.19.4, p. 3.19-14). The proposed Project area is currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat. The proposed Project involves the restoration and enhancement of tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) in the proposed Project area. Telecommunications service is not currently provided and would not be provided for proposed Project uses, and no telecommunications infrastructure is located in the proposed Project area. Furthermore, as described in Section 3.2, "Issues Not Addressed Further," and Section 5.1, "Growth-Inducing Impacts," the proposed Project would not include new land development or induce substantial population growth that would include development of occupied structures that would result in any increase in demand for telecommunications facilities.

Therefore, implementation of the proposed Project would not cause significant environmental effects because of relocation or construction of new or expanded telecommunications facilities. No impact would occur, and this issue is not discussed further in this Draft SEIR.

Methodology and Assumptions

As discussed in Chapter 1, "Introduction," the proposed Project is a "restoration project" as defined in Section V of the SRGO (State Water Board 2022a: Section V, p. 2); therefore, this Draft SEIR supplements and incorporates by reference the Final SRGO Program EIR, including its appendices (State Water Board 2022b). As provided by CEQA Guidelines Section 15163(b), a supplement to an EIR needs to contain only the information necessary to make the previous EIR adequate for a project as revised. This means that only those project-specific activities that would introduce new significant environmental effects or cause a substantial increase in the severity of significant effects identified in the SRGO Program EIR need to be evaluated. Where existing information and analysis in the SRGO Program EIR are considered sufficient to evaluate the impacts of the proposed Project, no additional environmental review is provided.

As outlined further in Chapter 1, this Draft SEIR incorporates by reference the general protection measures and species protection measures outlined in the Final SRGO Program EIR Appendices E and F, which are intended to avoid and minimize impacts on sensitive resources. Consistent with the Final SRGO Program EIR, the impact analysis for each resource area assumes that applicable general protection measures and species protection measures would be implemented and enforced in the same way as mitigation measures, consistent with Section 15126.4 of the CEQA Guidelines, and that the proposed Project would be constructed and operated in compliance with relevant federal and State regulations and ordinances. Therefore, if the analysis has determined that incorporating one or more general protection measures and/or species protection measures into the proposed Project would reasonably mitigate an impact, then the impact conclusion is less than significant. If the analysis has determined that an impact would remain significant after the incorporation of appropriate general protection measures and species protection measures, then mitigation measures from the Final SRGO Program EIR and/or Project-specific mitigation measures have been recommended to further reduce the magnitude of the impact. All mitigation measures are from the Final SRGO Program EIR unless specifically stated otherwise.

The following impact analysis considers the potential impacts related to utilities and service systems, associated with implementation of the proposed Project. The impact analysis evaluates the effects of construction activities (short-term, temporary); the effects of constructed restoration elements (long-term, permanent); and the effects of operations, monitoring, and maintenance activities. The evaluation of impacts on utilities, service systems, and public services is based on a review of existing, publicly available literature and data, as well as a site-specific inventory of existing water conveyance and distribution infrastructure in the proposed Project area (Appendix K to this Draft SEIR, "Tide's End Multibenefit Restoration Project Inventory of Existing Water Conveyance and Distribution Infrastructure Report").

Impacts and Mitigation Measures

Table 3.13-2 summarizes the impact conclusions presented in this section for reference.

TABLE 3.13-2
SUMMARY OF IMPACT CONCLUSIONS—UTILITIES AND SERVICE SYSTEMS

Impact Statement	Construction Activities	Constructed Restoration Elements	Operations, Monitoring, and Maintenance Activities
3.13-1: Implementation of the proposed Project could require or result in the construction or relocation of new or expanded water or electric power facilities, the construction or relocation of which could cause significant environmental effects.	LTS	LTS	LTS
3.13-2: Implementation of the proposed Project could result in insufficient water supplies available to serve the proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years.	LTS	LTS	LTS
3.13-3: The proposed Project could be served by a landfill with insufficient permitted capacity to accommodate the Project's solid waste disposal needs and could fail to comply with federal, state, and local statutes and regulations related to solid waste.	LTS	LTS	LTS

Notes: LTS = less than significant
Source: Data compiled by Environmental Science Associates in 2025.

Impact 3.13-1: Implementation of the proposed Project could require or result in the construction or relocation of new or expanded water or electric power facilities, the construction or relocation of which could cause significant environmental effects.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including potential for construction activities to require or result in the construction or relocation of new or expanded stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects (see SRGO Final Program EIR: Section 3.19.4, pp. 3.19-14 and 3.19-15). The Final SRGO Program EIR describes that implementation of restoration projects could require the relocation of stormwater outfalls, utilities (e.g., electrical power, natural gas, or telecommunications facilities) or water conveyance facilities (e.g., canals and diversions), if those facilities are located near or in the footprint of the restoration project. The Final SRGO Program EIR stated that the types and range of potential environmental effects (e.g., cultural or tribal cultural resources, special-status species and habitat, erosion, water quality, air quality) that could be caused by the relocation of stormwater outfalls or other facilities resulting from construction activities were analyzed in other resource sections of Chapter 3 of the Final SRGO Program EIR. Because there were potentially significant impacts for some of these resource areas, the Final SRGO Program EIR found that this impact would be significant and unavoidable (see SRGO Final Program EIR: Section 3.19.4, p. 3.19-15). The Final SRGO Program EIR does not include any general protection measures or mitigation measures applicable to this impact.

As detailed in Chapter 2, "Project Description," the proposed Project would restore tidal wetland and associated floodplain habitat at the fluvial-tidal interface in the downstream end of the Yolo Bypass. A variety of physical infrastructure is present in the proposed Project area, including utilities infrastructure, and water control infrastructure that reflects the area's prior and current land uses. Consistent with the types of construction activities evaluated by the Final SRGO Program EIR, construction of the proposed Project would require the following: site preparation and mobilization/demobilization; use of staging

areas, access routes, and haul routes; grading and excavation; the installation of fish-passable culverts and weir boxes and fish-screened water control structures, such as pumps; removal and salvage and/or disposal of existing pumps, pipes, and other water control structures that are no longer needed under proposed Project conditions; reconfiguration and modification of irrigation and drainage features, such as canals, ditches, and berms; and installation of temporary cofferdams.

To manage wetland water levels and floodplain agricultural irrigation effectively, the proposed Project includes modifications to existing water conveyance facilities (e.g., reconfigurations of irrigation canals and drainage ditches). The modified water conveyance facilities would be located in the disturbance areas that have been evaluated in other resource sections in Chapter 3 of this Draft SEIR.

As stated previously, the types and the range of potential environmental effects associated with the construction or relocation of water conveyance and electrical power facilities that are part of the proposed Project are evaluated in the other technical resource sections in Chapter 3, as appropriate. Where potential significant environmental effects are identified, this Draft SEIR includes general protection measures, species protection measures, and mitigation measures to avoid and minimize impacts on environmental resources in the proposed Project area.

The proposed Project would result in the relocation of existing or construction of new water conveyance facilities. As described in Section 2.2.6, "Facilities Improvements," in Chapter 2, "Project Description," the proposed Project would improve an irrigation supply canal on the Main Drain of the Capitol Oil property that supplies water to the managed floodplain areas and to the proposed Project area's western neighbors (Jackson Rancheria, CWA, and Webb properties). Construction activities for the proposed Project would be short-term and temporary and would be accommodated by existing infrastructure or by temporary or portable infrastructure, such as diesel generators. In addition, the construction or relocation of new water or stormwater conveyance and electric power facilities would be located in disturbance areas that have been evaluated in other resource sections in Chapter 3 of this Draft SEIR. This impact would be ***less than significant.***

The effects of construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see SRGO Final Program EIR: Section 3.19.4, pp. 3.19-14 and 3.19-15). The Final SRGO Program EIR adequately addresses the potential for construction of the proposed Project to cause significant environmental effects because of construction or relocation of new or expanded water or electric power facilities.

Effects of Constructed Restoration Elements, and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO, including the potential for constructed facilities (natural and artificial infrastructure) and operations and maintenance of those facilities to require or result in the construction or relocation of water, or electric power facilities, the construction or relocation of which could cause significant environmental effects (see SRGO Final Program EIR: Section 3.19.4, pp. 3.19-14 and 3.19-15). The Final SRGO Program EIR determined that routine operations and maintenance activities for restoration projects would not require or result in the construction or relocation of these

facilities, and that therefore, impacts would be less than significant. The Final SRGO Program EIR does not include any general protection measures applicable to this impact.

As described in Chapter 2, "Project Description," once construction is complete, the restored tidal wetland habitats are expected to be largely self-maintaining after the initial period of vegetation establishment. Operations and maintenance required for the proposed Project include ongoing water management and agricultural practices related to flood-up and drawdown, irrigation, vegetation management (e.g., disking, mowing), grading, fertilizing, and planting. Some of these activities would require the use of heavy equipment, but these activities are similar to those occurring under existing conditions for the agricultural fields and managed waterfowl ponds currently located in the proposed Project area. Additional monitoring and maintenance activities would be consistent with those evaluated under the Final SRGO Program EIR, including activities such as the following: periodic dredging of sediment from tidal channels and irrigation and drainage canals; mechanical or chemical weed control and control of invasive species; manual vegetation management (e.g., replanting, watering, mowing); and maintenance, cleaning, and/or repair of berms, equipment, and infrastructure.

Post-construction monitoring for the proposed Project would lead to minor maintenance activities consistent with the types of activities evaluated in the Final SRGO Program EIR. These activities would not require or result in the construction or relocation of water or electric power facilities. The new electrical utilities would not expand the services of the existing electrical utilities. Operations and maintenance of these existing facilities would be consistent with existing ongoing practices. This impact would be ***less than significant.***

The effects of constructed restoration elements and operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see SRGO Final Program EIR: Section 3.19.4, pp. 3.19-14 and 3.19-15). The Final SRGO Program EIR adequately addresses post-construction impacts of the proposed Project related to the construction or relocation of new or expanded water or electrical power facilities.

Impact 3.13-2: Implementation of the proposed Project could result in insufficient water supplies available to serve the proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years.

Effects of Construction Activities, Constructed Restoration Elements, and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote. These impacts include the potential for impacts of construction activities, constructed facilities (natural and artificial infrastructure), and operations and maintenance of those facilities to result in insufficient water supplies available to serve the restoration projects and reasonably foreseeable development during normal, dry, and multiple dry years. The Final SRGO Program EIR describes that implementation of the restoration projects may require temporary and short-term water demand for construction, as well as limited water supply for maintenance (e.g., irrigation water may be needed for initial establishment of native plant revegetation; see SRGO Final Program EIR: Section 3.19.4, pp. 3.19-15 and 3.19-16).

Constructed facilities may affect water supply availability, such as if water levels are reduced near diversion intakes. However, constructed facilities would need to comply with relevant federal, State, and local regulations and ordinances. The Final SRGO Program EIR found that construction and operations and maintenance activities would not result in an increase in water use or demand, nor would they result in insufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years; impacts were determined to be less than significant. The Final SRGO Program EIR does not include any general protection measures applicable to this impact (see SRGO Final Program EIR: Section 3.19.4, p. 3.19-16).

As described in Chapter 2, "Project Description," the proposed Project was developed to restore and enhance tidal wetland, floodplain habitat, and managed floodplain habitat (including managed wetlands for waterfowl, floodplain agriculture, and associated infrastructure) across the 2,212-acre proposed Project area currently operated as agricultural lands, upland habitat (for pheasant hunting), and managed waterfowl habitat.

During construction, construction-related water use (e.g., dust control) would be temporary and short-term and would be provided by an existing non-municipal system (e.g., groundwater wells or water trucks). Once construction is complete, the restored tidal wetland habitats are expected to be largely self-maintaining after the initial period of vegetation establishment. Post-construction, irrigation water may be needed to finalize and stabilize habitat. However, the level of irrigation would be similar to existing conditions and would not create additional water demand over current conditions.

Furthermore, the proposed Project would transition the conservation easement areas from a managed water delivery and drainage system, relying on pumps and constructed berms, to a naturalized system that emulates historic tidal wetlands and associated floodplain conditions. This naturalized system would support ecological processes that benefit waterfowl and many other species in the aquatic ecosystem and would decrease the demand for pumped water.

In addition, the proposed Project involves facilities improvements to irrigation and drainage ditches and installation of fish-passable structures such as culverts and modified weir boxes. Operations, monitoring, and maintenance of these facilities would be similar to existing conditions and would not create a substantial additional water demand. Finally, implementation of the proposed Project would not change water use at the clubhouse.

Therefore, implementation of the proposed Project would not result in insufficient water supplies available to serve the proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years. This impact would be ***less than significant***.

In addition, implementation of the proposed Project would benefit neighboring agricultural production by improving the irrigation and drainage systems that serve agricultural properties in the vicinity of the proposed Project area. The Lucky Five North property receives its irrigation supply from the clubhouse pump. Agriculture on that property would benefit from the rehabilitation of the clubhouse pump and the installation of a new fish screen. Agriculture on the nearby Jackson Rancheria, CWA, and Webb properties would benefit from the increased conveyance along the Main Drain canal. The Jackson Rancheria and CWA properties currently withdraw irrigation water from the Main Drain canal; however, the limited capacity of the existing canal limits the amount of water available for these properties during periods of

peak irrigation demand. The Webb property currently does not receive water from the Main Drain because of inadequate canal capacity, and the improvements to the Main Drain would allow for better use of existing water rights which would increase irrigation supply reliability to that property.

Construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see SRGO Final Program EIR: Section 3.19.4, pp. 3.19-15 and 3.19-16). The Final SRGO Program EIR adequately addresses the potential for the proposed Project to result in insufficient water supplies to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years.

Impact 3.13-3: The proposed Project could be served by a landfill with insufficient permitted capacity to accommodate the Project's solid waste disposal needs and could fail to comply with federal, state, and local statutes and regulations related to solid waste.

Effects of Construction Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects that the SRGO would encourage and promote, including the potential for construction activities to generate an amount of solid waste in excess of local landfill capacity or to result in non-compliance with federal, State, and local regulations related to solid waste (see SRGO Final Program EIR: Section 3.19.4, p. 3.19-16).

The Final SRGO Program EIR describes that the magnitude of the increase in solid waste generation would depend on the restoration project itself; the proposed Project's ability to recycle, reuse, or dispose of materials on-site; and the local landfill. Materials generated during construction could be hauled off-site to landfills (e.g., building demolition waste), delivered to recycling facilities (e.g., concrete), sold (e.g., organic material to cogeneration facilities), or reused on-site or nearby. Most projects permitted under the SRGO that would involve earthmoving activities would not generate large amounts of construction waste that would require disposal at a landfill (e.g., organic materials from borrow sites and restoration construction sites, excavated material, and soil not suitable for earthen structures). The Final SRGO Program EIR determined that construction waste is unlikely to cause the permitted capacity of local landfills to be exceeded or to result in non-compliance with federal, State, and local regulations related to solid waste. The impacts would be less than significant. The Final SRGO Program EIR does not include any general protection measures applicable to this impact (see SRGO Final Program EIR: Section 3.19.4, p. 3.19-16).

Construction of the restoration elements would have a goal to balance cut and fill on-site, minimizing the amount of material that would potentially be considered waste. In addition, there would be no change in the amount of solid waste associated with the existing clubhouse use. However, construction of the proposed Project would generate solid waste. As discussed in Section 2.3.3, "Construction Site Preparation," the proposed Project would require the demolition of structures and facilities throughout the proposed Project area. In total, it is likely that 51 outflow/spill structures, 33 turnout structures, 34 culverts, three weir boxes, seven heading structures, and four lift pumps would be demolished. Demolished equipment and facilities would be sorted for reuse or disposal. Plastic, metal, and associated debris would be hauled to appropriate off-site waste disposal facilities (see Section 3.19.2, "Environmental Setting"). Rock, inert concrete

debris, and any outwash collected by silt fencing or other stormwater pollution prevention plan best management practices would be either buried on-site or hauled to appropriate off-site waste disposal facilities. The amount of solid waste generated could be accommodated by the local landfill (Yolo County Central Landfill), which as of 2022 had 67.5 percent capacity remaining. Therefore, construction waste is unlikely to cause the permitted capacity of local landfills to be exceeded and would be in compliance with federal, state, and local regulations related to solid waste. This impact would be ***less than significant***.

Construction activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see SRGO Final Program EIR: Section 3.19.4, p. 3.19-16). The Final SRGO Program EIR adequately addresses the potential for construction of the proposed Project to generate an amount of solid waste in excess of local landfill capacity and result in non-compliance with federal, State, and local regulations related to solid waste.

Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

The Final SRGO Program EIR evaluated at a programmatic level the potential impacts of the types of restoration projects permitted under the SRGO, including the potential for constructed facilities (natural and artificial infrastructure) and operations and maintenance of those facilities to generate an amount of solid waste in excess of local landfill capacity or to result in non-compliance with federal, State, and local regulations related to solid waste (see SRGO Final Program EIR: Section 3.19.4, pp. 3.19-16 and 3.19-17). The Final SRGO Program EIR determined that the amount of solid waste likely to be generated by these uses would be very small relative to landfill capacity. The Final SRGO Program EIR found that the effects of constructed facilities and operations and maintenance of those facilities would be less than significant. The Final SRGO Program EIR does not include any general protection measures applicable to this impact.

As described in Chapter 2, “Project Description,” once construction is complete, the restored tidal wetland habitats are expected to be largely self-maintaining after the initial period of vegetation establishment. Post-construction monitoring for the proposed Project would lead to minor maintenance activities consistent with the types of activities evaluated in the Final SRGO Program EIR that could generate organic matter and debris (e.g., vegetation blocking tidal channels) and sediment (e.g., periodically dredged to maintain the tidal channels and irrigation and drainage canals). These materials could be used to reclaim borrow areas and temporarily disturbed sites or could be provided to local farmers for incorporation into their land to help improve soil quality. The maintenance of the on-site septic system servicing the clubhouse would not change under the proposed Project; thus, the amount of inert waste requiring disposal at a landfill would not change. The amount of solid waste needing to be disposed of at the local landfill, if any, would be very small and could be accommodated by the Yolo County Landfill, which as of 2022 had 67.5 percent capacity remaining. Therefore, post-construction waste is unlikely to cause the permitted capacity of local landfills to be exceeded, and the proposed Project would be in compliance with federal, state, and local regulations related to solid waste. This impact would be less than significant.

The effects of constructed restoration elements and operations, monitoring, and maintenance activities associated with the proposed Project are consistent with and would not result in new or more severe potentially significant impacts than those identified in the Final SRGO Program EIR (see SRGO Final Program EIR: Section 3.19.4, pp. 3.19-16 and 3.19-17). The Final SRGO Program EIR adequately

addresses post-construction impacts of the proposed Project on the generation of solid waste in excess of local landfill capacity and the potential for non-compliance with federal, State, and local regulations related to solid waste.

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CHAPTER 4
Cumulative Impacts

4.1 Introduction

As discussed in Chapter 1, the proposed Project is a "Restoration Project" as defined in Section V of the SRGO (State Water Board 2022a); therefore, this SEIR supplements and incorporates by reference the Final SRGO Program EIR, including its appendices (State Water Board 2022b). As provided by CEQA Guidelines Section 15163(b), a supplement to an EIR need contain only the information necessary to make the previous EIR adequate for the project as revised.

Chapter 4, "Cumulative Impacts," of the Final SRGO Program EIR presented an analysis of the potential cumulative impacts of restoration projects that would be permitted under the SRGO. The cumulative impact assessment included a representative sample, or range, of reasonably foreseeable and probable programs and projects located within the nine regional water board jurisdictions, defined as the geographic scope of the effects of the SRGO. The study area for the SRGO spans all nine regional water board jurisdictions and all counties and cities in California, and thus the cumulative analysis was broad and general. As such, this Draft SEIR supplements the Final SRGO Program EIR by providing project-level analysis of the potential cumulative impacts of the proposed Project.

4.2 Cumulative Context and Approach

4.2.1 Approach to Cumulative Analysis

CEQA Guidelines Section 15130 requires that an EIR discuss cumulative impacts of a project and determine whether the project's incremental effect is "cumulatively considerable." The definition of cumulatively considerable is provided in Section 15065(a)(3): "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

According to Section 15130(b) of the CEQA Guidelines:

> *[t]he discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.*

Therefore, for purposes of this Draft SEIR, the proposed Project would have a significant cumulative effect if either of the following would occur:

- The cumulative effects of other past, current, and probable future projects without the proposed Project are not significant and the proposed Project's incremental impact is substantial enough, when added to the cumulative effects, to result in a significant impact.
- The cumulative effects of other past, current, and probable future projects without the proposed Project are already significant and the proposed Project would contribute measurably to the effect. The standards used herein to determine measurability are that the impact either must be noticeable or must exceed an established threshold of significance.

In addition, according to Section 15130(a)(1) of the CEQA Guidelines, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. An EIR should not discuss impacts which do not result in part from the projects evaluated in the EIR." The CEQA Guidelines allow for the use of two methods to determine the scope of related projects for the cumulative impact analysis (CEQA Guidelines Section 15130[b][1]):

- **List Method:** A list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the agency.
- **Regional Growth Projections Method:** A summary of projections contained in an adopted general plan or related planning document that is designed to evaluate regional or areawide conditions.

The cumulative analysis in this Draft SEIR uses the list method, which was developed using the criteria discussed in Section 4.2.2.

4.2.2 Criteria for Identifying Related Cumulative Projects

Cumulative projects were considered for inclusion in the cumulative impact analysis based on the following criteria:

(1) The cumulative project could result in similar impacts as the proposed Project and would affect a portion of the physical environment that could also be affected by implementation of the proposed Project.

(2) The cumulative project has been constructed and/or sufficiently detailed information about the project is available to allow for meaningful analysis without undue speculation.

(3) The cumulative project meets one of the following criteria:

  – The cumulative project is actively under development (i.e., an identified sponsor is actively pursuing project development or construction).
  – An NOP or a notice of intent has been released and/or environmental clearance documentation has been completed, or substantial progress has been made toward completion.
  – The cumulative project is "reasonably foreseeable" given other considerations, such as site suitability, inclusion in planning documents, funding availability and economic viability, and/or regulatory limitations (e.g., the project has required regulatory permits).

(4) The cumulative project is not considered part of proposed Project activities.

4.2.3 Cumulative Projects

Table 4-1 lists the cumulative projects determined to meet the four criteria listed in Section 4.2.2 for past, current, and probable future projects that were selected for inclusion in the cumulative impact analysis.

TABLE 4-1
LIST OF CUMULATIVE PROJECTS

No.	Project Name	Type	Location	Lead Agency/ Proponent	Status
1	Fremont Weir Adult Fish Passage Modification Project	Fish Passage Improvement	Yolo Bypass, Yolo County, SVAB, YSAQMD	DWR and Reclamation	Complete
2	Lower Elkhorn Basin Levee Setback Project	Flood Control	Yolo Bypass, Yolo County, SVAB, YSAQMD	DWR	Complete
3	Lower Yolo Ranch Restoration Project	Habitat Restoration	Yolo Bypass, Yolo County, SVAB, YSAQMD	DWR	Complete
4	Sacramento Bypass Levee Setback	Flood Control	Yolo Bypass, Yolo County, SVAB, YSAQMD	DWR, USACE, CVFPB	Under Construction
5	Sacramento Weir Widening	Infrastructure Repair/Enhancement	Yolo Bypass, Yolo County, SVAB, YSAQMD	USACE	Under Construction
6	Yolo Bypass Wildlife Area Habitat and Drainage Improvement Project	Habitat Restoration, Infrastructure Repair/ Enhancement	Delta, Yolo Bypass, Yolo County, SVAB, YSAQMD	CDFW	Complete
7	Lookout Slough Tidal Habitat Restoration and Flood Improvement Project	Habitat Restoration, Flood Control	Delta, Yolo Bypass, Yolo and Solano counties, SVAB, YSAQMD	DWR	Complete
8	Prospect Island Tidal Habitat Restoration Project	Habitat Restoration	Delta, Yolo Bypass, Yolo County, SVAB, YSAQMD	DWR	Under Construction
9	Yolo Bypass Salmonid Habitat and Fish Passage Project (Big Notch Project)	Habitat Restoration, Natural Resource Management	Yolo Bypass, Yolo County, SVAB, YSAQMD	DWR and Reclamation	Complete, but not in operation
10	Conaway Ranch Salmonid Project	Habitat Restoration	Yolo Bypass, Yolo County, SVAB, YSAQMD	Reclamation District 2035	Planning/Design
11	Deep Water Ship Channel Improvements	Infrastructure Repair/ Enhancement	Delta, Yolo Bypass, Yolo County, SVAB, YSAQMD	Port of West Sacramento	Planning/Design
12	Elk Slough Fish Passage and Flood Improvement Project	Fish Passage Improvement; Habitat Restoration	Delta, Yolo County, SVAB, YSAQMD	Reclamation District 999	Planning/Design
13	Fremont Weir Expansion—Option B	Infrastructure Repair/ Enhancement	Yolo Bypass, Yolo County, SVAB, YSAQMD	DWR and SAFCA	Planning/Design
14	Lisbon Weir Modification Project	Agriculture; Infrastructure Repair/ Enhancement; Natural Resource Management	Delta, Yolo Bypass, Yolo County, SVAB, YSAQMD	DWR and/or Reclamation	Planning/Design
15	Little Egbert Multi-Benefit Project (Alt. 17)	Habitat Restoration and Flood Control	Delta, Yolo Bypass, Solano County, SVAB, YSAQMD	DWR	Planning/Design

No.	Project Name	Type	Location	Lead Agency/ Proponent	Status
16	Lower Cache Creek Multi-Benefit Project	Flood Control, Habitat Restoration	Delta, Yolo Bypass, City of Woodland, Yolo County, SVAB, YSAQMD	USACE	Planning/Design
17	Nigiri-Knaggs Ranch	Flood Control, Habitat Restoration	Yolo Bypass, Yolo County, SVAB, YSAQMD	TBD	Planning/Design
18	North Delta Fish Conservation Bank	Habitat Restoration	Delta, Yolo Bypass, Solano County, SVAB, YSAQMD	Reclamation District 2093	Planning/Design
19	Rio Vista Small Communities Flood Risk Reduction Project	Infrastructure Repair/ Enhancement; Flood Control; Agriculture	Delta, Rio Vista, Solano County, SVAB, YSAQMD	DWR	Planning/Design
20	Swanston Ranch Master Plan	Flood Control; Agriculture; Habitat Restoration	Delta, Yolo Bypass, Yolo County, SVAB, YSAQMD	TBD	Planning/Design
21	Tule Canal Corridor Multi-Benefit Enhancement Project	Habitat Restoration	Delta, Yolo Bypass, Yolo County, SVAB, YSAQMD	Reclamation District 108	Planning/Design
22	Upper Elkhorn Expansion—Option B	Flood Control	Yolo Bypass, Yolo County, SVAB, YSAQMD	DWR and SAFCA	Planning/Design

Notes: CDFW = California Department of Fish and Wildlife; CVFPB = Central Valley Flood Protection Board; Delta = Sacramento–San Joaquin Delta; DWR = California Department of Water Resources; Reclamation = U.S. Bureau of Reclamation; SAFCA = Sacramento Area Flood Control Agency; SVAB = Sacramento Valley Air Basin; TBD = lead agency to be determined; USACE = U.S. Army Corps of Engineers; YSAQMD = Yolo Solano Quality Management District

Source: Data compiled by Environmental Science Associates in 2025

As discussed throughout Chapter 3, the most significant potential impacts resulting from the proposed Project—those requiring the application of general protection measures, species protection measures, or mitigation measures—are related to construction activities (e.g., release of criteria air pollutants or water contaminants, encountering of unidentified contaminated soil, and/or disturbance of cultural or Tribal cultural resources as a result of earthmoving and excavation); conversion of land use types (e.g., conversion of agricultural lands to tidal wetland and/or conversion of terrestrial wildlife habitat to aquatic habitat); and changes to flood conveyance (e.g., changes to water surface levels upstream). Therefore, when compiling the list of cumulative projects, consideration was given to other projects that would result in impacts similar to those of the proposed Project due to project type (regional habitat restoration, flood management, and/or drainage improvement projects) in the same geographic area (the Yolo Bypass region).

4.2.4 Geographic Scope

The geographic area that could be affected by implementation of the proposed Project in combination with other projects varies depending on the environmental resource area being considered. The impact analysis presented in Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures," considers different geographic areas as appropriate for each resource area. Many resource area impacts occur within the immediate vicinity of a project (i.e., adjacent to or within one-half mile of a project site), whereas other impacts can affect a broader geographic scope such as the local watershed (e.g., stormwater runoff) or regional air basin (e.g., criteria air pollutants). **Table 4-2** presents the geographic scope associated with each resource area. As noted in Table 4-2, information about the regional environmental setting related to each resource area is presented in the environmental setting of each resource section of Chapter 3, "Environmental Settings, Impacts, and Mitigation Measures."

TABLE 4-2
GEOGRAPHIC SCOPE OF THE CUMULATIVE IMPACT ANALYSIS

Resource Area	Geographic Area	Description of Geographic Area (cross-reference to section in this Draft SEIR)
Agriculture	Yolo Bypass and proposed Project area	Section 3.4.2, "Environmental Setting"
Air Quality and Greenhouse Gas Emissions	Sacramento Valley Air Basin and Yolo-Solano Air Quality Management District	Section 3.5.2, "Environmental Setting"
Biological Resources – Terrestrial	Delta, Yolo Bypass, and proposed Project area	Section 3.6.2, "Environmental Setting"
Biological Resources – Aquatic	Delta, Yolo Bypass, and proposed Project area	Section 3.7.2, "Environmental Setting"
Cultural Resources	Yolo Bypass and proposed Project area	Section 3.8.2, "Environmental Setting"
Hazards and Hazardous Materials	Proposed Project area	Section 3.9.2, "Environmental Setting"
Hydrology and Water Quality	Delta, Yolo Bypass, and proposed Project area	Section 3.10.2, "Environmental Setting"
Recreation	Yolo Bypass and proposed Project area	Section 3.11.2, "Environmental Setting"
Tribal Cultural Resources	Yolo Bypass and proposed Project area	Section 3.12.2, "Environmental Setting"
Utilities and Service Systems	Proposed Project area	Section 3.13.2, "Environmental Setting"

Notes: Delta = Sacramento–San Joaquin Delta; Draft SEIR = draft supplemental environmental impact report
Source: Data compiled by Environmental Science Associates in 2025

4.3 Cumulative Impact Analysis

The cumulative impact analysis is presented by resource and in the same order as the technical resource sections in Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures." Consistent with the analysis of each technical resource topic in Chapter 3, the cumulative impact analysis considers the potential effects of construction activities (short-term, temporary); constructed restoration elements (long-term, permanent); and operations, monitoring, and maintenance activities. In addition, the criteria applied to evaluate the significance of cumulative effects are the same as those used to evaluate the impacts of the proposed Project.

General protection measures and species protection measures noted in the cumulative analysis for each resource topic are noted below and the full text is included in Appendix A to this Draft SEIR, "General Protection Measures and Species Protection Measures Applicable to the Proposed Project." The text of mitigation measures is presented in the relevant technical resource sections of Chapter 3.

To determine the significance of the proposed Project's cumulative impacts, a three-step process was followed:

- First, the extent of the cumulative impacts without the proposed Project was evaluated to determine whether a significant cumulative impact on a resource would exist in the future. To do so, the combined effects of past, present, and probable future projects listed in Table 4-1 were evaluated to determine whether there would be a significant cumulative impact.
- Second, a determination was made regarding whether the incremental contribution of the proposed Project to any significant cumulative impact would be cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed

in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (CEQA Guidelines Section 15065[a][3]).

- Third, a determination was made as to whether mitigation measures identified in this Draft SEIR would reduce the contribution of the proposed Project to the cumulative impact to a less-than-considerable level. If not, then the cumulative impact would remain significant and unavoidable.

4.3.1 Agriculture

Comments related to cumulative impacts on agricultural land as a result of the proposed Project were received in response to the NOP. See Appendix B to this Draft SEIR, "Tide's End Multibenefit Restoration Project Notice of Preparation and Comment Letters," for NOP comment letters.

As presented in Table 4-2, the geographic scope for agricultural resources is other projects that occur in the Yolo Bypass and proposed Project area (see Section 3.4, "Agriculture," for information about the environmental setting related to agricultural resources in the Yolo Bypass and proposed Project area). As described in Section 3.4, approximately 75 percent or 44,000 acres of the 59,000-acre Yolo Bypass is in agricultural production. Implementation of the cumulative projects listed in Table 4-1 would involve construction activities, introduction of new physical features, and operations and maintenance activities in the Yolo Bypass and proposed Project area. Depending on the location and nature of the cumulative projects, these actions could convert Special Designation Farmland (Prime Farmland, Farmland of Statewide Importance, and Unique Farmland) to nonagricultural use, conflict with a Williamson Act contract, or create a conflict with zoning for agricultural use. For example, the following cumulative projects resulted in the conversion of Special Designated Farmland: Lower Elkhorn Basin Levee Setback Project (conversion of approximately 494 acres of Prime and Unique Farmland [GEI Consultants 2018]), Lower Yolo Ranch Restoration Project (conversion of approximately 270 acres of Unique Farmland [SFCWA 2013]), Sacramento Weir Widening Project (conversion of approximately 375 acres of Prime Farmland [GEI Consultants 2020]) and Lookout Slough Tidal Habitat Restoration and Flood Improvement Project (conversion of approximately 1,460 acres of Prime Farmland [WRA 2019]). These effects would be short-term and temporary (construction-related activities) as well as long-term and permanent (operations, monitoring, and maintenance of new facilities), and the cumulative impact would be significant.

The following subsections present an analysis of whether the proposed Project's construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities could result in a contribution to this cumulative significant impact, and if so, whether that contribution would be cumulatively considerable.

Cumulative Effects of Construction Activities

Cumulative projects presented in Table 4-1 include activities associated with construction, such as development of access routes and equipment staging areas, materials stockpiling, vegetation removal, temporary disruption of irrigation, and earthmoving activities that create dust that could result in temporary conversion of Special Designation Farmland if they occur on such lands. Construction of the proposed Project would involve similar construction activities that would result in the temporary conversion of Special Designation Farmland. Even though the conversion would be temporary and the

land would be returned to agricultural use after construction is completed, the proposed Project would still make a considerable contribution to this cumulative impact.

To reduce the proposed Project's contribution to this significant cumulative impact, the following general protection measures from the Final SRGO Program EIR would be implemented: GPM-8: Prevent Spread of Invasive Species, GPM-10: Equipment Maintenance and Materials Storage, GPM-11: Material Disposal, GPM-12: Fugitive Dust Reduction, GPM-15: Revegetate Disturbed Areas, VHDR-1: Avoidance of Vegetation Disturbance, VHDR-2: Native and Invasive Vegetation Removal Materials and Methods, VHDR-3: Revegetation Materials and Methods, VHDR-4: Revegetation Erosion Control Materials and Methods, VHDR-5: Revegetation Monitoring and Reporting, and VHDR-6: General Herbicide Use (see Final SRGO Program EIR: Section 3.3.4, pp. 3.3-15 and 3.3-16). Implementation of these general protection measures would reduce the proposed Project's contribution to less than significant because they would reduce the effects of construction activities by preventing the spread of invasive exotic plants, properly maintaining equipment and storing materials, properly disposing of materials, reducing fugitive dust emissions, revegetating disturbed areas, and reducing impacts associated with vegetation/habitat disturbance, revegetation, and herbicide use. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of the general protection measures would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

Cumulative Effects of Constructed Restoration Elements, and Operations, Monitoring, and Maintenance Activities

Cumulative projects presented in Table 4-1 would introduce new physical features and involve operations and maintenance activities that would result in the permanent conversion of Special Designation Farmland to nonagricultural use (see above). The proposed Project would include landscape modifications, new infrastructure, and operational actions to create tidal wetland and associated floodplain habitat and managed wetlands for waterfowl, which would result in the permanent conversion of 481.4 acres of Special Designation Farmland to a nonagricultural use. As a result, the proposed Project would make a considerable contribution to the permanent cumulative conversion of Special Designation Farmland.

To reduce the proposed Project's contribution to this significant cumulative impact, Final SRGO Program EIR ***Mitigation Measure AG-1*** would be implemented. As required by Mitigation Measure AG-1, of the approximately 1,153 acres of Unique Farmland in the proposed Project area, approximately 671.6 acres of Unique Farmland and 38.3 acres of Grazing Land (which are not currently under an agricultural conservation easement) would be retained under the proposed Project as Unique Farmland and would be placed under agricultural conservation easement in perpetuity. This would satisfy more than the 1:1 mitigation ratio required by Mitigation Measure AG-1 (see Table 3.4-3 in Section 3.4, "Agriculture," for the approximate mitigation for Unique Farmland in the proposed Project area).

Furthermore, proposed infrastructure improvements including the removal of tide gates and widening and deepening the Main Drain would allow the Main Drain to receive enhanced flows from the Toe Drain and provide continuous water availability to neighboring agricultural properties. Specifically, proposed improvements would expand water accessibility to neighboring lands to the west and facilitate access to existing water diversions for both irrigation and drainage. The proposed improvements would also allow

lands that are not currently under cultivation to be farmed, potentially increasing the amount of actively farmed land in the Yolo Bypass. Increased water availability would also allow lands that are currently being farmed to diversify their crops and improve crop production. For example, the 881.7-acre Jackson Rancheria property, west of the proposed Project area, is designated as Grazing Land, of which approximately 160 acres is currently under rice cultivation and 721.7 acres is grazed (cattle). The Project's proposed improvements would lower the cost of irrigation and improve water reliability across the entire 881.7 acres and allow a shift from grazing to rice production (G. Williams, pers. comm., 2025; Letter from land manager). This would enable 721.7 acres of the property to qualify as other Specially Designated Farmland, such as Unique or Prime Farmland, instead of Grazing Land as defined by the California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program (DOC, 2025). In addition, the Webb property, which includes 37.05 acres of Prime Farmland and 350.42 acres of Unique Farmland currently in irrigated pasture, could continue as irrigated pasture, and potentially improve the existing yield, or alternatively allow potential irrigated crop production instead of pasture due to improved water reliability. In addition, the lowering the cost of agricultural water usage through the proposed improvements removes a significant barrier to agriculture in the Delta and directly benefits the 881-acres of Jackson Rancheria and 410-acre Webb property.

The proposed drainage improvements would increase the ability of neighboring lands to drain, including the Jackson Rancheria and Webb properties. As a result, the proposed Project would not only conserve in the proposed Project site's 671.6 acres of Unique Farmland and 38.3 acres of Grazing Land but also provide further agricultural opportunities and enhance agricultural production on approximately 1,291 acres of grazing land and Special Designated Farmland in the Yolo Bypass.

Portions of the proposed Project area (the Capitol Oil, Yolo Basin, Kleary, and Lucky Five South properties) are also under Williamson Act contracts. To reduce conflicts with Williamson Act contracts, the proposed Project would implement Final SRGO Program EIR ***Mitigation Measure AG-2,*** which requires that restoration projects be designed to minimize conflicts and inconsistencies with land protected by such contracts. As discussed under Impact 3.4.2 in Chapter 3.4, "Agriculture," the tidal wetland and floodplain restoration that would occur under the proposed Project is considered an "open space" use, which is compatible with the terms of the contracts and the Williamson Act itself; therefore, the proposed Project would not conflict with or result in an inconsistency with allowed uses under a Williamson Act contract, and the proposed Project's contribution to this significant cumulative impact would not be considerable. In addition, because the proposed Project also would include installation of a subsurface concrete reinforced sump basin associated with the northernmost pump station, GEO-6 would be implemented.

Once the proposed Project is constructed, the long-term operations, monitoring, and maintenance of the proposed Project would be similar to existing activities within the proposed Project area and would not lead to additional changes in the environment that would cause indirect conversion of Special Designation Farmland or conflicts with a Williamson Act contract.

Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of ***Mitigation Measure AG-1*** and ***Mitigation Measure AG-2*** would reduce the proposed Project's impact to less than significant, and the

proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.3.2 Air Quality and Greenhouse Gas Emissions

As presented in Table 4-2, the geographic scope for cumulative impacts related to air quality and GHGs is the SVAB and the YSAQMD. All cumulative projects included in Table 4-1 are located in the SVAB and the YSAQMD. The jurisdiction of the SVAB covers Yolo County and portions of Solano County and the jurisdiction of the YSAQMD covers all of Yolo County and the portions of Solano County under the jurisdiction of the SVAB (see Section 3.5, "Air Quality and Greenhouse Gases," for information about the environmental setting related to air quality and GHGs in the SVAB and the YSAQMD).

Implementation of the cumulative projects listed in Table 4-1 would involve construction activities, introduction of new physical features, and operations and maintenance activities in the SVAB and YSAQMD. Depending on the location and nature of the projects, these actions could increase criteria pollutants, generate GHG emissions, and create other emissions (such as those leading to odors); expose sensitive receptors to substantial pollutant concentrations; and conflict with or obstruct implementation of an applicable air quality plan.[1] For example, cumulative projects listed in Table 4-1 (such as the Sacramento Weir Widening Project [GEI Consultants 2020], Lookout Slough Tidal Habitat Restoration and Flood Improvement Project [WRA 2019], and Prospect Island Tidal Habitat Restoration Project [CDFW 2019]) would involve the construction of features or structures that would likely require the use of diesel-powered equipment and vehicles, potentially resulting in a short- or long-term cumulatively considerable net increase in pollutants in the SVAB and the YSAQMD. Similarly, project operations could generate stationary-source pollutant emissions (e.g., from electrical generators), and some maintenance activities could involve substantial use of heavy equipment or other emissions-intensive activities. These effects would be short-term and temporary (construction-related activities) as well as long-term and permanent (operations, monitoring, and maintenance of new facilities), and the cumulative impact would be significant.

The following subsections present an analysis of whether the proposed Project's construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities could result in a contribution to this cumulative significant impact, and if so, whether that contribution would be cumulatively considerable.

Cumulative Effects of Construction Activities

Cumulative projects presented in Table 4-1 include activities associated with construction, such as installation of access routes and equipment staging areas, materials stockpiling, vegetation removal, use of heavy equipment and earthmoving activities that create dust, temporary emissions of criteria pollutants, and odors. Construction of the proposed Project would involve similar construction activities that would contribute to cumulative temporary emissions of dust and criteria pollutants. However, proposed Project construction emissions would not exceed thresholds of significance for criteria pollutants (see Tables 3.5-

[1] As presented in Section 3.5, Air Quality and Greenhouse Gases, the applicable air quality control plans are the *Sacramento Regional 2015 NAAQS 8-Hour Ozone Attainment & Reasonable Further Progress Plan* (YSAQMD 2023) for ozone attainment planning and the *$PM_{2.5}$ Implementation/Maintenance Plan and Redesignation Request* (YSAQMD 2013) for fine particulate matter ($PM_{2.5}$) planning.

6 and 3.5-7 in Section 3.5, "Air Quality and Greenhouse Gas Emissions"). Therefore, construction of the proposed Project would not conflict with or obstruct implementation of the applicable air quality control plans (YSAQMD 2013, 2023). Any odor emissions associated with proposed Project construction activities would be intermittent and would dissipate from the source rapidly over a short distance. The nearest receptor is located 0.7 miles away, and the land use does not fall under any category that is identified as an odor source.

To further reduce the proposed Project's contribution to this significant cumulative impact, the following general protection measures from the Final SRGO Program EIR would be implemented: GPM-6: Work Area and Speed Limits, and GPM-12: Fugitive Dust Reduction. Implementation of these general protection measures would reduce the proposed Project's contribution to less than significant because they would reduce emissions associated with construction activities by limiting speed limits in work areas and reducing fugitive dust. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of the general protection measures would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

Cumulative Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

Cumulative projects presented in Table 4-1 would introduce new physical features and involve operations and maintenance activities that would result in emissions of criteria pollutants, dust, and odors. The proposed Project would include landscape modifications, new infrastructure, and operational actions to create tidal wetland and associated floodplain habitat and managed wetlands for waterfowl. Once restoration elements are completed, the operations, monitoring, and maintenance activities would generally be similar to existing operations, monitoring, and maintenance activities. As described in Section 3.5, activities would be minimal when compared to the proposed Project's construction phase; therefore, operational emissions would be less than construction emissions, which are already below the YSAQMD threshold. Therefore, emissions associated with proposed Project operations and maintenance activities are not anticipated to violate an air quality standard, contribute substantially to an air quality violation, or result in a short-term cumulatively considerable net increase of nonattainment pollutants.

In addition, implementation of GPM-6 and GPM-12, which are designed to reduce the effects of construction activities, would reduce the effects of any ground-disturbing activities required for operations, monitoring, and maintenance activities for the proposed Project. Implementation of these general protection measures would reduce the proposed Project's contribution to less than significant because these measures would reduce fugitive dust emissions. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of the general protection measures would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.3.3 Biological Resources – Terrestrial

As presented in Table 4-2, the geographic scope for cumulative impacts related to terrestrial biological resources is the Yolo Bypass and the proposed Project area (see Section 3.6, "Biological Resources – Terrestrial," for information about the environmental setting related to terrestrial biological resources in the Yolo Bypass and proposed Project area).

Implementation of the cumulative projects listed in Table 4-1 would involve construction activities, introduction of new physical features, and operations and maintenance activities in the Yolo Bypass and proposed Project area. Several special-status wildlife species have the potential to occur in the proposed Project area including GGS and WPT. Some species are not expected to occupy the proposed Project area (e.g., western burrowing owl), while habitat may be present for other species (e.g., tricolored blackbird, Swainson's hawk). Depending on the location and nature of the projects, implementation of cumulative projects could adversely affect the same terrestrial biological resources. These cumulative projects include, for example, the Lower Elkhorn Basin Levee Setback Project (temporary impacts on 213.8 acres and permanent impacts on 25.9 acres of GGS and WPT habitat, temporary impacts on 1,117.5 acres and permanent impacts on 596 acres of Swainson's hawk habitat [GEI Consultants 2018]); Lookout Slough Tidal Habitat Restoration and Flood Improvement Project (permanent impacts on 333 acres of GGS habitat, temporary impacts on 151 acres of WPT habitat, and permanent impacts on 1,850 acres of Swainson's hawk habitat [WRA 2019]); and Lower Yolo Ranch Restoration Project (permanent impacts on 1,480 acres of GGS and WPT habitat [SFCWA 2013]).

Construction activities could result in temporary habitat disturbance and permanent habitat loss from clearing of vegetation in equipment staging areas; temporary dewatering of channel sections; and general grading, recontouring, relocation, and/or filling of portions of channels and/or wetlands to accommodate the implementation of projects. Once constructed, projects could include new and or/rehabilitated existing setback levees, meadow restoration, conveyance facilities, and off-stream storage ponds. Such facilities could result in significant temporary or permanent adverse effects on sensitive natural communities, special-status plant species, and special-status wildlife species and their habitat in the proposed Project area. These effects would be short-term and temporary (construction-related activities) as well as long-term and permanent (operations, monitoring, and maintenance of new facilities), and the cumulative impact would be significant.

The following subsections present an analysis of whether the proposed Project's construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities could result in a contribution to this cumulative significant impact, and if so, whether that contribution would be cumulatively considerable.

Cumulative Effects of Construction Activities

Cumulative projects presented in Table 4-1 include activities associated with construction, such as installation of access routes and equipment staging areas, materials stockpiling, vegetation removal, use of heavy equipment, and earthmoving activities that could affect terrestrial biological resources. Construction of the proposed Project would involve similar construction activities that would contribute to cumulative effects on terrestrial biological resources. Focused botanical surveys of the proposed

Project area did not find any special-status plants. Therefore, construction activities for the proposed Project would not contribute to cumulative impacts on special-status plants.

As noted above, several special-status wildlife species, including GGS and WPT, have the potential to occur in the proposed Project area. Grading and other ground-disturbing activities could temporarily disrupt the movement of reptiles and amphibians, such as GGS and WPT. However, construction work would not substantially interfere with the movement of these species because they could move through adjacent unaffected habitat. In addition, habitat may be present for other species (e.g., tricolored blackbird, Swainson's hawk). Construction would include activities that would generate noise, vibration, dust, and other disturbances that could adversely affect nesting birds by altering their nesting behaviors (e.g., prompting adults to abandon eggs or chicks in nests). Construction work, including removal of riparian trees during the nesting season, could result in the destruction of nests and eggs and mortality of nestlings.

Construction work for the proposed Project would affect riparian habitats (riparian forest and riparian scrub) in the proposed Project area. In total, approximately 4.2 acres of riparian habitat would be removed during construction of the proposed Project (see Table 3.6-11in Section 3.6, "Biological Resources – Terrestrial"). As discussed in Section 3.6, "Biological Resources – Terrestrial," under Impact 3.6-3, the amount of newly planted riparian habitat (riparian forest and riparian scrub) under the proposed Project would exceed the amount of affected riparian habitat (no net long-term loss). Under the proposed Project, there would be approximately 10.2 acres of new riparian forest as compared to approximately 3.1 acres of riparian forest loss during construction; also, 3.3 acres of new riparian scrub would be planted as compared to the loss of approximately 1.1 acres of existing riparian scrub during construction. Temporary effects on managed tule wetlands within the proposed Project area would result from ground-disturbing activities. However, because this same area would be restored to tidal action for restoration into tidal wetlands (with associated tules), the proposed Project would ultimately improve the ecological functionality of the existing tule wetlands. The proposed Project would result in direct and indirect impacts on waters of the United States and State through restoration activities. Construction activities for the proposed Project could interfere with the local movement of native resident or migratory wildlife species.

The proposed Project would be consistent with the overall biological goals listed in the Yolo HCP/NCCP to improve conservation opportunities in Yolo County for its 12 covered species. Additionally, construction of the proposed Project would not interfere with any existing permanent conservation easement that is part of the reserve system land holdings for the Yolo HCP/NCCP. In summary, construction activities for the proposed Project could make a considerable contribution to significant cumulative effects of construction activities.

To reduce the proposed Project's contribution to this significant cumulative impact, the following general protection measures and species protection measures from the Final SRGO Program EIR would be implemented: GPM-1: Receipt and Copies of All Permits and Authorizations, GPM-2: Construction Work Windows, GPM-3: Construction Hours, GPM-4: Environmental Awareness Training, GPM-5: Environmental Monitoring, GPM-6: Work Area and Speed Limits, GPM-7: Environmentally Sensitive Areas, GPM-8: Prevent Spread of Invasive Exotic Plants, GPM-9: Practices to Prevent Pathogen Contamination, GPM-10: Equipment Maintenance and Materials Storage, GPM-11: Material Disposal, GPM-12: Fugitive Dust Reduction, GPM-13: Trash Containment and Removal, GPM-14: Project Cleanup after Completion, GPM-15: Revegetate Disturbed Areas, WQHM-1: Staging Areas and

Stockpiling of Materials and Equipment, WQHM-2: Storm Water Pollution Prevention Plan, WQHM-3: Erosion and Sediment Control Measures, WQHM-4: Hazardous Materials Management and Spill Response Plan, WQHM-5: In-Water Concrete Use, WQHM-6: Accidental Discharge of Hazardous Materials, IWW-1: Appropriate In-Water Materials, IWW-2: In-Water Vehicle Selection and Work Access, IWW-3: In-Water Placement of Materials, Structures, and Operation of Equipment, IWW-8: Removal of Diversion and Barriers to Flow, IWW-11: Sediment Containment during In-Water Pile Driving, IWW-13: Dredging Operations and Dredging Materials Reuse Plan, VHDR-1: Avoidance of Vegetation Disturbance, VHDR-2: Native and Invasive Vegetation Removal Materials and Methods, VHDR-3: Revegetation Materials and Methods, VHDR-4: Revegetation Erosion Control Materials and Methods, VHDR-5: Revegetation Monitoring and Reporting, SPM-1: Preconstruction Surveys, SPM-2: Environmentally Sensitive Areas and/or Wildlife Exclusion, SPM-3: Species Protection Construction Work Windows, SPM-4: Species Capture, Handling and Translocation, SPM-5: Special-Status Species Entrapment Prevention, SPM-6: Airborne Noise Reduction, AMP-1: Wildlife Passage Design, AMP-2: Rain Event Limitations, AMP-3: Pre-Construction Survey, AMP-4: Disease Prevention and Decontamination, AMP-5: Lighting, AMP-6: Clearing and Grubbing Vegetation, AMP-7: Pump Screens, AMP-8: Removal of Non-native Invasive Species, AMP-9: Placement of Suitable Erosion Control Material, AMP-10: Encounters with Species, AMP-11: Species Observations and Handling Protocol, REP-1: Pre-Construction Survey, REP-2: Environmentally Sensitive and Wildlife Exclusion Area, REP-3: Clearing and Grubbing Vegetation, REP-4: Prohibited Use of Rodenticides, REP-5: Species Observations and Encounters, REP-6: Species Handling and Relocation, BIRD-1: Habitat Assessment, BIRD-2: Nest Protection Work Window, BIRD-3: Work Area Limits, BIRD-4: Site Access Restrictions, BIRD-5: Monitoring, MAM-1: Conduct Habitat Assessment, MAM-2: Avoidance Areas, MAM-3: Use of Handheld Tools, MAM-4: Species Trapping and Relocating, MAM-5: Reporting Requirements, INVERT-1: Implement California Freshwater Shrimp Measures, INVERT-2: Implement Vernal Pool Branchiopods Measures, INVERT-3: Implement Valley Elderberry Longhorn Beetle Protocol, and INVERT-4: Implement Butterfly Protection Measures.

Implementation of these general protection measures would reduce the proposed Project's contribution to less than significant because they would reduce the effects of any ground-disturbing activities; protect water quality from hazardous materials; implement in-water work measures; reduce the effects of vegetation and habitat disturbance and revegetation and herbicide use; and reduce the effects of construction activities on species through conducting preconstruction surveys, excluding work in environmentally sensitive areas, identifying species protection construction work windows, preventing entrapment of sensitive species, and reducing airborne noise. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of the general protection measures would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

Cumulative Effects of Constructed Restoration Elements and Operations, Monitoring, and Maintenance Activities

Once constructed, the restoration elements and operations, monitoring, and maintenance activities for the proposed Project could affect terrestrial biological resources. Although no special-status plants were identified during focused botanical surveys, the potential exists for special-status plants that rely on tidal

wetland habitats to colonize the proposed Project area in the future. As presented in Section 3.6, "Biological Resources –Terrestrial," nine special-status plant species have the potential to occur in the proposed Project area. Botanical surveys conducted in the proposed Project area found no occurrences of special-status plant species. Although suitable habitat for Mason's lilaeopsis exists on the east shore of the Toe Drain, surveys along the west shore, which the proposed Project overlaps, did not detect the species and found the habitat to be of poor quality. The proposed Project's operations, monitoring, and maintenance could affect the special-status terrestrial wildlife species discussed above under "Cumulative Effects of Construction Activities" because the types of activities and equipment would be generally the same as those described for construction. However, the magnitude and duration of impacts would likely be reduced because the scale of equipment use and ground disturbance would be limited.

The proposed Project includes the expansion of riparian forest, riparian scrub, and tidal wetland habitat within the proposed Project area relative to existing conditions. Even though removal of riparian habitat would occur during construction of the proposed Project, the constructed restoration elements of the proposed Project would expand riparian and tidal wetland habitat within the proposed Project area. Therefore, the proposed Project would result in a net gain of sensitive natural communities. (Riparian forest would increase from 26.1 to 33.2 acres and riparian shrub would increase from 1.1 to 3.3 acres. There would be no loss of wetlands and managed tule wetlands would be converted to tidal wetlands.)

Ongoing long-term maintenance of the proposed Project area may result in short-term impacts on riparian habitat, particularly if the maintenance would require vegetation management. The potential also exists for indirect effects of maintenance activities on the riparian forest and riparian scrub, such as from fugitive dust generation, although the relative intensity of these indirect effects would be much lower compared to those associated with the construction phase of the proposed Project. Maintenance of constructed facilities, including restored habitats, is expected to have effects on wetlands and other waters of the United States and/or State similar to those described for construction of the proposed Project. However, the effects would be reduced in scope because the scale of equipment use and ground disturbance is expected to be much smaller.

As discussed in Section 3.6, "Biological Resources – Terrestrial," under Impact 3.6-5, the proposed Project's seasonal wetland and tidal wetland restoration elements would improve the value of the site as a stopover site for migratory birds. Further, the proposed Project is expected to improve hydrologic connectivity in a manner that would be beneficial to the movement of highly aquatic reptile species such as GGS and WPT. Some terrestrial species with more limited mobility could be negatively affected by the large-scale tidal wetland restoration that would occur under the proposed Project, but overall, the proposed Project is largely expected to improve the movement of and migration by terrestrial wildlife. The proposed Project would result in additional aquatic (approximately 29.2 acres) and upland refugia (36.4 acres) habitat for GGS, and an additional 29.2 acres of habitat for WPT. As noted under Impact 3.6-2, related to Swainson's hawk foraging habitat, under existing conditions, land managed in rice is poor foraging habitat for Swainson's hawk because inundation of the rice fields diminishes the population of burrowing rodent prey and the rice stalks further reduce foraging efficiency. However, the proposed Project would also provide an additional 50.3 acres of potential Swainson's hawk foraging habitat as compared to existing conditions. Monitoring and maintenance activities may have effects similar to those described previously for construction activities, but the relative scale of those effects would be much smaller in intensity and duration. Portions of the proposed Project area could overlap with priority areas

for acquisition by the Yolo Habitat Conservancy for inclusion in its reserve system, as identified in Figure 3.6-6, "Priority Acquisition Areas," of the Yolo HCP/NCCP. Therefore, the proposed Project could make a considerable contribution to this significant cumulative impact.

To reduce the proposed Project's contribution to this significant cumulative impact, the following general protection measures and species protection measures from the Final SRGO Program EIR would be implemented: GPM-2 through GPM-12 and GPM-15, WQHM-1, WQHM-4, WQHM-6, IWW-1 through IWW-3, IWW-8, IWW-13, VHDR-2 and VHDR-3, and VHDR-6 (all identified above under "Cumulative Effects of Construction Activities"), as well as VHDR-7: Herbicide Application Planning, VHDR-8: Herbicide Application Reporting, SPM-2 through SPM-6 (identified above), PLANT-1: Habitat Assessment and Surveys, PLANT-2: Seasonal Avoidance of Vernal Pool Plant Species and Other Annual and Perennial Species, PLANT-3: Exclusion Buffer Establishment, PLANT-4: Work Restrictions in the Exclusion Buffer, PLANT-6: Herbicide Application, Clearing and Ground Disturbance, and REP-1 through REP-6 and BIRD-1 through BIRD-5 (identified above). Additionally, the proposed Project would implement Final SRGO Program EIR ***Mitigation Measure TERR-1***, which would require the proposed Project to coordinate with the California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (USFWS), and permittees regarding HCPs, NCCPs, and other conservation plans, which would ensure that there would be no conflict with such plans.

Implementation of these general protection measures would reduce the proposed Project's contribution to less than significant because they would reduce the effects of any ground-disturbing activities; protect water quality from hazardous materials; implement in-water work measures; reduce the effects of vegetation and habitat disturbance and revegetation and herbicide use; reduce effects on species by excluding operations, monitoring, and maintenance work in environmentally sensitive areas, identifying species protection work windows, preventing entrapment of sensitive species, and reducing airborne noise; protect reptile and bird species; and require coordination with CDFW, USFWS, and permittees regarding HCPs, NCCPs, and other conservation plans, which would ensure that there would be no conflict with such plans. Furthermore, as discussed in Section 3.6, "Biological Resources – Terrestrial," under Impact 3.6-3, the proposed Project would result in a net gain in riparian habitat extent compared to existing conditions. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of the general protection measures would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.3.4 Biological Resources – Aquatic

The geographic scope for cumulative impacts related to aquatic biological resources is defined as the Delta, Yolo Bypass, and proposed Project area (see Section 3.7, "Biological Resources – Aquatic," for information about the environmental setting related to aquatic biological resources in the Delta, Yolo Bypass, and proposed Project area). Implementation of the cumulative projects listed in Table 4-1 would involve construction activities, introduction of new physical features, and operations and maintenance activities in the Delta, Yolo Bypass, and proposed Project area. Special-status fish species that have the potential to occur in the proposed Project area include delta smelt, longfin smelt, Chinook salmon, steelhead, green and white sturgeon, and Sacramento splittail. Depending on the location and nature of the cumulative projects, implementation of cumulative projects could adversely affect the same fish. For

example, the following special-status fish species had the potential to occur within or near cumulative projects listed in Table 4-1: Lower Elkhorn Basin Levee Setback Project—green sturgeon, white sturgeon, longfin smelt, delta smelt, Central Valley steelhead, Chinook salmon, and Sacramento splittail (GEI Consultants 2018); Lookout Slough Tidal Habitat Restoration and Flood Improvement Project—green sturgeon, white sturgeon, delta and longfin smelt, Central Valley steelhead, Chinook salmon, and Sacramento splittail (WRA 2019); and Lower Yolo Ranch Restoration Project—green sturgeon, Sacramento splittail, delta and longfin smelt, Chinook salmon, and Central Valley steelhead (SFCWA 2013).

Construction activities associated with these cumulative projects, such as earthmoving, vegetation removal, equipment staging, and stockpiling of materials, could indirectly affect special-status fish species through disturbance of benthic prey species, mobilization of sediment, disturbance of riparian habitat, impingement or entrainment, or chemical contamination. These effects would be short-term and temporary (construction-related activities) as well as long-term and permanent (operations, monitoring, and maintenance of new facilities), and the cumulative impact would be significant.

The following subsections present an analysis of whether the proposed Project's construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities could result in a contribution to this cumulative significant impact, and if so, whether that contribution would be cumulatively considerable.

Cumulative Effects of Construction Activities

Cumulative projects presented in Table 4-1 include activities associated with construction, such as use of heavy equipment, materials stockpiling, vegetation removal, in-water work, dewatering activities, temporary disruption of irrigation, and earthmoving activities that could result in potential impacts on special-status fish species. Construction of the proposed Project would involve similar construction activities that would contribute to this cumulative impact. For example, sediment disturbance during construction could result in increased turbidity; however, this effect would be temporary and would occur during periods when fish are not expected to be present in the proposed Project area. In addition, dewatering of work areas could lead to temporary loss, alteration, and reduction of aquatic habitat for special-status fish. However, dewatered areas would be dry temporarily and would return to normal conditions upon completion of the construction activities. Proposed Project construction activities involving installation of cofferdams could also temporarily affect fish movement, hindering migrating adults in their ability to reach spawning and/or rearing areas, and hindering juveniles by potentially exposing them to increased predation and unsuitable aquatic habitat conditions. However, because cofferdams typically do not block the entire width of affected waterways, the movement of juvenile or adult fishes is unlikely to be substantially affected. Additionally, work along the Toe Drain would occur only along the bank and would not impede flow, so the movement of juvenile or adult fishes is unlikely to be affected.

Construction activities to connect new channels to the Toe Drain would be conducted seasonally, in the late spring/early summer when the proposed Project area is expected to dry out and seasonally inundated areas are dry (see Section 2.3.4, "Tidal Wetland and Transition Zone Habitat Construction"). However, it may be necessary to use temporary pumps to accelerate drying of the site in low-lying and deeper ponded areas and for the new tidal channels as the areas are being excavated. In that case, all applicable dewatering measures from the Final SRGO Program EIR would be implemented. Construction activities

could therefore result in temporary impacts on special-status fish species, including delta smelt, longfin smelt, Chinook salmon, steelhead, green and white sturgeon, and Sacramento splittail.

To reduce the proposed Project's contribution to this significant cumulative impact, the following general protection measures and species protection measures from the Final SRGO Program EIR would be implemented: GPM-2, IWW-2, IWW-3, IWW-4, IWW-9: In-Water Pile Driving Plan for Sound Exposure, IWW-10: In-Water Pile Driving Methods, IWW-11, IWW-12: Pile-Driving Monitoring, SPM-3, FISH-1: Habitat Disturbance Avoidance and Minimization, FISH-2: Habitat Assessment and Surveys, FISH-3: Fish Capture and Relocation, and FISH-4: Reporting. Implementation of these general protection measures and species protection measures would reduce the proposed Project's contribution to less than significant because they would reduce the impacts of proposed Project construction activities during in-water work to minimize the mobilization of sediment during in-water pile driving; and on the release and exposure of construction-related contaminants, and because they include measures to minimize the potential impacts of dewatering and relocating fish as applicable. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of the general protection measures would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

Cumulative Effects of Constructed Restoration Elements

Once construction is completed, the restoration elements have the potential to benefit special-status fish species and their associated habitat. In the long term, the proposed Project would reduce loss from entrainment, stranding, and predation compared to existing conditions, thereby providing improved conditions for native fish movement in the proposed Project area. This would be accomplished by removing the existing berm along the Toe Drain, opening the site to tidal influence, installing fish screens, and modifying outlet structures to avoid fish stranding. Lastly, the proposed Project would be expected to provide increased primary and secondary food production and increased growth and survival of special-status fish species and would therefore result in long-term net benefits for listed fish species and their associated habitat. Therefore, although cumulative projects could have a cumulatively significant impact on aquatic biological resources, the proposed Project's contribution would be ***less than cumulatively considerable***.

Cumulative Effects of Operations, Monitoring, and Maintenance Activities

Once the proposed Project is constructed, the operations, monitoring, and maintenance activities for the proposed Project would have the potential to affect listed fish species and their associated habitat. As discussed in Section 3.7, "Biological Resources – Aquatic," under Impact 3.7-2, the proposed Project is expected to reduce stranding risk and entrainment risk for native fish species, thereby providing better conditions for native fish movement in the proposed Project area (see the analysis presented in Section 3.7, Impact 3.7-1 for additional details). The effects of operations, monitoring and maintenance would be beneficial to the movement of native resident or migratory fish. Operations, monitoring, and maintenance activities may lead to sediment disturbance and increased turbidity that are expected to be relatively brief and confined.

To reduce the proposed Project's contribution to this significant cumulative impact, the following general protection measures and species protection measures from the Final SRGO Program EIR would be implemented: IWW-6, SPM-3, FISH-1, FISH-2, FISH-3, and FISH-4. Implementation of these general protection measures and species protection measures would reduce the proposed Project's contribution to less than significant because they would reduce dewatering and diversions, identify species protection work windows, and protect fish species through specific fish protection measures. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of the general protection measures would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.3.5 Cultural Resources

As presented in Table 4-2, the geographic scope for cumulative impacts related to cultural resources is the Yolo Bypass and the proposed Project area (see Section 3.8, "Cultural Resources," for information about the environmental setting related to cultural resources in the Yolo Bypass [regional] and proposed Project area).

Implementation of the cumulative projects listed in Table 4-1 would involve construction activities, introduction of new physical features, and operations and maintenance activities in the Yolo Bypass and proposed Project area. Depending on the location and nature of the projects, these actions could cause a substantial adverse change in the significance of a historical or archaeological resource pursuant to CEQA Guidelines Section 15064.5 or disturb human remains. For example, cumulative projects listed in Table 4-1 that involve installation of conveyance facilities (such as the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project [DWR and Reclamation 2019], Lookout Slough Tidal Habitat Restoration and Flood Improvement Project [WRA 2019], and Swanston Ranch Master Plan [ICF 2023]) could involve the construction of intakes and water management facilities that would potentially damage historic structures and features, such as historic canals themselves or associated historic-period ancillary features (e.g., bridges, weirs). Projects that involve ground-disturbing activities have the potential to uncover prehistoric archaeological resources and human remains not documented in archival sources or identified during field surveys. These effects would be short-term and temporary (construction-related activities) as well as long-term and permanent (operations, monitoring, and maintenance of new facilities), and the cumulative impact would be significant.

The following subsections present an analysis of whether the proposed Project's construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities could result in a contribution to this cumulative significant impact, and if so, whether that contribution would be cumulatively considerable.

Cumulative Effects of Construction Activities, Constructed Restoration Elements, and Operations, Monitoring, and Maintenance Activities

Cumulative projects presented in Table 4-1 include activities associated with construction, such as installation of access routes and equipment staging areas, materials stockpiling, vegetation removal, use of heavy equipment, and earthmoving activities. In addition, these cumulative projects would introduce new physical features and involve operations and maintenance activities. These activities could result in a potential adverse change in the significance of a historical resource. Construction of the proposed Project

would involve similar activities, and after construction is completed, the proposed Project would include landscape modifications, new infrastructure, and operational actions to create tidal wetland and associated floodplain habitat and managed wetlands for waterfowl. Implementation of the proposed Project would not cause a substantial adverse change in the significance of a historical resource because identified architectural resources in the proposed Project area were evaluated as not eligible for the California Register of Historical Resources and therefore do not qualify as historical resources. Although no archaeological resources or human remains were identified as present in the proposed Project area, implementation of the proposed Project would involve ground-disturbing activities that could unearth, expose, or disturb subsurface archaeological resources pursuant to CEQA Guidelines Section 15064.5 or previously unknown human remains; therefore, the proposed Project's contribution to this significant cumulative impact would be considerable.

The proposed Project would implement Final SRGO Program EIR ***Mitigation Measure CUL-3*** and ***Mitigation Measure CUL-4***. Implementation of these mitigation measures would reduce the proposed Project's contribution to less than significant because they require the implementation of measures to protect archaeological resources and human remains during project construction and operations and maintenance. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of ***Mitigation Measure CUL-3*** and ***Mitigation Measure CUL-4*** would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.3.6 Hazards and Hazardous Materials

The geographic scope for cumulative impacts related to hazards and hazardous materials is defined as the proposed Project area. In the case of hazards and hazardous materials, some effects could be localized (e.g., encountering contaminated soils during construction would result in impacts only in the immediate vicinity of the encounter), while others could be broader in scope (e.g., contaminants released into air or water that could spread across the region). See Section 3.9, "Hazards and Hazardous Materials," for information about the environmental setting related to hazards and hazardous materials.

Implementation of the cumulative projects listed in Table 4-1 (such as the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project [DWR and Reclamation 2019], Lookout Slough Tidal Habitat Restoration and Flood Improvement Project [WRA 2019], and the Lower Yolo Ranch Restoration Project [SFCWA 2013]) would involve construction activities, introduction of new physical features, and operation and in the vicinity of the proposed Project that could involve the routine transport, use, or disposal of hazardous materials, encounter previously unidentified contaminated soil and/or groundwater, interfere with emergency response access or with an adopted emergency response or evacuation plan, or create vector habitat that would pose a significant public health hazard. For example, construction of restoration projects could require grading, plowing, or disking for the preparation of seed beds and could expose existing on-site hazardous materials if located on an unidentified contaminated site. Both construction and operation of these projects could involve the transport, use, or disposal of hazardous materials and result in the accidental release of hazardous materials, which could create a hazard to the public or the environment. These effects would be short-term and temporary (construction-related

activities) as well as long-term and permanent (operations, monitoring, and maintenance of new facilities), and the cumulative impact would be significant.

The following subsections present an analysis of whether the proposed Project's construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities could result in a contribution to this cumulative significant impact, and if so, whether that contribution would be cumulatively considerable.

Cumulative Effects of Construction Activities

Cumulative projects presented in Table 4-1 include activities associated with construction, such as development of access routes and equipment staging areas, materials stockpiling, and vegetation removal. Such activities would require the use of limited quantities of hazardous materials commonly used during construction activities that if improperly used, stored, handled, transported, or disposed of, could be accidentally released, which could expose construction workers, the public, and the environment (including soil, groundwater, or surface water) to contamination. Construction of the proposed Project would involve similar use, storage, and transportation of hazardous materials during construction activities that would contribute to this cumulative significant impact. Although heavy equipment entering and exiting the proposed Project area could temporarily disrupt traffic, construction activities would not result in street closures or lane blockages. Stagnant water could occur in construction areas, creating potential mosquito habitat; however, ponded water would likely be infrequent and would not last long enough to support mosquito hatching. Furthermore, the proposed Project area is not located adjacent to a populated area.

To reduce the proposed Project's contribution to this significant cumulative impact, the following general protection measures from the Final SRGO Program EIR would be implemented: GPM-6, GPM-7, GPM-10, GPM-11, GPM-12, GPM-14, WQHM-1, WQHM-2, WQHM-4, WQHM-5, WQHM-6, IWW-1, IWW-2, IWW-3, IWW-6, IWW-13, and VHDR-6. In addition, the proposed Project would implement the following Final SRGO Program EIR mitigation measures: ***Mitigation Measures HAZ-1***, ***Mitigation Measure HAZ-2*****,** and ***Mitigation Measure HAZ-3.***

Implementation of these general protection measures and mitigation measures would reduce the proposed Project's contribution to less than significant because they would reduce the effects of construction activities by limiting speed limits in work areas, protecting environmentally sensitive areas, properly maintaining equipment and storing materials, cleaning up the work area following completion of construction, protecting water quality, preventing hazardous material spills and accidental discharge, implementing in-water work measures, and properly using herbicides; would require preparation and implementation of a health and safety plan, and provide qualified oversight of fill removal related to earthmoving activities; and would require notification to appropriate regulatory agencies if contaminated soils are identified or if accidental discharges of hazardous materials occur. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of the general protection measures and ***Mitigation Measures HAZ-1*** through ***HAZ-3*** would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

Cumulative Effects of Constructed Restoration Elements, and Operations, Monitoring, and Maintenance Activities

Cumulative projects presented in Table 4-1 would introduce new physical features and involve operations and maintenance activities that would require limited quantities of hazardous materials commonly used during maintenance activities that if improperly used, stored, handled, transported, or disposed of, could be accidentally released, which could expose construction workers, the public, and the environment (including soil, groundwater, or surface water) to contamination. The proposed Project would involve similar operations and maintenance activities that would contribute to this cumulative significant impact.

Operational activities for the proposed Project would also include ongoing water management practices similar to existing conditions to support waterfowl in the managed wetland areas and support rice production in the managed floodplain agriculture areas. The potential effects of these activities would be reduced in scope compared to the effects of construction activities because equipment use for maintenance activities would be expected to be smaller in scale and more spread out over time than during construction of the proposed Project. Ground-disturbing operational activities for the proposed Project would occur in the same areas as construction and thus would not be expected to encounter previously unidentified contaminated soil and/or groundwater that could expose construction workers, the public, and the environment to risks associated with hazardous materials. In addition, as described in Section 3.9, "Hazards and Hazardous Materials," under Impact 3.9-4, the proposed Project would not increase vector habitat compared to existing conditions in the proposed Project area.

To reduce the proposed Project's contribution to this significant cumulative impact, the following general protection measures and species protection measures from the Final SRGO Program EIR would be implemented: GPM-6, GPM-7, GPM-10, GPM-11, GPM-12, GPM-14, WQHM-1, WQHM-2, WQHM-4, WQHM-5, WQHM-6, IWW-1, IWW-2, IWW-3, IWW-6, IWW-13, VHDR-6, VHDR-7, VHDR-8, and PLANT-6. Implementation of these general protection measures and species protection measures would reduce the proposed Project's contribution to less than significant by reducing the effects of ground-disturbing activities and reducing effects related to herbicide use and application. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of the general protection measures would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.3.7 Hydrology and Water Quality

The geographic scope for cumulative impacts related to hydrology and water quality is defined as the Delta, Yolo Bypass, and proposed Project area (see Section 3.10, "Hydrology and Water Quality," for information about the environmental setting related to hydrology and water quality in the Delta, Yolo Bypass, and proposed Project area).

Implementation of the cumulative projects listed in Table 4-1 (such as the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project [WRA 2019], Prospect Island Tidal Habitat Restoration Project [CDFW 2019], and Sacramento Weir Widening Project [GEI Consultants 2020]) would involve construction activities, introduction of new physical features, and operations and maintenance activities in the Delta, Yolo Bypass, and proposed Project area. Depending on the location and nature of the

cumulative projects, these actions could substantially alter existing drainage patterns in a manner that could exceed stormwater drainage systems and/or result in flooding. Construction and operational activities could also result in increased turbidity and/or polluted runoff to receiving waters. Additionally, cumulative projects listed in Table 4-1 could involve activities or features that could substantially deplete groundwater supplies through interference or use of groundwater, which could lead to impedance of sustainable groundwater management or obstruct the implementation of a sustainable groundwater management plan. For example, construction of the proposed Project could involve earthmoving activities that could temporarily disturb streambed sediments and cause the resuspension of sediment-associated pollutants (e.g., trace metals, heavy metals, pesticides) associated with either legacy activities (e.g., gold mining) or contemporary activities (e.g., watershed urbanization). These effects would be short-term and temporary (construction-related activities) as well as long-term and permanent (operations, monitoring, and maintenance of new facilities), and the cumulative impact would be significant.

The following subsections present an analysis of whether the proposed Project's construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities could result in a contribution to this cumulative significant impact, and if so, whether that contribution would be cumulatively considerable.

Evaluation of Future Cumulative Conditions on Hydrology and Water Quality

The list of cumulative projects displayed in Table 4-1 is consistent with the "future cumulative conditions" scenario simulated as part of the hydraulic impact analysis (described under "Approach to the Analysis of Surface Hydraulics and Hydrology" in Section 3.10, "Hydrology and Water Quality," and detailed in Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment") and the "future conditions" scenario simulated in RMA's Bay-Delta model (see Appendix I to this Draft SEIR, "Tide's End Multibenefit Restoration Project Modeling Evaluation of Stage and Water Quality Impacts"). The models are summarized in Section 3.10 and detailed in Appendices H and I to this Draft SEIR. As discussed in Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment," the future cumulative conditions scenario represents ongoing and reasonably foreseeable future regional projects within the Yolo Bypass. For purposes of this analysis, conditions depicted in Yolo Bypass Cache Slough Master Plan Scenario 2 (DWR and CVFPB 2025) have been used as the basis for representing this condition state, as well as the list of regional projects within the existing-conditions state (referred to in this Draft SEIR as the "NOP baseline") and future no-action condition state (referred to in this Draft SEIR as the "future no-action baseline") with the following additions:

- Nigiri-Knaggs Ranch
- Conaway Ranch Salmonid Project
- Fremont Weir Expansion—Option B
- Upper Elkhorn Expansion—Option B
- Conaway Ranch Levee Setback
- Tule Canal Corridor Multi-Benefit Enhancement Project

- Lower Cache Creek Multi-Benefit Project
- Elk Slough Fish Passage and Flood Improvement Project
- Deep Water Ship Channel Improvements
- Swanston Ranch Master Plan
- Little Egbert Multi-Benefit Project (Alternative 17A)
- Rio Vista Small Communities Flood Risk Reduction Project
- North Delta Fish Conservation Bank

Although the Lisbon Weir project was included in the suite of Master Plan Scenario 2 projects described in the Yolo Bypass Cache Slough Master Plan (DWR and CVFPB 2025), it has been omitted from the current analysis, as it was not considered hydraulically significant for the range of flows being analyzed. Detailed descriptions of these respective projects can be found in the Yolo Bypass Cache Slough Master Plan. In RMA's Bay-Delta model, the future-conditions scenario includes projects constructed after July 2024 (Lookout Slough) and planned restoration projects at Prospect Island, McCormack Willamson Tract Phase B, Little Egbert Multi-Benefit Project, Cache Slough Mitigation Bank, Chipps Island, Grizzly King, North Delta Fish Conservation Bank, Peters Pocket, and Zacharias Ranch.

Changes in water surface elevation were evaluated for the future-cumulative-conditions scenario (comparison of with–proposed Project conditions to without–proposed Project conditions) across the Yolo Bypass and downstream areas, and within the proposed Project area. **Table 4-3** presents the changes in water levels at the 13 index points (see Figure 3.10-4 in Section 3.10, "Hydrology and Water Quality"). As shown in Table 4-3, although decreases in water levels were simulated upstream of the proposed Project area (index points 1 and 5) with the proposed Project, the changes were minor and relatively localized. No change in water levels was simulated at the remaining index points downstream and adjacent to the proposed Project area with implementation of all projects listed in Table 4-1. Therefore, the proposed Project has been determined to create no adverse impacts on water surface elevations or velocity under the future-cumulative-conditions scenario.

To assess changes in salinity, modeled EC) for the future-conditions scenario (comparison of with–proposed Project conditions to without–proposed Project conditions) was evaluated at select D-1641 compliance locations and water exports. In summary, under future conditions, the modeling results showed that the proposed Project would have small impacts on regional salinity in the Delta relative to without–proposed Project conditions. The proposed Project would not cause any EC changes at the D-1641 stations such that compliance would be affected. Evaluation of changes to X2 indicated that the proposed Project would generally decrease monthly averaged X2 by less than 0.02 kilometer. Therefore, the proposed Project has been determined to create no adverse impacts on water quality under the future-conditions scenario.

TABLE 4-3
PROPOSED PROJECT CHANGES IN WATER SURFACE ELEVATION UNDER THE 100-YEAR DESIGN STORM FOR THE FUTURE CUMULATIVE CONDITIONS

Index Point	1957 Design WSEL (feet, NAVD88)	Design Freeboard (feet)	Existing Top of Levee Elevation (feet, NAVD88)	WSEL (feet, NAVD88)		
				Without Project	With Project	Change
1	25.72	6	32.03	26.99	26.98	-0.01
2	24.44	6	34.14	25.23	25.22	-0.01
3	23.42	6	29.99	24.26	24.26	0.00
4	22.06	6	28.68	22.87	22.87	0.00
5	17.88	3	20.86	18.58	18.58	0.00
6	19.71	6	25.34	19.53	19.53	0.00
7	17.88	3	20.86	18.58	18.58	0.00
8	17.86	3	20.59	18.57	18.57	0.00
9	17.86	N/A	N/A	18.53	18.53	0.00
10	17.85	3	19.57	18.24	18.24	0.00
11	17.82	3	20.82	17.78	17.78	0.00
12	12.42	N/A	11.85 (Restricted Height Levee El.)	14.94	14.94	0.00
13	12.01	3	22.99	12.57	12.57	0.00

Notes: El = elevation; N/A = not applicable; NAVD88 = North American Vertical Datum of 1988; NOP = Notice of Preparation; WSEL = water surface elevation

Source: Data compiled by Environmental Science Associates in 2025 using information presented in Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment," Table 7

Cumulative Effects of Construction Activities

Construction-related changes in the proposed Project area's drainage patterns, surface water quality, and groundwater supply and quality would be temporary and localized. As described in Section 3.10, "Hydrology and Water Quality," under Impact 3.10-1, compared to existing conditions, the construction-related changes would not result in substantial on- or off-site erosion and siltation, or substantial increases in the rate or amount of surface runoff which would result in on or off-site flooding; would not create or contribute runoff water which would exceed the capacity of the stormwater drainage system (i.e., the irrigation and drainage system) or provide substantial additional sources of polluted runoff; and would not impede or redirect flood flows. Additionally, groundwater changes would be localized and temporary and would not be anticipated to substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the proposed Project would impede sustainable groundwater management of the basin or obstruct implementation of a sustainable groundwater management plan (i.e., the Yolo Subbasin Groundwater Sustainability Plan). Although the time required for construction of the proposed Project's restoration elements would be short-term (up to two construction seasons), temporary construction could result in effects on water quality that could persist throughout the construction period. Construction activities for the proposed Project could therefore make a considerable contribution to significant cumulative effects of related projects associated with construction activities.

Adherence to the National Pollutant Discharge Elimination System regulations and best management practices would ensure that construction of the proposed Project would not result in a release of pollutants into surface water and/or groundwater that could violate water quality standards or waste discharge requirements, substantially degrade water quality, or obstruct implementation of a water quality control plan. Additionally, to further reduce the proposed Project's contribution to this significant cumulative impact, the following general protection measures from the Final SRGO Program EIR would be implemented: GPM-10, GPM-11, GPM-12, WQHM-1, WQHM-2, WQHM-3, WQHM-4, WQHM-5, WQHM-6, IWW-1, IWW-2, IWW-3, IWW-4, IWW-6, IWW-10: In-Water Pile Driving Methods, IWW-11, IWW-12: Pile-Driving Monitoring, IWW-13, VHDR-2, VHDR-3, VHDR-4, VHDR-6, VHDR-7, and VHDR-8. Implementation of the general protection measures would reduce the proposed Project's contribution to less than significant by requiring proper equipment maintenance, materials storage, and disposal of materials. In addition, these measures require reduction of fugitive dust, protection of water quality, prevention of hazardous material spills and accidental discharge, implementation of in-water work measures, revegetation of disturbed areas, and proper use of herbicides. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of the general protection measures would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

Cumulative Effects of Constructed Restoration Elements

Once construction is completed, some of the long-term effects of the restoration elements are anticipated to be beneficial or neutral compared to existing conditions. For example, restoration elements would not create impervious surfaces that would lead to permanent decreases in groundwater recharge. Therefore, alterations of or interference with groundwater recharge as a result of facilities improvements would likely be negligible. Groundwater recharge would still occur around these facilities.

However, floodplain grading, improvements to drainage and irrigation infrastructure, and minor land use changes could alter the existing drainage patterns. As detailed in Section 3.10, "Hydrology and Water Quality," hydraulic modeling was conducted to quantify changes in water surface elevation and velocity with implementation of the proposed Project, and the results suggested that the proposed Project would result in negligible changes to water levels and velocity across the proposed Project area and within the Yolo Bypass (see Table 3.10-7 in Section 3.10, and Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment"). Thus, the constructed restoration elements would not impede or redirect flood flows, alter the existing drainage patterns in a manner that would result in substantial on or off-site erosion and siltation, or result in on or off-site flooding. In addition, constructed restoration elements would not create or contribute runoff water which would exceed the capacity of the existing irrigation and drainage system or provide substantial additional sources of polluted runoff (see the discussion under Impact 3.10-1 in Section 3.10).

Based on the best available science, the constructed restoration elements would not be a substantial source of turbidity, dissolved organic carbon, methylmercury, organic chemicals, or boron (see the discussion under Impact 3.10-3 in Section 3.10). The proposed Project would not substantively increase off-site export of these constituents or increase their concentrations in adjacent water bodies, including the Delta. Although the proposed Project may result in slight increases in localized daytime temperature before vegetation matures, these increases would be mediated by tidal exchange facilitated by the proposed

Project, thus rendering potential water temperature impacts negligible. As detailed in Section 3.10, modeling results for hydrodynamics and water quality constituents support that the proposed Project would result in negligible changes in salinity levels across the proposed Project area and within the Yolo Bypass and Delta; the proposed Project also would have negligible effects on drinking water quality, water quality for in-Delta agricultural irrigation, and water quality for fish and wildlife populations (see also Appendix I to this Draft SEIR, "Tide's End Multibenefit Restoration Project Modeling Evaluation of Stage and Water Quality Impacts"). The proposed Project was found to result in no violations of the water quality objectives at any drinking water intakes and would not be expected to cause or exacerbate noncompliance with X2 objectives.

As discussed in Section 3.10, "Hydrology and Water Quality," under Impact 3.10-1 and detailed in Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment," the most significant contributions to hydraulic roughness in the floodway for both existing and with–proposed Project conditions are agricultural berms and vegetation. The proposed Project would maintain or improve flood conveyance in the Yolo Bypass by creating a network of tidal channels connected to adjacent floodplain areas that would facilitate and increase flow conveyance, reducing localized flood stages. Specifically, changes in grading and land cover through restoration of tidal wetlands, active management of managed wetlands and the agricultural floodplain, and lowering of existing berms would decrease overall hydraulic roughness and improve the conveyance capacity within this portion of the Yolo Bypass relative to existing conditions. The increased conveyance associated with these changes during low-flow scenarios is expected to result in more efficient (i.e., faster) drainage of the Yolo Bypass in the latter stages of flooding (i.e., on the receding limb of the hydrograph) that is beneficial to ecological, recreation, and agricultural functions. Additionally, the proposed Project's habitat elements would work collectively as a wind-wave buffer to provide additional protection against localized wind-wave erosion to portions of the Sacramento River Deep Water Ship Channel levee, which protects the city of West Sacramento. Additional details can be found in Appendix H to this Draft SEIR, "Tide's End Multibenefit Restoration Project Hydraulic Impacts Assessment."

The proposed Project's restoration elements include establishment of tule wetland and riparian vegetation that would act as a wind-wave buffer, reducing wave heights in the Yolo Bypass. In addition to improving conditions on-site, the proposed assemblage of nature-based features and agricultural infrastructure would provide reductions (up to approximately 2.3 feet) in wind-wave runup heights near the Sacramento River Deep Water Ship Channel levee, during periods when the depth of flooding in the Yolo Bypass is at or below the tops of the berms and/or tops of the tules across a full range of winter operating conditions (ESA 2025). This is expected to reduce the effects of wind-wave erosion on the levee over time, particularly during lower stage conditions, which are more frequent and can be longer in duration. As a result, the proposed Project's impact associated with constructed restoration elements would be less than significant. The future-cumulative-conditions modeling further demonstrates that the proposed Project would not make a considerable contribution to existing hydraulic conditions or water quality. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of the general protection measures would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

Cumulative Effects of Operations, Monitoring, and Maintenance Activities

Cumulative projects presented in Table 4-1 would introduce new physical features and involve operations and maintenance activities. The proposed Project would include landscape modifications, new infrastructure, and operational actions to create tidal wetland and associated floodplain habitat and managed wetlands for waterfowl, which once completed, would involve operations, monitoring, and maintenance activities similar to existing operations, monitoring, and maintenance activities. Given the nature and anticipated frequency of operations, monitoring, and maintenance activities, they would not alter the existing drainage patterns in a manner that would result in substantial on- or off-site erosion and siltation; substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding; create or contribute runoff water which would exceed the capacity of the existing irrigation and drainage system or provide substantial additional sources of polluted runoff; or impede or redirect flood flows. As discussed in Section 3.10, "Hydrology and Water Quality," under Impact 3.10-2, operations, monitoring, and maintenance activities would also not substantially deplete groundwater supplies, interfere with groundwater recharge, impede sustainable groundwater management, or obstruct implementation of a sustainable groundwater management plan.

In addition, operations and maintenance activities required for the proposed Project would include ongoing water management and agricultural practices related to flood-up and drawdown, irrigation, vegetation management (e.g., disking, mowing), grading, fertilizing, and planting. Long-term vegetation management would include herbicide application, which could result in release of pollutants into surface water and/or groundwater.

To reduce the proposed Project's contribution to this significant cumulative impact, the following general protection measures from the Final SRGO Program EIR would be implemented: VHDR-2, VHDR-3, VHDR-4, VHDR-6, VHDR-7, and VHDR-8. Implementation of the general protection measures would reduce the proposed Project's contribution to less than significant because they would reduce the effects of herbicide application. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of the general protection measures would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.3.8 Recreation

The geographic scope for cumulative impacts related to recreation is defined as the Yolo Bypass and proposed Project area (see Section 3.11, "Recreation," for information about the environmental setting related to recreation in the Yolo Bypass and proposed Project area).

Implementation of cumulative projects listed in Table 4-1 (such as the Sacramento Weir Widening Project [GEI Consultants 2020], Lower Elkhorn Basin Levee Setback Project [GEI Consultants 2018], and Prospect Island Tidal Habitat Restoration Project [CDFW 2019]) would involve construction activities, introduction of new physical features, and operations and maintenance activities in the vicinity of the proposed Project. Depending on the location and nature of the cumulative projects, these actions could significantly alter, impair, degrade, or eliminate recreational resources, facilities, and opportunities; could require the construction or expansion of recreational facilities that could result in significant environmental impacts; or could increase the use of existing recreational resources and facilities such that substantial

physical deterioration would occur or be accelerated. For example, restoration projects could involve the removal of tide gates and legacy structures that could temporarily impair, degrade, or eliminate recreational resources, facilities, and opportunities. Flood control projects that change water operations could alter the duration of flooding in managed ponds used for recreational hunting. In addition, temporary removal of soil and vegetation, excavation and grading activities, dust abatement, staging and storage of equipment and materials, vehicle parking, and construction operations could further impair recreation opportunities. These effects on recreation would be short-term and temporary (construction-related activities) as well as long-term and permanent (operations, monitoring, and maintenance of new facilities), and the cumulative impact would be significant.

The following subsections present an analysis of whether the proposed Project's construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities could result in a contribution to this cumulative significant impact, and if so, whether that contribution would be cumulatively considerable.

Cumulative Effects of Construction Activities, Constructed Restoration Elements, and Operations, Monitoring, and Maintenance Activities

Cumulative projects presented in Table 4-1 include activities associated with construction, such as installation of access routes and equipment staging areas, materials stockpiling, vegetation removal, use of heavy equipment, and earthmoving activities. Construction of the proposed Project would involve similar construction activities. As discussed in Section 3.11, "Recreation," under Impact 3.11-1, construction activities for the proposed Project could temporarily impair or prevent access to recreational resources, facilities, and opportunities. For example, the proposed Project would relocate or remove duck blinds and managed wetlands. In addition, recreation access to the proposed Project private duck clubs and the hunting and fishing opportunities they provide would be limited during the 1- to 2-year construction period to accommodate ingress and egress by construction equipment. Further, existing managed wetlands for waterfowl would not be operated during construction activities; however, any closures would be coordinated with USFWS, NRCS and CDFW to ensure that all work during the construction period conforms to requirements of the existing easement or of a compatible use authorization.

However, the proposed Project would not result in street closures or lane blockages that could reduce the number of travel lanes and require rerouting of traffic, because the number of vehicle trips is limited given the rural nature of the surrounding area. Therefore, during the construction period, public bird-watching or wildlife viewing upon CR 155 and/or CR 107 would not be disrupted. Further, a variety of private duck clubs within the Yolo Bypass, and directly adjacent to the proposed Project area, would be operational during construction activities. In addition, the Yolo Bypass Wildlife Area and Liberty Island Ecological Reserve would not be affected and would still be available for bird-watching, boating, fishing, hunting, hiking, and wildlife viewing during the proposed Project's construction activities. Once constructed, the managed wetlands for waterfowl would serve the dual purpose of duck habitat and floodplain habitat, providing waterfowl hunting opportunities and enhanced food web productivity to benefit native fishes in adjacent aquatic habitats. Land managers would have the ability to add supplemental water to inundate the managed ponds in dry years and increase the duration of inundation.

After construction is complete, the type, area, and quality of existing recreational use (e.g., waterfowl and upland game hunting, fishing, bird-watching, and wildlife viewing) would be returned similar to existing

conditions. Further, the proposed Project would allow for public access of the tidal channels through the Toe Drain via small boat, kayak, or paddle board allowing for additional recreational opportunities, including fishing and birdwatching. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, the proposed Project would result in a less-than-significant impact and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.3.9 Tribal Cultural Resources

As presented in Table 4-2, the geographic scope for cumulative impacts related to Tribal cultural resources is the Yolo Bypass and proposed Project area (see Section 3.12, "Tribal Cultural Resources," for information about the environmental setting related to cultural resources in the Yolo Basin [regional] and proposed Project area).

Implementation of the cumulative projects listed in Table 4-1 would involve construction activities, introduction of new physical features, and operations and maintenance activities in Yolo Bypass and proposed Project area. Depending on the location and nature of the projects, these actions could cause a substantial adverse change in the significance of Tribal cultural resources. For example, cumulative projects listed in Table 4-1 that involve the use of heavy equipment and ground disturbance, such as grading of berms for erosion control (such as the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project [DWR and Reclamation 2019], Lookout Slough Tidal Habitat Restoration and Flood Improvement Project [WRA 2019], and Swanston Ranch Master Plan [ICF 2023]) could result in the disturbance and destruction of surficial and subsurface Tribal cultural resources. Projects that involve operational activities could limit Tribal access to sacred locations or gathering sites. These effects would be short-term and temporary (construction-related activities) as well as long-term and permanent (operations, monitoring, and maintenance of new facilities), and the cumulative impact would be significant.

The following subsections present an analysis of whether the proposed Project's construction activities, constructed restoration elements, operations, monitoring, and maintenance activities could result in a contribution to this cumulative significant impact, and if so, whether that contribution would be cumulatively considerable.

Cumulative Effects of Construction Activities, Constructed Restoration Elements, and Operations, Monitoring, and Maintenance Activities

Cumulative projects presented in Table 4-1 include activities associated with construction, such as installation of access routes and equipment staging areas, materials stockpiling, vegetation removal, use of heavy equipment, and earthmoving activities. In addition, these cumulative projects would introduce new physical features and involve operations and maintenance activities. These activities could result in a potential adverse impact on Tribal cultural resources. Construction of the proposed Project would involve similar activities, and after construction is completed, the proposed Project would include landscape modifications, new infrastructure, and operational actions to create tidal wetland and associated floodplain habitat and managed wetlands for waterfowl. Although no Tribal cultural resources were identified as present in the proposed Project area, implementation of the proposed Project would involve ground-disturbing activities that could unearth, expose, or disturb subsurface Tribal cultural resources that

could qualify as Tribal cultural resources as defined by Public Resources Code Section 21074; therefore, the proposed Project's contribution to this significant cumulative impact would be considerable.

The proposed Project would implement Final SRGO Program EIR ***Mitigation Measure TCR-2*** and ***Mitigation Measure CUL-4.*** Implementation of these mitigation measures would reduce the proposed Project's contribution to less than significant because they require implementation of measures to protect Tribal cultural resources and measures to protect human remains during project construction and operation. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, implementation of ***Mitigation Measure TRC-2*** and ***Mitigation Measure CUL-4*** would reduce the proposed Project's impact to less than significant, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

4.3.10 Utilities and Service Systems

As presented in Table 4-2, the geographic scope for cumulative impacts related to utilities and service systems is the proposed Project area. In the case of utilities and service systems, this is further constrained by the service areas for the utilities and service systems serving the cumulative projects (i.e., water supply and distribution systems, wastewater collection and treatment systems, electric power use and infrastructure, natural gas use and infrastructure, telecommunication use and infrastructure, and solid waste collection and disposal). See Section 3.13, "Utilities and Service Systems," for information about the environmental setting related to utilities and service systems in the proposed Project area.

Implementation of the cumulative projects listed in Table 4-1 (such as the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Project [DWR and Reclamation 2019], Sacramento Weir Widening Project [GEI Consultants 2020], and Prospect Island Tidal Habitat Restoration Project [CDFW 2019]) would involve construction activities, introduction of new physical features, and operations and maintenance activities in the vicinity of the proposed Project. Depending on the location and nature of the projects, these actions could require or result in the construction of new or expanded utility infrastructure to meet project needs; or the projects could be served by a landfill with insufficient permitted capacity to accommodate the solid waste disposal needs and could fail to comply with federal, State, and local statutes and regulations related to solid waste. For example, projects could require the relocation of stormwater outfalls or utilities (e.g., electric power, natural gas, or telecommunication facilities) that would cause significant environmental effects. These effects would be short-term and temporary (construction-related activities) as well as long-term and permanent (operations, monitoring, and maintenance of new facilities), and the cumulative impact would be significant.

The following subsections present an analysis of whether the proposed Project's construction activities, constructed restoration elements, and operations, monitoring, and maintenance activities could result in a contribution to this cumulative significant impact, and if so, whether that contribution would be cumulatively considerable.

Cumulative Effects of Construction Activities

Cumulative projects presented in Table 4-1 include activities associated with construction, such as development of access routes and equipment staging areas, materials stockpiling, vegetation removal, temporary disruption of irrigation, and earthmoving activities. Construction of the proposed Project would involve similar activities. Construction activities for the proposed Project would be short-term and temporary and would be accommodated by existing infrastructure or by temporary or portable infrastructure, such as diesel generators. In addition, the construction or relocation of existing utility infrastructure has been evaluated in the resource sections in Chapter 3 of this Draft SEIR and the other cumulative resource analyses in this chapter. Construction activities would not result in insufficient water supplies available to serve the proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years. The amount of solid waste generated during construction of the proposed Project could be accommodated by the Yolo County Central Landfill, which as of 2022 had 67.5 percent capacity remaining. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, the proposed Project would result in a less-than-significant impact, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

Cumulative Effects of Constructed Restoration Elements, and Operations, Monitoring, and Maintenance Activities

Cumulative projects presented in Table 4-1 would introduce new physical features and involve operations and maintenance activities. The proposed Project would include landscape modifications, new infrastructure, and operational actions to create tidal wetland and associated floodplain habitat and managed wetlands for waterfowl. The proposed Project would include facilities improvements to irrigation and drainage ditches and installation of fish-passable structures such as culverts and modified weir boxes. Operations, monitoring, and maintenance of the facilities improvements to irrigation and drainage ditches and installation of fish-passable structures such as culverts and modified weir boxes would be similar to existing conditions and would not create substantial additional water demand. The amount of solid waste needing to be disposed of at the local landfill would be accommodated by the Yolo County Landfill, which as of 2022 had 67.5 percent capacity remaining. Therefore, although cumulative projects presented in Table 4-1 in combination with the proposed Project would result in a cumulatively significant impact, the proposed Project would result in a less-than-significant impact, and the proposed Project's contribution to this significant cumulative impact would be ***less than cumulatively considerable***.

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CHAPTER 5
Alternatives

5.1 Introduction

The principles used to guide selection of the alternatives analyzed in this Draft SEIR are provided by Section 15126.6 of the CEQA Guidelines, which specifies that an environmental impact report (EIR) must do all of the following:

- Describe a reasonable range of alternatives to the project, or to the location of the project, that could feasibly attain most of the basic objectives of the project. "Feasible" means "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (Public Resources Code [PRC] Section 21061.1).
- Consider alternatives that could avoid or substantially lessen any significant environmental impacts of the project, including alternatives that may be costlier or could otherwise impede the project's objectives.
- Evaluate the comparative merits of the alternatives.

The focus and definition of the alternatives evaluated in this Draft SEIR are governed by the "rule of reason," in accordance with Section 15126.6(f) of the CEQA Guidelines. That is, the range of alternatives presented in this Draft SEIR must permit a reasoned choice by DWR, as the CEQA lead agency. CEQA Guidelines Section 15126.6 requires that an EIR evaluate at least one "No Project Alternative," evaluate a reasonable range of alternatives to the project, identify alternatives that were considered during the scoping process but eliminated from detailed consideration, and identify the "environmentally superior alternative."

Although CEQA Guidelines (Section 15126.6(d)) require that alternatives be evaluated, they permit the evaluation to be conducted in less detail than for a proposed project. Consistent with Section 15126.6(d) of the CEQA Guidelines, the information provided in this Draft SEIR about each alternative allows for a meaningful evaluation, analysis, and comparison of the alternatives with the proposed Project.

5.1.1 Summary of Final SRGO Program EIR Alternatives

In accordance with CEQA Guidelines Section 15126.6, the Final SRGO Program EIR evaluated alternatives to the State Water Resources Control Board's (State Water Board) "Order for Clean Water Act Section 401 Water Quality Certification and Waste Discharge Requirements for Restoration Projects

Statewide" in Chapter 6, "Alternatives." Four alternatives were identified for further evaluation in the Final SRGO Program EIR:

- The No Project Alternative.
- Alternative 1 – Specify More Narrowly the Types of Restoration Projects Included in the Order.
- Alternative 2 – Eliminate Certain Aspects of Restoration Categories.
- Alternative 3 – Exclude Entire Categories of Restoration Projects.

Under the No Project Alternative, the State Water Board would take no action to approve the Order to expedite regulatory approval of restoration projects that fall outside the project size limits of the existing "Order for Small Habitat Restoration Projects" (Order #SB12006GN) (see Final SRGO Program EIR Section 6.4.1, pp. 6-5 and 6-6). Restoration projects initiated by project proponents would continue to be implemented, and projects would remain subject to the requirement to file a Clean Water Act Section 401 water quality certification and/or waste discharge requirements for each restoration project. The No Project Alternative would not achieve the objective to help streamline the regulatory process for restoration projects statewide by interpreting State standards in a uniform manner to ensure that the projects are consistent with federal and State water quality laws.

Alternative 1 specified more narrowly the types of restoration projects included in the Order (e.g., the project must exceed a certain limited percent of footprint) (see Final SRGO Program EIR Section 6.4.2, p. 6-7). This alternative would allow for larger restoration projects than specified in the Order for Small Habitat Restoration Projects but would be more limited than the Order. Alternative 2 eliminated certain aspects of restoration categories (e.g., bank stabilization projects that depend on riprap, removal of small dams) (see Final SRGO Program EIR Section 6.4.3, pp. 6-8 and 6-9). Alternative 3 excluded entire categories of restoration projects (e.g., Water Conservation, Floodplain Restoration) (see Final SRGO Program EIR Section 6.4.4, p. 6-10).

The analysis presented in Chapter 6 of the Final SRGO Program EIR found that Alternatives 1, 2, and 3 would result in similar impacts compared to the proposed Project, but potentially at a lesser magnitude. Alternative 3 excludes entire categories of restoration projects, which, depending on the excluded restoration category, could result in less construction activity than under the other alternatives. Therefore, Alternative 3 would be the environmentally superior alternative. However, all three of these alternatives were eliminated because they would not achieve the same degree of environmental benefits as the Order and would limit the restoration projects covered under the Order such that they would not fully achieve streamlining of the regulatory process for restoration projects statewide.

According to CEQA Guidelines Section 15163, this Draft SEIR needs to contain only the information necessary to analyze the proposed Project, including changed circumstances and new information requiring additional environmental review than that provided in the Final SRGO Program EIR. The range of alternatives described and evaluated in the Final SRGO Program EIR were, appropriately, alternatives to the program-level regulatory coverage provided by the Order, which are not relevant to project-specific alternatives at issue here. As such, consistent with CEQA Guidelines Section 15126.6(d), this Draft SEIR provides an alternatives development evaluation, sufficient to allow for a meaningful evaluation, analysis, and comparison of the alternatives with the proposed Project.

5.2 Alternatives Development and Screening

This section describes the development of a reasonable range of alternatives, the method used to screen the alternatives, and the alternatives considered but eliminated from detailed consideration in this document.

As discussed in Section 5.1, CEQA requires that an EIR describe and evaluate a reasonable range of alternatives to a project or to the location of a project that would feasibly attain most of the basic project objectives and avoid or substantially lessen significant project impacts. As presented in Chapter 2, "Project Description," Section 2.1.2, "Purpose, Goals and Objectives," the proposed Project's goals and objectives have been developed to support the Healthy Rivers and Landscapes (HRL) Program, help meet the objectives of the Central Valley Flood Protection Plan, provide benefits for native fish and wildlife species, and maintain existing recreational and agricultural land uses that are of regional importance in the Yolo Bypass. The goals and objectives of the proposed Project are:

Goal 1: Restore tidal and floodplain habitats in the Yolo Bypass to support native fish and wildlife.

Objectives:

1. Create a tidal channel network with connectivity to adjacent floodplain habitat.
2. Reduce impediments to fish passage on and off the floodplain.
3. Enhance aquatic food web production and export.
4. Accommodate inland migration of habitats.

Goal 2: Support multibenefit land uses that are compatible with Yolo Bypass tidal and floodplain habitat objectives.

Objectives:

1. Maintain or improve infrastructure that supports existing recreation and agriculture uses.
2. Implement recreational and agricultural management practices compatible with tidal and floodplain habitats.

Goal 3: Reduce flood risk in a manner compatible with tidal and floodplain habitats.

Objectives:

1. Reduce localized flood stages.
2. Reduce flood encroachments.
3. Maintain or reduce hydraulic roughness.
4. Reduce localized wind-wave erosion.

5.2.1 Development of a Reasonable Range of Alternatives

The alternatives considered in this Draft SEIR were developed based on information gathered during development of the proposed Project and during the Draft SEIR scoping process (Section 1.4, "Environmental Review and Approval Process").

In developing the proposed Project, a range of potential design options and other ways to meet the proposed Project objectives were considered, based on input from hydraulic engineers, aquatic biologists, and other technical experts. A range of potential scales and layouts for various land uses included in proposed Project design were considered in this process.

In addition, two comments received during the scoping period of this Draft SEIR were considered in the development of alternatives (see Appendix B to the Draft SEIR, "Tide's End Multibenefit Restoration Project Notice of Preparation and Comment Letters," for the comments received in response to the NOP). One comment suggested maximizing agricultural land uses rather than creating tidal wetland. An alternative with the goal of maximizing agricultural land uses rather than creating tidal wetlands would not meet Project Goal 1 (and related objectives): Restore tidal and floodplain habitats in the Yolo Bypass to support native fish and wildlife and would not meet Goal 3 (and related objectives): Reduce flood risk in in a manner compatible with tidal and floodplain habitats. However, as presented in Section 5.3.3, "Alternative 2: Maintain Multibenefit Land Uses/Minimize Construction," has been developed that includes maintaining multibenefit land uses, including agricultural uses. Another comment suggested consideration of an alternative focused on achieving the Yolo Bypass Cache Slough Partnership's six pillars of flood risk management, fisheries and wildlife habitat, water supply, water quality, agriculture, and recreation. As described in Chapter 2, "Project Description," the proposed Project's goals and objectives have been developed to support the HRL Program, help meet the objectives of the Central Valley Flood Protection Plan, provide benefits for native fish and wildlife species, and maintain existing recreational and agricultural land uses that are of regional importance in the Yolo Bypass. These goals and objectives are consistent with the Yolo Bypass Cache Slough Partnership's six pillars and each alternative evaluated in this chapter (see Section 5.3) was evaluated for its ability to feasibly attain most of the proposed Project's objectives.

5.2.2 Methods Used to Screen Alternatives

According to CEQA Guidelines Section 15126.6, an EIR must describe a reasonable range of alternatives to the project that could feasibly attain most of the basic objectives of the project. "Feasible" is defined as capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (PRC Section 21061.1).

Potential alternatives were screened based on their ability to feasibly attain most of the basic project objectives, their feasibility within the limits of DWR's jurisdiction, and their ability to reduce or eliminate any significant environmental impacts of the proposed Project.

- **Meeting proposed Project objectives**—The proposed Project objectives are listed in Section 2.1.2, "Purpose, Goals and Objectives" (and repeated above in Section 5.2, Alternatives Screening and Development). The CEQA Guidelines state that alternatives must feasibly attain most of the basic objectives of the project. Alternatives that did not meet the majority of the objectives for the proposed Project were screened out and not carried forward for further evaluation in this Draft SEIR.
- **Feasibility**—Alternatives that do not meet the requirements of applicable laws and regulations, were not carried forward for further evaluation in this Draft SEIR.
- **Avoiding or substantially lessening any potentially adverse environmental effect of the proposed Project** —Consistent with the CEQA Guidelines, alternatives should avoid or substantially

lessen one or more of the significant environmental effects of the proposed Project. Alternatives that would not avoid or substantially lessen a potentially significant environmental impact may be eliminated from detailed evaluation in the Draft SEIR.

5.2.3 Alternatives Considered but Rejected

The CEQA Guidelines require an EIR to identify any alternatives that were considered by the lead agency but were rejected as infeasible, and to briefly explain the reasons underlying the lead agency's determination. Section 15126.6(c) of the CEQA Guidelines states the following:

> *The EIR should identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination…Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.*

One alternative was considered but rejected from further analysis, and it is related to alternative locations for the proposed Project. This alternative is described below along with the reasons why it was rejected from further consideration.

Alternative Restoration Project Location

Siting of the proposed Project area focused on the Yolo Bypass because it is a uniquely ideal location for balancing the proposed Project's three overarching goals (and associated objectives) of restoring tidal and floodplain habitat, supporting multibenefit land uses, and reducing flood risk.

As part of California's Central Valley flood protection system, the Yolo Bypass was established as the primary flood risk reduction mechanism in the Sacramento River Basin and acts as a relief valve for floodwaters in the Sacramento River. This low-lying area was subject to the seasonal inundation of floodwaters from the nearby Sacramento River and its numerous tributaries (CDFG 2008). Its seasonal flooding continues natural hydrologic patterns, creating wetland and riparian habitats for hundreds of species, including migratory birds along the Pacific Flyway and juvenile Chinook salmon, which use the floodplain as a rearing habitat. The nutrient-rich floodplain environment makes the area a productive agricultural region with approximately 75% of it being privately owned agriculture, as well as additional agricultural uses on public lands within the Yolo Bypass Wildlife Area held under leases managed by the California Department of Fish and Wildlife (CDFW) (Yolo County RCD 2025; Napa County WICC 2022). Further, these diverse managed habitats provide extensive hunting and wildlife viewing opportunities. See the environmental settings sections of the following resource sections of this Draft SEIR for additional detail about the characteristics of the Yolo Bypass that provide unique and important opportunities to meet the goals of the proposed Project: Section 3.4, "Agriculture," Section 3.6, "Biological Resources – Terrestrial," Section 3.7, "Biological Resources – Aquatic," Section 3.10, "Hydrology and Water Quality," and Section 3.11, "Recreation."

As stated in Section 2.1.1 of this Draft SEIR, "Proposed Project Location," the proposed Project area is sited to take advantage of existing land elevations and amplify the habitat benefits of seasonal flows through the Yolo Bypass. With the restoration and enhancement of tidal wetland and floodplain habitats,

conditions would mimic the historic shallow, long-duration flood patterns of the region that support underlying ecological processes necessary for productive aquatic ecosystems. Importantly, the proposed Project area is adjacent to the Toe Drain, which is an important migratory corridor for fish moving between upstream and Delta ecosystems, and the opening of which is necessary for reconnection to tidal hydrology and restoration of tidal habitats. There are no alternative properties available that are adjacent to the Toe Drain and provide the same opportunities. In addition, implementation of the proposed Project would complete an approximately 10-mile corridor of wetland and floodplain habitats, stretching from the southern tip of Lookout Slough to the Yolo Bypass Wildlife Area, that are managed for fish and wildlife benefits. The proposed Project area also contains existing infrastructure (e.g., agricultural roads, water control structures, irrigation canals) that supports the proposed Project's goals to support agricultural and recreational land uses.

Therefore, as described above, because the Yolo Bypass and the proposed Project area are uniquely located to allow for coordination of habitat restoration, agricultural viability, recreation, and reduction of flood risk as required by the goals and objectives of the proposed Project, per CEQA Guidelines Section 15126.6(f)(2)(B), alternative locations were determined not to be feasible and this alternative was rejected from further consideration. Alternative locations were rejected because acquiring 2,212 acres of contiguous land would unreasonably increase Project costs and significantly extend the implementation timeline of the proposed Project due to the time required to identify comparable land, negotiate with multiple landowners, clear encumbrances, and conduct environmental review, etc. Further, alternative locations also do not require detailed discussion where they are infeasibly expensive or would cause unreasonable delay (*Citizens of Goleta Valley v. Board of Supervisors* [1990] 52 Cal.3d 553, 575).

5.3 Alternatives to the Proposed Project

The No Project Alternative and three feasible alternatives to the proposed Project have been identified for further evaluation in the Draft SEIR and are discussed below as follows:

- No Project Alternative.
- Alternative 1: Maximize Tidal Habitat Restoration.
- Alternative 2: Maximize Multibenefit Land Uses.
- Alternative 3: Maximize Flood Benefits.

The discussions below include a description of each alternative, an evaluation of the alternative's ability to achieve the proposed Project objectives presented in Section 5.2, "Alternatives Development and Screening," and a summary of ability of the alternative to lessen one or more significant impacts of the proposed Project. A comparison of the potential impacts of the alternatives to the impacts of the proposed Project is presented in Section 5.4, "Comparative Analysis of Alternatives."

5.3.1 No Project Alternative

Description of Alternative

CEQA Guidelines Section 15126.6(e) requires consideration of a "no project" alternative. The purpose of this alternative is to allow the decision makers to compare the impacts of the proposed Project with the

impacts of not approving the proposed Project. The No Project Alternative consists of existing conditions at the time the NOP is published (the "NOP baseline" defined in Section 3.2.1, "Explanation of Baselines for this Draft SEIR") and what would be reasonably expected to occur in the foreseeable future if the proposed Project were not approved, based on current plans and consistent with available infrastructure (the "future no-action baseline" defined in Section 3.2.1 "Explanation of Baselines for this Draft SEIR" of Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures"). As stated in Section 3.2.1, the future no-action baseline reflects the environmental conditions at the time the proposed Project is planned to be operational (2028), and includes the additional operation of three specific projects: the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project (Lookout Slough), the Yolo Bypass Salmonid Habitat and Fish Passage Project (Big Notch Project), and the Prospect Island Tidal Habitat Restoration Project (Prospect Island).

Under the No Project Alternative, none of the restoration elements of the proposed Project would be constructed or operated. Specifically, the Toe Drain berm would not be opened to reconnect tidal hydrology to the proposed Project area; tidal channels would not be excavated; no earthmoving would occur to optimize drainage; and facilities improvements (i.e., irrigation and drainage infrastructure improvements, fish passage and screening improvements, removal of redundant water control and utilities infrastructure, addition of volitional fish passage[1] structures) would not occur. The temporary construction impacts associated with the construction of the restoration elements of the proposed Project would likewise not occur. The existing managed wetlands for waterfowl and agricultural fields would be left as they currently exist and operate. As tidal hydrology would not be restored and transition zone habitat would not be created, the proposed Project area would not experience improved resilience to sea-level rise.

Relationship to Project Objectives

The No Project Alternative would not achieve the proposed Project's three overarching goals nor any of the specific objectives. Tidal and floodplain habitats would not be restored in the Yolo Bypass to support native fish and wildlife, existing impediments to fish would persist, aquatic food web production may be enhanced but would not export efficiently, and the area would not accommodate inland migration of habitats. Existing multibenefit land uses (i.e., agricultural production, private duck hunting clubs) would continue on the proposed Project area as under existing conditions, but supporting infrastructure (e.g., for irrigation and drainage) would not be improved. Flood risk in the Yolo Bypass would also not be reduced via the proposed Project's drainage improvements, reduction of flood encroachments, and tidal and floodplain vegetation that could buffer localized wind-wave erosion.

Ability to Lessen Significant Environmental Impacts

The No Project Alternative would not result in any impacts to the physical environment; therefore, it would have a reduction in impacts as compared to the proposed Project.

[1] Volitional passage refers to fish passage whereby fish transit a passage facility under their own swimming capability, using timing and behavior they choose, and under all naturally passable flows. Volitional passage means fish can enter, traverse, and exit a passage facility under their own power, instinct, and swimming capability. The fish pass through the facility without the aid of any apparatus, structure, or device (i.e., they are not trapped, mechanically lifted or pumped, or transported) (NOAA 2023).

5.3.2 Alternative 1: Maximize Tidal Habitat Restoration

Description of Alternative

Alternative 1 would maximize the tidal habitat restoration goal by creating approximately 950 acres of tidal wetlands, compared to approximately 460.7 acres under the proposed Project. To maximize the area of tidal wetlands, the managed floodplain area maintained for agriculture and managed wetland (recreational) land uses would be less than the proposed Project (approximately 950 acres would be maintained for agriculture and managed wetlands under Alternative 1 compared to approximately 1,262.6 acres under the proposed Project), and the area of transition zone floodplain habitat would also be less than the proposed Project (approximately 15 acres would be created under Alternative 1 compared to approximately 151.7 acres under the proposed Project). Similar to the proposed Project, tidal inundation would be restored by hydrologically connecting the proposed Project area to the Toe Drain via a series of berm openings and tidal channel construction. Riparian vegetation on the Toe Drain berm disturbed by this activity would be replanted elsewhere in the proposed Project area. This alternative would also include facilities improvements to support and improve agriculture and managed wetlands (recreational), similar to the proposed Project (i.e., irrigation and drainage infrastructure improvements including lowering and relocation of existing berms to reduce flood encroachments, regrading and resizing irrigation ditches, removal of redundant water control and utilities infrastructure, addition of fish screening to pumping systems, and addition of volitional fish passage structures to fields and managed wetlands).

Maximizing the acreage of tidal wetland habitat on the proposed Project area would include approximately 1.5 million cubic yards (CY) of excavation (compared to approximately 670,000 CY for the proposed Project) to create appropriate elevations within the new tidal wetland areas. The majority of the excavated material would have to be hauled off-site to maintain multibenefit (agricultural and recreational) land uses and avoid creating new elevated landforms that would result in an adverse impact on flooding. It is assumed the same seasonal construction work windows would be followed as planned for the proposed Project. In addition, long-term operations, monitoring, and maintenance activities (e.g., water management to benefit fish, habitat monitoring, invasive species management) would be similar to those under the proposed Project.

Relationship to Project Objectives

As compared to the proposed Project, Alternative 1 emphasizes the attainment of the proposed Project's Goal 1 related to restoring tidal wetland habitats in the Yolo Bypass, as noted above in the "Description of Alternative," and increases the achievement of the associated first objective for this goal to create a tidal channel network with connectivity to adjacent floodplain habitat. Similar to the proposed Project, this alternative would satisfy the second objective through reducing impediments to fish passage on and off the floodplain. Floodplain and tidal wetland vegetation, as well as agricultural fields, would contribute to aquatic food web production and export (Objective 3), and the floodplain area could accommodate some, but lesser inland migration of habitats as sea levels rise (Objective 4) as compared to the proposed Project.

To maximize the area of tidal wetlands, the area maintained for agricultural and recreational land uses would be reduced under Alternative 1 to a smaller area that is still large enough to be expected to potentially support an economically viable rice farming operation (for agriculture), and the smallest area

expected to potentially support a viable private duck club (for managed wetlands); thus, still supporting achievement of goals related to multibenefit land use (objectives under Goal 2), but at a reduced scale as compared to the proposed Project.

This alternative may meet the flood benefit goal (objectives under Goal 3) to the same extent as the proposed Project. Alternative 1 would include improvements to water supply infrastructure and drainage that could reduce localized flood stages, tidal and floodplain vegetation could buffer localized wind-wave erosion, and lowered berm heights could reduce flood encroachments on the proposed Project area; however, additional modeling would be necessary to assess the flood benefits of the alternative.

Ability to Lessen Significant Environmental Impacts

Implementation of Alternative 1 would create different amounts of habitat areas than the proposed Project (i.e., additional acres of tidal wetland and floodplain habitat and fewer acres of transition zone, managed wetlands, and floodplain agriculture) and would require a higher magnitude and intensity of construction work (i.e., amount of earthwork and excavated material would be nearly three times greater than the proposed Project). The majority of the excavated material would be hauled off-site under Alternative 1, as creation of upland topographic features within the proposed Project area would be minimized in order to maximize area for tidal wetland and other multibenefit land uses, and to avoid creation of tall topographic features that would obstruct flood flows. Long-term operations, monitoring, and maintenance would be similar between Alternative 1 and the proposed Project.

The intensity of impacts resulting from Alternative 1, in comparison to the impacts of proposed Project are summarized in Section 5.4, Table 5-1, "Comparison of the Environmental Impacts of the Proposed Project and Alternatives." Below is a summary of how the environmental impacts for the alternative differ from the proposed Project.

For construction activities, the earthmoving and ground disturbance required to construct this Alternative, which maximizes tidal wetland area, would result in a greater magnitude and intensity associated with a longer construction duration, which would at least double as compared to the proposed Project (e.g., impacts related to transport, use, disposal, and accidental release of hazardous substances, dewatering, or release of pollutants into surface waters). Increased excavation also increases the chances of encountering previously unrecorded cultural, and Tribal cultural resources. Increased truck trips to off-haul the additional fill would increase air quality impacts during construction such as by generating additional emissions of GHGs and criteria pollutants thereby increasing the likelihood of impacts to sensitive receptors and occupants in the surrounding area and conflicts with adopted air quality and GHG reduction plans.

Constructed restoration elements would convert a larger acreage of Special Designation Farmland to non-agricultural use (i.e., tidal and floodplain habitat) and would eliminate some of the managed wetlands that currently exist on the proposed Project area. This would likely lead to more significant alterations to lands with Williamson Act contracts and additional impacts to recreational resources; however, the effects of these would be similar to the proposed Project. With a larger degree of aquatic habitat established, some impacts to habitat for special-status terrestrial wildlife species could increase as well. However, because there would be less managed floodplain habitat requiring operations, monitoring, and maintenance, some long-term special-status plant and wildlife species habitats may be reduced (a significant Project impact

that would be reduced to less-than-significant levels through implementation of general protection measures and species protection measures).

Long-term impacts related to operations, monitoring, and maintenance would be mostly similar between Alternative 1 and the proposed Project. However, as compared to the proposed Project, the associated long-term operations, monitoring, and maintenance activities required for agricultural and managed wetlands equipment operation would be less than required for the proposed Project. While operational GHG emissions are less than significant under the proposed Project, this alternative could result in lesser long-term GHG emissions.

Similar to the proposed Project, portions of Alternative 1 project area could overlap with priority areas for acquisition by the Yolo Habitat Conservancy for inclusion its reserve system, as identified in Figure 3.6-6, "Priority Acquisition Areas," of the Yolo Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP; Yolo Habitat Conservancy 2018). As such, pursuant to the SRGO Final Program EIR, Mitigation Measure TERR-1 would be applied to reduce this impact to less-than-significant level by requiring coordination between CDFW, the USFWS, and the plans' permittees to ensure that a project would conform to the goals and policies in said plan. Therefore, these impacts would be similar to the proposed Project.

5.3.3 Alternative 2: Maintain Multibenefit Land Uses/Minimize Construction

Description of Alternative

Alternative 2 would create new tidal wetland habitats only where achievable without extensively modifying existing grades and elevations to develop such habitats. This approach would reduce the need for substantial earthwork. Specifically, Alternative 2 would result in the creation of approximately 436 acres of new tidal wetland (about 24.7 acres less than the proposed Project), and approximately 190 acres of new transition zone habitats (about 38.3 acres more than the proposed Project), and approximately 192 acres of floodplain habitats (about 28.4 acres less than the proposed Project). The extents of all other land uses under Alternative 2, including managed wetlands and agricultural fields, would be similar to the proposed Project.

Alternative 2 would maintain or create managed wetlands, agricultural fields and floodplain habitats similar to the proposed Project area. The location and extent of the managed wetlands, agricultural fields, and floodplain and tidal wetland habitat areas would be determined based on existing grades and elevations, proximity to other land uses and infrastructure, and other existing site conditions, so as to limit the overall magnitude of earthwork and other construction activities while still providing benefits for each of the proposed Project goals.

Alternative 2 leaves more areas of the site similar to the existing elevations compared to the proposed Project and achieves tidal wetland and floodplain habitat restoration primarily through the creation of new tidal channels and swales to restore natural floodplain hydrology. The volume of excavated material required to construct Alternative 2 would be approximately 40% less than that required for the proposed Project (approximately 400,000 CY of earthwork for Alternative 2, compared to approximately 670,000 CY for the proposed Project).

Alternative 2 would involve earthwork to connect low-elevation portions of the proposed Project area to the Toe Drain, reintroducing tidal flows, and converting some of the existing managed wetland and agriculture areas to tidal wetland and transition zone habitats. Alternative 2 would create new tidal habitat channels and swales that would provide adequate tidal circulation to the new tidal wetland habitats and provide drainage from adjacent managed floodplain areas across the new floodplain habitats and transition zones and into the new tidal wetland habitat areas. Unlike the proposed Project, Alternative 2 does not include earthmoving to lower the site's existing elevations for the purpose of creating new tidal wetland habitats where current elevations would generally not support it.

This alternative would also include facilities improvements similar to the proposed Project (i.e., irrigation and drainage infrastructure improvements including lowering and relocation of existing berms to reduce flood encroachments; regrading and resizing irrigation ditches; removal of redundant water control and utilities infrastructure; addition of fish screening to pumping systems; and addition of volitional fish passage structures to fields and managed wetlands). This alternative would reconnect low-elevation portions of the proposed Project area to the Toe Drain, similar to the proposed Project, and would include similar creation of new riparian forest and riparian scrub habitats resulting in a net increase from existing riparian habitats.

It is assumed the same seasonal construction work windows would be followed as planned for the proposed Project. In addition, long-term operations, monitoring, and maintenance activities (e.g., water management to benefit fish, habitat monitoring, invasive species management) would be similar to those under the proposed Project.

Relationship to Project Objectives

This alternative seeks to attain all of the proposed Project's goals and objectives while minimizing the extent and duration of construction activities, and thereby reducing the environmental impacts associated with those construction activities compared to the proposed Project.

Regarding Goal 1 and related objectives, Alternative 2 would create a smaller area of new tidal wetland and tidal channel habitat (Objective 1) but would create a larger area of transition zone habitat that would accommodate more inland migration of habitats (Objective 4), as compared to the proposed Project. While Alternative 2 would provide similar types of benefits for native fish and wildlife compared to the proposed Project, Alternative 2 would result in more benefits associated with creation of transition zone and floodplain habitats, and lesser benefits associated with creation of tidal wetland and tidal channels. Similar to the proposed Project, this alternative would satisfy the second objective through reducing impediments to fish passage on and off the floodplain. Floodplain and tidal wetland vegetation, as well as agricultural fields, would also contribute to aquatic food web production and export (Objective 3).

Alternative 2 would maintain compatibility with the proposed Project's multibenefit goal and objectives (Goal 2) by managing and maintaining floodplain agricultural land and managed wetlands recreational waterfowl hunting use similar to the proposed Project.

Regarding Goal 3 objectives related to reduction of flood risk in the Yolo Bypass, Alternative 2 would achieve similar reductions in flood stages and would include new floodplain vegetation that could buffer localized wind-wave erosion, as compared to the proposed Project.

Ability to Lessen Significant Environmental Impacts

Alternative 2 maintains a similar area of agricultural and recreational land uses as under the proposed Project, while minimizing the magnitude and intensity of construction required for restoring tidal and floodplain habitats. Alternative 2 would require a lesser scale of construction activities compared to the proposed Project due to the preservation of existing grades across a larger portion of the floodplain and transition zone habitat areas, resulting in a reduced extent of new tidal wetland habitat, less new tidal channels, and a lesser amount of total earthwork compared to the proposed Project. All other construction activities would be similar to those described for the proposed Project

The intensity of impacts resulting from Alternative 2 in comparison to the proposed Project can be seen in Section 5.4, Table 5-1, "Comparison of the Environmental Impacts of the Proposed Project and Alternatives." Alternative 2 would reduce construction-related impacts as compared to the proposed Project across most impacts due to the reduced earthwork and associated construction activity, including impacts to terrestrial biological resources. Decreased excavation as compared to the proposed Project also reduces the chances of encountering previously unrecorded cultural and Tribal cultural resources, as well as previously unidentified contaminated soil and groundwater. Decreased excavation and truck trips to haul excavated material across the proposed Project area would decrease air quality impacts during construction as well, including reduced GHG emissions and criteria pollutants thereby further decreasing potential impacts to sensitive receptors and occupants in the surrounding area and conflicts with adopted air quality and GHG reduction plans compared to the proposed Project.

Implementation of Alternative 2 would result in a similar level of conversion of Special Designation Farmland to a non-agricultural use as would occur with the proposed Project. This would likely lead to similar alterations to lands with Williamson Act contracts and similar levels of impact to recreational resources because the proposed Project would relocate some of the existing managed wetlands but the type, area, and quality of existing recreational use (e.g., waterfowl and upland game hunting, fishing, bird-watching, and wildlife viewing) would be returned similar to existing conditions after construction.

Alternative 2 would also reduce the degree of impact to terrestrial wildlife species, because Alternative 2 requires a smaller footprint of direct ground disturbance, and so less existing riparian vegetation and tule wetland would be disturbed and fewer existing floodplain habitats would be altered or converted to aquatic habitats compared to the proposed Project.

Alternative 2 would require a similar level of operations, monitoring, and maintenance as the proposed Project.

Similar to the proposed Project, portions of Alternative 2 project area could overlap with priority areas for acquisition by the Yolo Habitat Conservancy for inclusion its reserve system, as identified in Figure 3.6-6, "Priority Acquisition Areas," of the Yolo HCP/NCCP. As such, pursuant to the SRGO Final Program EIR, Mitigation Measure TERR-1 would be applied to reduce this impact to less-than-significant level by requiring coordination between CDFW, USFWS, and the plans' permittees to ensure conformance to the goals and policies in said plan. Therefore, these impacts would be similar to the proposed Project.

5.3.4 Alternative 3: Maximize Flood Benefits

Description of Alternative

Alternative 3 would involve the removal of as many existing landforms and vegetation features that are considered encroachments in the floodway as possible, while maintaining existing agricultural land uses in higher elevation portions of the proposed Project area and creating tidal wetland and transition zone habitats in lower elevation areas adjacent to the Toe Drain. This would result in approximately 900 acres of agriculture, 600 acres of tidal wetland, and 500 acres of transition zone and/or floodplain habitats. This alternative would not support any managed wetlands within the proposed Project area. This would include removing all the berms around the agricultural fields in the Capitol Oil property. Excavation would occur to lower elevations of the rice fields such that they could still hold water as required by standard rice production practices, or alternately the fields would be converted to another highly managed crop that does not require deep inundation. Rice is highly compatible with flood conveyance because after harvest occurs in the fall, leftover rice stalks are churned into the soil and left to decompose over winter (leaving rice fields with extremely low hydraulic roughness during the flood season). Non-rice crops would be required to be mowed or otherwise treated to provide a similar low hydraulic roughness during the flood season. To maintain rice fields or other crops under these conditions, the irrigation and drainage system would be re-engineered to ensure appropriate water management could occur to allow for farming.

Volitional fish passage structures would be implemented in order to convey fish out of the lowered rice fields and avoid fish stranding. This alternative would also include facilities improvements (i.e., removal of redundant water control and utilities infrastructure; and addition of fish screening to pumping systems), similar to the proposed Project.

Berms around existing managed wetlands would be removed to increase flood conveyance and reduce fish stranding potential. As under the proposed Project, the managed wetland areas would not be relocated to Capitol Oil, in order to maintain the area as rice or a similarly managed crop for flood conveyance purposes; therefore, with the reconnection to tidal hydrology, there would be no way to manage water levels for significant portions of existing managed wetlands for waterfowl (i.e., most of those located on the Laurel G, Yolo Basin, Kleary, and Williams properties) and they could become inoperable as managed wetlands. Targeted earthwork to create drainage swales and connect ponded areas to the Toe Drain would also occur across the proposed Project area south of Capitol Oil to reduce fish stranding.

Finally, this alternative would also include opening the Toe Drain berm to reconnect tidal hydrology to low-elevation areas but would not include excavation of tidal channels. The partial reconnection of tidal hydrology would allow a limited amount of tidal wetland vegetation to establish naturally within low-elevation areas (but less than with the proposed Project). Tidal channel excavation is not proposed under this alternative because such excavation is not expected to provide a substantial benefit for flood conveyance and would increase construction impacts. Riparian vegetation disturbed by excavation of the Toe Drain berm could be replanted elsewhere on the proposed Project area in locations that are not expected to result in a reduction in floodplain conveyance, similar to the proposed Project.

The amount of excavation required to lower the fields would depend on whether rice or non-rice crops are selected, and the total volume of excavation for the proposed Project would either be similar to (for non-rice crops), or substantially greater than (for rice) the volume of earthwork under the proposed Project.

All excavated material would be hauled to an off-site location to avoid the need to raise grades elsewhere within the proposed Project area, thereby maintaining maximum flood conveyance and minimizing hydraulic roughness. Both rice and non-rice agriculture operations would require irrigation improvement to allow for irrigation water delivery and drainage from the improved fields. The types and scale of irrigation improvements would generally be similar to the proposed Project including modifications to existing and installation of new canals, pumps, and water control structures, however the specific locations, elevations, sizing and other features of the irrigation improvements would be specific to the irrigation requirements of the selected crops.

It is assumed the same seasonal construction work windows would be followed as planned for the proposed Project. In addition, long-term maintenance and repair of the expanded engineered infrastructure would be required to maintain the irrigation and drainage system, similar to the proposed Project.

Relationship to Project Objectives

Alternative 3 would provide the greatest benefits of any of the alternatives with respect to flood risk reduction (Goal 3) and would achieve some (but not all) of the specific project objectives regarding habitat restoration (Goal 1) and multibenefit land uses (Goal 2).

Regarding Goal 1, a tidal channel network with connectivity to adjacent floodplain would not be created (Objective 1). Some tidal wetland habitat may naturally re-establish once the proposed Project area is reconnected to tidal hydrology, but the degree to which this natural establishment would occur is uncertain. If tidal wetland habitat were to naturally establish where existing elevations could support it, this alternative would accommodate inland migration of these habitats (Objective 4), but to a lesser extent than the proposed Project. Alternative 3 could introduce impediments to fish passage if the fields are lowered to support rice but would minimize these impediments to the extent possible (Objective 2) with the installation of engineered fish passage infrastructure, removal of berms, and excavation of drainage swales. Similar to the proposed Project, floodplain and tidal wetland vegetation, as well as agricultural fields, would contribute to aquatic food web production and export (Objective 3).

Regarding Goal 2, agricultural land uses on the proposed Project area would be maintained and supported by water supply and drainage infrastructure; however, existing recreational land uses (i.e., managed wetlands) could become inoperable (though they could still provide recreational hunting opportunities in unmanaged tidal wetland areas).

Alternative 3 emphasizes Goal 3 through substantial removal of flood encroachments as compared to the proposed Project, thereby reducing local flood stages (Objective 1) to a greater degree than the proposed Project, reducing flood encroachments (Objective 2), maintaining hydraulic roughness by maintaining compatible managed vegetation (Objective 3). Alternative 3 would maintain existing and create new riparian habitats in strategic locations including along the Toe Drain berm to reduce erosive wind waves affecting off-site infrastructure, similar to the proposed Project.

Ability to Lessen Significant Environmental Impacts

Alternative 3 would minimize flood encroachments in the floodway while maintaining existing agricultural land uses. The magnitude and intensity of construction-related activities would be similar to or greater than the proposed Project because, while excavation would not be needed to create tidal channels,

earthwork associated with excavation needed to lower berms and, potentially, to lower elevations of existing rice fields on Capitol Oil to maintain their function, would be similar or greater in magnitude. Excavation would be needed in order to prevent significant fish stranding issues (i.e., removal of berms around existing managed wetlands and excavation of drainage swales), similar to the proposed Project. The excavated material would have to be hauled off-site in order to maintain maximum flood conveyance and minimize hydraulic roughness.

The intensity of impacts resulting from Alternative 3 in comparison to the proposed Project can be seen in Table 5-1, in Section 5.4, "Comparison of the Environmental Impacts of the Proposed Project and Alternatives."

For construction activities, this alternative results in an increased number and distance of truck trips to off-haul excavated material (rather than balance fill on-site as under the proposed Project), which would increase air quality impacts during construction resulting in greater emissions of GHGs and criteria pollutants and thereby result in greater effects to sensitive receptors and occupants. Changes to the nature and location of construction activities would focus excavation in previously disturbed and managed rice fields and adjacent berms, reducing impacts to previously undisturbed areas, and thus, potentially decreasing the chances of encountering unrecorded subsurface cultural and Tribal cultural resources, a significant impact under the proposed Project that would be reduced to less than significant with the implementation of mitigation measures. However, this would result in an increase to other construction impacts from excavation such as increasing the likelihood of encountering previously unknown contaminated soils and groundwater. Permanent impacts to riparian vegetation would be similar to the proposed Project because riparian communities disturbed by the opening of the Toe Drain berm could be replanted elsewhere in the proposed Project area to minimize vegetative roughness.

For constructed restoration elements, implementation of Alternative 3 would result in reduced levels of conversion of Special Designation Farmland to a non-agricultural use as would occur with the proposed Project. This would likely lead to similar or reduced alterations to lands with Williamson Act contracts and similar levels of impairment, degradation, or elimination of recreational resources, a significant impact under the proposed Project that would be reduced to less-than-significant levels with the implementation of mitigation measures. Once constructed, this alternative would result in a reduction in recreation resources as compared to the proposed Project, because the number of duck blinds would be reduce when managed wetlands are reduced. This could result in a significant recreation impact that does not occur under the proposed Project. Tidal connectivity under Alternative 3 without excavation of tidal channels could lead to areas of tidal damping, reduced circulation, and potentially increased water quality impacts or vector control that would reduce the aquatic benefits of any tidal wetland that naturally establishes. Decreased tidal circulation could lead to an increase in creation of vector habitat; however, given the alternative is sited within the proposed Project area, it is not expected to result in the creation of a vector habitat that would pose a significant public health hazard.

Long-term maintenance and repair of the expanded engineered infrastructure would be required to maintain a highly managed irrigation and drainage system, similar to the proposed Project. Because there would be less managed floodplain habitat requiring operations, monitoring, and maintenance, some long-term special-status plant and wildlife species habitats may be reduced (a significant impact that would be

reduced to less than significant through implementation of general protection measures and species protection measures).

Similar to the proposed Project portions of Alternative 3 project area could overlap with priority areas for acquisition by the Yolo Habitat Conservancy for inclusion its reserve system, as identified in Figure 3.6-6, "Priority Acquisition Areas," of the Yolo HCP/NCCP. As such, pursuant to the SRGO Final Program EIR, Mitigation Measure TERR-1 would be applied to reduce this impact to less-than-significant level by requiring coordination between CDFW, USFWS, and the plans' permittees to ensure conformance to the goals and policies in said plan. Therefore, these impacts would be similar to the proposed Project.

5.4 Comparative Impact Analysis

Consistent with CEQA Guidelines Section 15126.6(d), the information provided in this Draft SEIR about the alternatives allows for a meaningful evaluation, analysis, and comparison of the alternatives with the proposed Project. **Table 5-1** presents a comparison of the environmental impacts of the proposed Project, the No Project Alternative, and Alternatives 1, 2, and 3.

In the resource sections of Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures," the potential impacts of implementation of the proposed Project were evaluated for the three types of potential impacts: construction activities; constructed restoration elements; and operations, monitoring, and maintenance activities. In some cases, the significance determination varied across impact type (e.g., less than significant for construction activities, but less than significant with mitigation for constructed restoration elements). The impacts of the alternatives are compared against potential impact of implementation of the proposed Project as a whole, with identification of the specific impact type discussed as needed to clarify comparative impacts between the proposed Project and an alternative. The magnitude or intensity of each alternative's impacts as compared to the proposed Project is then noted with "increased," "reduced," or "similar." These comparative statements are provided to designate the degree to which individual impacts of alternatives may vary from those of the proposed Project.

A brief summary of the comparative merits of each alternative is provided below:

- As discussed in Section 5.3.1 and presented in Table 5-1, the No Project Alternative would not achieve any of the proposed Project's goals and objectives but would avoid the potential impacts of the proposed Project.
- As discussed in Section 5.3.2 and presented in Table 5-1, Alternative 1 would result in ecological benefits to aquatic function that exceed those of the proposed Project; however, Alternative 1 would not balance the three overarching goals and corresponding objectives as well as the proposed Project (i.e., less agricultural and recreational land uses would be maintained). Alternative 1 may lessen two impacts of the proposed Project: impacts to special-status plants and wildlife species during operational activities (Impacts 3.6-1 and 3.6-2); however, both impacts associated with the proposed Project were identified as less than significant with implementation of general protection measures (Table 3.6-5).
- As discussed in Section 5.3.3 and presented in Table 5-1, Alternative 2 would achieve all three of the proposed Project's overarching goals and corresponding objectives. Alternative 2 would avoid or substantially lessen many of the potential impacts of the proposed Project, such as emission of GHGs

and criteria pollutants (Impacts 3.5-1 to 3.5-6), construction-related impacts to terrestrial biological resources (Impacts 3.6-1 to 3.6-4), and impacts to cultural resources and Tribal cultural resources (Impacts 3.6-2, 3.6-3, and 3.12-1).

- As discussed in Section 5.3.4 and presented in Table 5-1, Alternative 3 would not achieve all three of the proposed Project's overarching goals and corresponding objectives to the same extent as the proposed Project. Alternative 3 would maximize flood benefits to the degree possible, but the level of increased flood benefits would likely be modest given the size and existing land uses of the proposed Project area in relation to the amount of flood flows conveyed by the Yolo Bypass. Alternative 3 may lessen the following potential impacts of the proposed Project: impacts to farmland and Williamson Act contract lands (Impacts 3.4-1 through 3.4-3), impacts to special-status plant and wildlife species (Impacts 3.6-1 and 3.6-2), and impacts to cultural resources and Tribal cultural resources (Impacts 3.6-2, 3.6-3, and 3.12-1).

5.5 Environmentally Superior Alternative

CEQA requires identification of the environmentally superior alternative which is the alternative that has the least significant impacts on the environment. CEQA Guidelines Section 15126.6(e)(2) states: "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives."

The No Project Alternative would not result in any construction or long-term operations, monitoring, or maintenance impacts, which would make it the environmentally superior alternative. However, the No Project Alternative would not achieve any of the objectives of the proposed Project to restore tidal and floodplain habitat, support improvements to multibenefit land uses, or reduce flood risk in a manner compatible with tidal and floodplain habitats.

As shown in Table 5-1, and as discussed in the alternatives analysis above, Alternative 2 (Maintain Multibenefit Land Uses) would avoid or substantially lessen several potential impacts identified for the proposed Project, due to the reduced construction activities required. Decreased excavation would reduce potential impacts to subsurface resources and terrestrial biological resources and would minimize air quality impacts associated with excavation and hauling fill material.

Due to the reduced magnitude and duration of impacts, Alternative 2 is the environmentally superior alternative as defined by CEQA Guidelines Section 15126.6. This alternative would provide similar ecological benefits to native fish and wildlife that result from restoration of tidal wetland and floodplain habitats and the increased export of aquatic food web production as would be provided under the proposed Project. Likewise, Alternative 2 would maintain multibenefit land uses and would achieve objectives related to flood benefits and reduction in wind-wave erosion similar to the proposed Project. Alternative 2 would achieve these objectives with a smaller overall construction effort (including an approximately 40 percent reduction in earthwork, and associated reduction in construction duration and total vehicle operations), resulting in substantially less environmental impacts associated with construction activities compared to the proposed Project.

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TABLE 5-1
COMPARISON OF THE ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT AND ALTERNATIVES

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.4 Agriculture					
3.4-1: Implementation of the proposed Project could convert Special Designation Farmland to non-agricultural use.	**Less than Significant with Implementation of Mitigation Measures** Constructed restoration elements would convert Special Designation Farmland to tidal wetland and floodplain habitat. However, implementation of Mitigation Measure AG-1 would reduce this impact to less than significant.	**No Impact** None of the proposed Project restoration elements would be constructed and there would be no conversion of Special Designation Farmland to non-agricultural use.	**Increased** Construction of approximately 1,000 acres of habitat restoration, compared to approximately 460.7 acres under the proposed Project would result in conversion of a larger acreage of Special Designation Farmland to non-agricultural use (i.e., tidal and floodplain habitat) as compared to the proposed Project. Therefore, the impact under Alterative 1 would be increased.	**Similar** Implementation of Alternative 2 would result in a similar level of conversion of Special Designation Farmland to a non-agricultural use as would occur with the proposed Project; therefore, impacts would be similar to the proposed Project.	**Reduced** Alternative 3 would minimize flood encroachments in the floodway while maintaining existing agricultural land uses. Alternative 3 would therefore result in less conversion of Special Designation Farmland as more of these uses would continue as compared to the proposed Project.
3.4-2: Implementation of the proposed Project could conflict with existing zoning for agricultural use or a Williamson Act contract.	**Less than Significant with Implementation of Mitigation Measures** Constructed restoration elements would occur on lands under a Williamson Act contract. However, implementation of Mitigation Measure AG-2 would reduce this impact to less than significant.	**No Impact** None of the proposed Project restoration elements would be constructed and there would be no change from existing zoning for agricultural use or a Williamson Act contract	**Similar** Construction of approximately 1,000 acres of tidal habitat restoration, compared to approximately 460.7 acres under the proposed Project, would result in additional changes in land uses from existing zoning for agricultural use and Williamson Act contracts as compared to the proposed Project; however, the effects of these would be similar.	**Similar** Implementation of Alternative 2 would result in a similar level of agricultural lands used as would occur with the proposed Project resulting in similar imparts to agricultural zoning and Williamson Act contracts.	**Reduced or Similar** Alternative 3 would minimize flood encroachments in the floodway while maintaining existing agricultural land uses. Alternative 3 would therefore result in less changes in land uses regarding agricultural zoning or Williamson Act contracts.
3.4-3: Implementation of the proposed Project could involve other changes in the existing environment which, due to their location or nature, could result in conversion of Special Designation Farmland to non-agricultural use.	**Less than Significant with Implementation of General Protection Measures** Construction activities associated with the proposed Project could negatively affect the viability of surrounding agricultural uses, impede or restrict access to agricultural areas (including Special Designation Farmland), or disrupt agricultural infrastructure. However, implementation of general protection measures would reduce this impact to less than significant.	**No Impact** The temporary construction impacts associated with the construction of the proposed Project restoration elements would not occur and there would be no conversion of Special Designation Farmland to non-agricultural use.	**Increased** The implementation of Alternative 1 would create different amounts of habitat areas than the proposed Project and would require a higher magnitude and intensity of construction work. Therefore, the potential for changes in the existing environment would be increased.	**Similar** Alternative 2 would require a lesser scale of construction activities compared to the proposed Project; however, Alternative 2 would result in a similar level of conversion of Special Designation Farmland to a non-agricultural use as would occur with the proposed Project and therefore impacts would be similar to the proposed Project.	**Similar** The magnitude and intensity of construction-related activities would be similar to or greater than the proposed Project; however, these impacts would be temporary and Alternative 3 would minimize flood encroachments in the floodway while maintaining existing agricultural land uses. Therefore, impacts would be similar to the proposed Project.

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.5 Air Quality and Greenhouse Gases					
3.5-1: Implementation of the proposed Project could conflict with or obstruct implementation of an applicable air quality plan.	**Less than Significant with Implementation of General Protection** Measures Implementation of the proposed Project would not result in pollutant emissions that could conflict with the applicable air quality control plans. Additionally, the implementation of general protection measures would reduce this impact to less than significant.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, there would be no impact on air quality which could obstruct the implementation of an applicable plan.	**Increased** Earthmoving and ground disturbance required to construct a design that maximizes tidal wetland area would result in a greater magnitude and intensity of construction activities. As such, Alternative 1 would increase the number of truck trips required and their associated potential to conflict with the applicable air quality control plans.	**Reduced** Alternative 2 would require a lesser scale of construction activities compared to the proposed Project and would result in decreased truck trips to haul excavated material across the proposed Project area thereby decreasing air quality impacts during construction. As such Alternative 2 would have reduced impacts related to potential conflict with applicable air quality control plans as compared to the proposed Project.	**Increased** Alternative 3 results in an increased number and distance of truck trips to off-haul excavated material (rather than balance fill on-site as proposed by the Project), which would result in increased air quality impacts related to potential conflict with applicable air quality control plans as compared to the proposed Project.
3.5-2: Implementation of the proposed Project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard.	**Less than Significant with Implementation of General Protection Measures** Implementation of the proposed Project would not result in pollutant emissions that could result in a cumulatively considerable net increase of criteria air pollutants. Additionally, the implementation of general protection measures would reduce this impact to less than significant.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, there would be no generation of criteria pollutants.	**Increased** The increased amount of constructed restoration elements under Alternative 1 would require a higher magnitude and intensity of construction work, increasing the volume of materials to be off hauled resulting in higher emission levels. Therefore, Alternative 1 would result in a higher potential for the alternative to result in a cumulatively considerable net increase of criteria pollutants as compared to the proposed Project.	**Reduced** Alternative 2 would require a lesser scale of construction activities compared to the proposed Project and would result in decreased truck trips to haul excavated material across the proposed Project area thereby decreasing emissions of criteria pollutant during construction. As such Alternative 2 would have reduced impacts associated with potential to result in a cumulatively considerable net increase in criteria air pollutants as compared to the proposed Project.	**Increased** Alternative 3 results in an increased number and distance of truck trips to off-haul excavated material (rather than balance fill on-site as proposed by the Project), which would result in increased emissions during construction leading to additional criteria pollutants as compared to the proposed Project. Therefore, Alternative 3 would result in a higher potential for the alternative to result in a cumulatively considerable net increase of criteria pollutants as compared to the proposed Project.
3.5-3: Implementation of the proposed Project could expose sensitive receptors to substantial pollutant concentrations.	**Less than Significant with Implementation of General Protection Measures** Implementation of the proposed Project would not expose sensitive receptors to substantial pollutant concentrations. Additionally, the implementation of general protection measures would reduce this impact to less than significant.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, there would be no impact on sensitive receptors.	**Increased** The increased amount of constructed restoration elements under Alternative 1 would require a higher magnitude and intensity of construction work, increasing the volume of materials to be off hauled resulting in higher emission levels. Therefore, Alternative 1 would increase impacts associated with exposure of sensitive receptors to substantial pollutant concentrations as compared to the proposed Project.	**Reduced** Alternative 2 would require a lesser scale of construction activities compared to the proposed Project and would result in decreased truck trips to haul excavated material across the proposed Project area thereby decreasing emissions impacts during construction and effects on sensitive receptors. As such Alternative 2 would have reduced impacts associated with exposure of sensitive receptors to substantial pollutant concentrations as compared to the proposed Project.	**Increased** Alternative 3 results in an increased number and distance of truck trips to off-haul excavated material (rather than balance fill on-site as proposed by the Project), which would result in increased emissions generated during construction increasing impacts associated with exposure of sensitive receptors to substantial pollutant concentrations as compared to the proposed Project.

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.5-4: Implementation of the proposed Project could result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	**Less than Significant with Implementation of General Protection Measures** Implementation of the proposed Project would not result in other odorous emissions that could affect people. Additionally, the implementation of general protection measures would reduce this impact to less than significant.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, no generation of harmful emissions would occur.	**Increased** The increased amount of constructed restoration elements under Alternative 1 would require a higher magnitude and intensity of construction work, increasing the volume of materials to be off hauled resulting in higher emission levels. Therefore, Alternative 1 would increase the amounts of pollutants, such as odors, generated from construction activities resulting in greater impacts on people in the surrounding area as compared to the proposed Project.	**Reduced** Alternative 2 would require a lesser scale of construction activities compared to the proposed Project and would result in decreased truck trips to haul excavated material across the proposed Project area thereby decreasing emissions impacts during construction and effects on surrounding occupants. As such Alternative 2 would have reduced odor and other emissions impacts as compared to the proposed Project.	**Increased** Alternative 3 results in an increased number and distance of truck trips to off-haul excavated material (rather than balance fill on-site as proposed by the Project), which would result in increased emissions generated during construction increasing odor and other emissions impacts to surrounding occupants as compared to the proposed Project.
3.5-5: Implementation of the proposed Project could result in an increase in GHG emissions that may have a significant impact on the environment.	**Less than Significant** Implementation of the proposed Project would not result in an increase in GHG emissions that would have a significant impact on the environment.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, no increase in GHG emissions would occur.	**Increased** The increased amount of constructed restoration elements under Alternative 1 would require a higher magnitude and intensity of construction work, increasing the volume of materials to be off hauled resulting in higher emission levels. Therefore, Alternative 1 would result in increased levels of GHG emissions.	**Reduced** Alternative 2 would require a lesser scale of construction activities compared to the proposed Project and would result in decreased truck trips to haul excavated material across the proposed Project area thereby decreasing GHG emissions impacts during construction. As such Alternative 2 would have reduced impacts as compared to the proposed Project.	**Increased** Alternative 3 results in an increased number and distance of truck trips to off-haul excavated material (rather than balance fill on-site as proposed by the Project), which would result in increased GHG emission impacts during construction as compared to the proposed Project.
3.5-6: Implementation of the proposed Project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs.	**Less than Significant** Implementation of the proposed Project would not conflict with State or local planning efforts to reduce GHG emissions. Construction of the Proposed Project would not exceed significant GHG emission thresholds, conflict with DWR's emission reduction measures, or hinder its emission goals. Operations, monitoring, and maintenance would be intermittent, with only a minor increase in vehicle trips compared to current conditions.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, no conflict with an applicable plan, policy, or regulation related to GHG reduction would occur.	**Reduced and Increased** The increased amount of constructed restoration elements under Alternative 1 would require a higher magnitude and intensity of construction work, increasing the volume of materials to be off hauled resulting in higher emission levels. Therefore, Alternative 1 would result in increased construction related-GHG emissions compared to the proposed Project. Construction of approximately 1,000 acres of tidal habitat restoration, compared to approximately 460.7 acres under the proposed Project, would result in less required equipment operation associated with operations, monitoring, and maintenance activities of managed floodplain habitats. Therefore, Alternative 1 would result in decreased GHG emissions from operations, monitoring, and maintenance activities compared to the proposed Project.	**Reduced** Alternative 2 would require a lesser scale of construction activities compared to the proposed Project and would result in decreased truck trips to haul excavated material across the proposed Project area thereby decreasing GHG emissions impacts during construction and reducing potential conflicts with a State or local plan. As such Alternative 2 would have reduced GHG emission impacts as compared to the proposed Project.	**Increased** Alternative 3 results in an increased number and distance of truck trips to off-haul excavated material (rather than balance fill on-site as proposed by the Project), which would result in increased GHG emission impacts during construction as compared to the proposed Project.

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.6 Biological Resources - Terrestrial					
3.6-1: Implementation of the proposed Project could adversely affect habitat for special-status plant species.	**Less than Significant with Implementation of General Protection Measures and Species Protection Measures** Constructed restoration elements and operations, monitoring and maintenance activities associated with the proposed Project could adversely affect habitat for special-status plant species. However, the implementation of general protection measures and species protection measures would reduce this impact to less than significant.	**No Impact** None of the proposed Project restoration elements would be constructed or operated, and there would be no impacts to habitat for special-status plant species.	**Reduced** Alternative 1 would maximize the tidal habitat restoration goal by increasing constructed restoration elements. This would result in more tidal and freshwater wetland habitat and would likely expand habitat opportunities for many special-status plant species that rely on such habitat types. Construction of approximately 1,000 acres of tidal habitat restoration, compared to approximately 460.7 acres under the proposed Project, would result in less adverse effects to special-status plant species from increased operations, monitoring, and maintenance activities of managed floodplain habitats. Therefore, Alternative 1 would result in decreased operations, monitoring, and maintenance activities related impacts to habitat for special-status plant species.	**Reduced** Alternative 2 would require a lesser scale of construction activities due to different and in some cases smaller amounts of constructed restoration elements; however, Alternative 2 would require a similar level of operations, monitoring, and maintenance as the proposed Project. As such, disturbance to habitat for special-status plant species from constructed restoration elements would be reduced under Alternative 2	**Reduced** Under Alternative 3, the changes to the nature and location of construction activities would focus excavation in previously disturbed and managed rice fields and adjacent berms, thus decreasing any impacts from increased constructed restoration elements and ongoing operations, monitoring, and maintenance. Therefore, impacts on special-status plants would be reduced compared to the proposed Project.
3.6-2: Implementation of the proposed Project could adversely affect habitat for special-status wildlife species.	**Less than Significant with Implementation of General Protection Measures and Species Protection Measures** Implementation of the proposed Project could alter habitat for special-status terrestrial wildlife species through conversion to aquatic habitat or direct alteration due to construction or operations, monitoring, or maintenance activities. However, the implementation of general protection measures and species protection measures would reduce this impact to less than significant.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, there would be no impacts to habitat for special-status wildlife species.	**Reduced and Increased** The increased amount of constructed restoration elements under Alternative 1 would require a higher magnitude and intensity of construction work. Increased construction activities and a larger degree of aquatic habitat established would likely increase impacts to habitat for special-status wildlife species. Construction of approximately 1,000 acres of tidal habitat restoration, compared to approximately 460.7 acres under the proposed Project, would result in less required disturbance from equipment operation associated with operations, monitoring, and maintenance activities of managed floodplain habitats. Therefore, Alternative 1 would result in decreased operations, monitoring, and maintenance activities related impacts to habitat for special-status wildlife species.	**Reduced** Alternative 2 would reduce the degree of impact to terrestrial wildlife species, because Alternative 2 requires a smaller footprint of direct ground disturbance and so less existing riparian vegetation would be disturbed, and fewer existing floodplain habitats would be altered or converted to aquatic habitats compared to the proposed Project. Therefore, Alternative 2 would result in reduced impacts to habitat for special-status wildlife species.	**Reduced** Under Alternative 3, the changes to the nature and location of construction activities would focus excavation in previously disturbed and managed rice fields and adjacent berms, thus decreasing any impacts from increased constructed restoration elements and ongoing operations, monitoring, and maintenance. Therefore, impacts on special-status wildlife would be reduced compared to the proposed Project.

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.6-3: Implementation of the proposed Project could result in adverse effects on riparian habitat or sensitive natural communities.	**Less than Significant with Implementation of General Protection Measures** Implementation of the proposed Project could disturb riparian habitats along the Toe Drain berm where berm openings are planned and/or during operations, monitoring, and maintenance activities.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, there would be no impacts to riparian habitat or sensitive natural communities.	**Similar** Similar to the proposed Project, tidal and floodplain inundation would be restored by hydrologically connecting the proposed Project area to the Toe Drain via a series of berm openings and tidal channel construction. Riparian vegetation on the Toe Drain berm disturbed by this activity would be replanted elsewhere in the proposed Project area. As such, impacts on riparian habitat and sensitive natural communities are expected to be similar to the proposed Project.	**Reduced** Alternative 2 would require a smaller footprint of direct ground disturbance and so less existing riparian vegetation would be disturbed, and fewer existing floodplain habitats would be altered or converted to aquatic habitats compared to the proposed Project. Therefore, Alternative 2 would result in reduced impacts to riparian habitat or sensitive natural communities.	**Similar** Impacts to riparian vegetation would be similar to the proposed Project because riparian communities disturbed by the opening of the Toe Drain berm could be replanted elsewhere in the proposed Project area to minimize vegetative roughness.
3.6-4: Implementation of the proposed Project could result in adverse effects on State and federally protected wetlands through direct removal, hydrological interruption, or other means.	**Less than Significant with Implementation of General Protection Measures** Implementation of the proposed Project could result in adverse effects on State and federally protected wetlands from direct ground disturbance, equipment installation, heavy or handheld equipment use, and/or management of invasive species. However, the implementation of general protection measures would reduce this impact to less than significant.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, there would be no impact on State and federally protected wetlands.	**Similar** Alternative 1 would result in fewer managed wetlands as compared to the proposed Project but would maximize the tidal habitat restoration goal by creating approximately 1,000 acres of tidal wetlands, as compared to approximately 460.7 acres under the proposed Project. Therefore, impacts to State and federally protected wetlands are generally expected to be similar to the proposed Project.	**Reduced** Alternative 2 would result in approximately 436 acres of tidal wetland (about 24.7 acres less than the proposed Project) and thus would require a smaller footprint of direct ground disturbance. This would result in less existing riparian vegetation disturbance and fewer existing floodplain habitats that would be altered or converted to aquatic habitats compared to the proposed Project. Therefore, Alternative 2 would result in reduced impacts to special-status wildlife species.	**Similar** Alternative 3 would result in approximately 900 acres of agriculture, approximately 600 acres of tidal wetland (about 150 acres more than the proposed Project), and approximately 500 acres of transition zone and/or floodplain habitats. However, this Alternative would not support any managed wetlands within the proposed Project area.
3.6-5: Implementation of the proposed Project could interfere with the movement of native resident and migratory wildlife species.	**Less than Significant with Implementation of General Protection Measures and Species Protection Measures** The implementation of the proposed Project could interfere with the movement of native resident and migratory wildlife species through direct ground disturbance, vegetation clearing, and noise. However, the implementation of general protection measures and species protection measures would reduce this impact to less than significant.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, there would be no impacts to the movement of native resident and migratory wildlife species.	**Similar** Similar to the proposed Project, Alternative 1 could interfere with the movement of native resident and migratory wildlife species. Construction activities would increase in intensity with the increase in the amounts of constructed restoration elements; however, these activities would be temporary and long-term operations, monitoring, and maintenance would be similar between Alternative 1 and the proposed Project.	**Similar** Similar to the proposed Project, Alternative 2 could interfere with the movement of native resident and migratory wildlife species. Construction activities would decrease in intensity with the reduction in the amounts of constructed restoration elements and these activities would be temporary; long-term operations, monitoring, and maintenance would be similar between Alternative 2 and the proposed Project. As such, impacts to wildlife movement would generally be similar under Alternative 2.	**Similar** Similar to the proposed Project, Alternative 3 could interfere with the movement of native resident and migratory wildlife species. Construction activities would increase in intensity with the increase in the amounts of constructed restoration elements; however, these activities would be temporary and long-term operations, monitoring, and maintenance would be similar between Alternative 3 and the proposed Project.

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.6-6: Implementation of the proposed Project could conflict with local policies or ordinances protecting biological resources.	**Less than Significant** Implementation of the proposed Project would not conflict with local policies or ordinances protecting biological resources to the extent feasible. Implementation of operations, monitoring, and maintenance activities by DWR for the proposed Project would comply with applicable adopted County ordinances protecting biological resources, provided they are consistent with DWR's internal environmental policies.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, there would be no conflict with local policies or ordinance protecting biological species.	**Similar** Similar to the proposed Project, Alternative 1 would not conflict with local policies or ordinances protecting biological resources to the extent feasible, and impacts are expected to be similar to the proposed Project.	**Similar** Similar to the proposed Project, Alternative 2 would not conflict with local policies or ordinances protecting biological resources to the extent feasible, and impacts are expected to be similar to the proposed Project.	**Similar** Similar to the proposed Project, Alternative 3 would not conflict with local policies or ordinances protecting biological resources to the extent feasible, and impacts are expected to be similar to the proposed Project.
3.6-7: Implementation of the proposed Project could conflict with the provisions of an adopted habitat conservation plan or natural community conservation plan.	**Less than Significant with Implementation of Mitigation Measures** Portions of the proposed Project area could overlap with priority areas for acquisition by the Yolo Habitat Conservancy for inclusion in its reserve system under the Yolo HCP/NCCP. However, implementation of Mitigation Measure TERR-1 would reduce this impact to less than significant.	**No Impact** None of the proposed Project restoration elements would be constructed or operated, and no conflict with an adopted habitat conservation plan or natural community conservation plan would occur.	**Similar** Alternative 1 would be sited on the same project site as the proposed Project and could overlap with priority areas for acquisition by the Yolo Habitat Conservancy for inclusion in its reserve system under the Yolo HCP/NCCP. As such, implementation of Mitigation Measure TERR-1 would be required to reduce this impact to less-than-significant level and this impact would be similar to the proposed Project.	**Similar** Alternative 2 would be sited on the same project site as the proposed Project and could overlap with priority areas for acquisition by the Yolo Habitat Conservancy for inclusion in its reserve system under the Yolo HCP/NCCP. As such, implementation of Mitigation Measure TERR-1 would be required to reduce this impact to less-than-significant level and this impact would be similar to the proposed Project.	**Similar** Alternative 3 would be sited on the same project site as the proposed Project and could overlap with priority areas for acquisition by the Yolo Habitat Conservancy for inclusion in its reserve system under the Yolo HCP/NCCP. As such, implementation of Mitigation Measure TERR-1 would be required to reduce this impact to less-than-significant level and this impact would be similar to the proposed Project.
3.7 Biological Resources – Aquatic					
3.7-1: Implementation of the proposed Project could result in substantial adverse effects on special-status fish species directly, or indirectly through habitat modifications.	**Less than Significant with Implementation of General Protection Measures and Species Protection Measures** Construction activities associated with the proposed Project would result in adverse effects on special-status fish species through dewatering and fish relocation and potential degradation of habitat due to release of contaminants and/or sediments. However, the implementation of general protection measures and species protection measures would reduce this impact to less than significant.	**No Impact** The temporary construction impacts associated with the construction of the proposed Project restoration elements would not occur and there would be no impacts on special-status fish species.	**Similar** Similar to the proposed Project, Alternative 1 construction activities could result in adverse effects on special-status fish species through dewatering and fish relocation and potential degradation of habitat due to release of contaminants and/or sediments.	**Similar** Similar to the proposed Project, Alternative 2 construction activities could result in adverse effects on special-status fish species through dewatering and fish relocation and potential degradation of habitat due to release of contaminants and/or sediments.	**Similar** Similar to the proposed Project, Alternative 3 construction activities could result in adverse effects on special-status fish species through dewatering and fish relocation and potential degradation of habitat due to release of contaminants and/or sediments.

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.7-2: Implementation of the proposed Project could result in substantial adverse direct effects on the movement of native resident or migratory fish.	**Less than Significant** Construction activities associated with the proposed Project would not result in substantial adverse direct effects on the movement of native resident or migratory fish. Project construction activities could temporarily affect fish movement. However, work along the Toe Drain would only occur along the bank and in-water work would occur during the designated work window of August 1 through November 30, which would protect both delta smelt and salmonids.	**No Impact** The temporary construction impacts associated with the construction of the proposed Project restoration elements would not occur and there would be no impact on the movement of native resident or migratory fish.	**Similar** Similar to the proposed Project, construction activities associated with Alternative 1 would not result in substantial adverse direct effects on the movement of native resident or migratory fish. Construction activities along the Toe Drain would follow similar procedures, and in-water work would be within similar construction windows.	**Similar** Similar to the proposed Project, construction activities associated with Alternative 2 would not result in substantial adverse direct effects on the movement of native resident or migratory fish. Construction activities along the Toe Drain would follow similar procedures, and in-water work would be within similar construction windows.	**Similar** Similar to the proposed Project, construction activities associated with Alternative 3 would not result in substantial adverse direct effects on the movement of native resident or migratory fish. Construction activities along the Toe Drain would follow similar procedures, and in-water work would be within similar construction windows.
3.8 Cultural Resources					
3.8-2: Implementation of the proposed Project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	**Less than Significant with Implementation of Mitigation Measures** Implementation of the proposed Project could unearth, expose, or disturb previously unrecorded subsurface archaeological resources that have not been identified on the surface. However, implementation of Mitigation Measure CUL-3 would reduce this impact to less than significant.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, there would be no impact on archaeological resources.	**Increased** Implementation of Alternative 1 would create different amounts of habitat areas than the proposed Project and would require a higher magnitude and intensity of construction work. Increased excavation also increases the chances of encountering previously unrecorded cultural and Tribal cultural resources. As such, impacts to areological resources are expected to be greater under Alternative 1 compared to the proposed Project.	**Reduced** Alternative 2 would require a lesser scale of construction activities compared to the proposed Project resulting in decreased excavation as compared to the proposed Project which also reduces the chances of encountering previously unrecorded archaeological resources. As such, impacts would be reduced under Alternative 2 compared to the proposed Project.	**Reduced** The changes to the nature and location of construction activities under Alternative 3 would focus excavation in previously disturbed and managed rice fields and adjacent berms, thus potentially decreasing the chances of encountering unrecorded subsurface archaeological resources as compared to the proposed Project.
3.8-3: Implementation of the proposed Project could disturb human remains, including those interred outside of dedicated cemeteries.	**Less than Significant with Implementation of Mitigation Measures** Implementation of the proposed Project could unearth, expose, or disturb previously unrecorded human remains that have not been identified on the surface. However, implementation of Mitigation Measure CUL-4 would reduce this impact to less than significant.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, no disturbance to human remains would occur.	**Increased** Implementation of Alternative 1 would create different amounts of habitat areas than the proposed Project and would require a higher magnitude and intensity of construction work. Increased excavation also increases the chances of encountering previously unrecorded cultural and Tribal cultural resources. As such, impacts on human remains are expected to be greater under Alternative 1 compared to the proposed Project.	**Reduced** Alternative 2 would require a lesser scale of construction activities compared to the proposed Project resulting in decreased excavation as compared to the proposed Project which also reduces the chances of encountering previously unrecorded human remains. As such, impacts would be reduced under Alternative 2 compared to the proposed Project.	**Reduced** The changes to the nature and location of construction activities under Alternative 3 would focus excavation in previously disturbed and managed rice fields and adjacent berms, thus potentially decreasing the chances of encountering unrecorded subsurface human remains as compared to the proposed Project.

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.9 Hazards and Hazardous Materials					
3.9-1: Implementation of the proposed Project could involve the routine transport, use, or disposal of hazardous materials that, if accidentally released, could create a hazard to the public or the environment.	**Less than Significant with Implementation of General Protection Measures and Species Protection Measures** Implementation of the proposed Project would involve hazardous materials that if accidentally released or handled improperly could create a hazard to the public or the environment. However, the implementation of general protection measures and species protection measures would reduce this impact to less than significant.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, no transport, use, or disposal of hazardous materials would occur.	**Increased** The earthmoving and ground disturbance required to construct a design that maximizes tidal wetland area would result in a greater magnitude and intensity of construction activities and associated with a longer construction duration, which would increase construction-related impacts associated with the routine transport, use, or disposal of hazardous materials as compared to the proposed Project. However long-term operations, maintenance, and monitoring activities would be similar to the proposed Project. As such, impacts related to the transport, use, or disposal of hazardous materials would be increased under Alternative 1 compared to the proposed Project.	**Reduced** Alternative 2 would reduce construction-related impacts as compared to the proposed Project across all impacts and long-term operations, monitoring, and maintenance activities would generally be same as the proposed Project. As such Alternative 2 would result in decreased impacts related to the transport, use, and disposal of hazardous materials.	**Similar or Increased** The magnitude and intensity of construction-related activities would be similar to or greater than the proposed Project and additional excavation would be needed. In addition, long-term maintenance would be required to maintain a more highly managed irrigation and drainage system, similar to the proposed Project. Therefore, impacts related to the transport, use, and disposal of hazardous materials would be similar or greater to the proposed Project.
3.9-2: Ground-disturbing activities for construction of the proposed Project could encounter previously unidentified contaminated soil and/or groundwater, potentially exposing construction workers, the public, and the environment to risks associated with hazardous materials.	**Less than Significant with Implementation of Mitigation Measures** Construction activities associated with the proposed Project could encounter previously unidentified contaminated soil and/or groundwater that would pose a risk to construction workers, the public and the environment. However, implementation of Mitigation Measures HAZ-1, HAZ-2, and HAZ-3 would reduce this impact to less than significant.	**No Impact** The temporary construction impacts associated with the construction of the proposed Project restoration elements would not occur and therefore there would be no impact associated with exposure to the risks associated with hazardous materials	**Increased** Implementation of Alternative 1 would create different amounts of habitat areas than the proposed Project and would require a higher magnitude and intensity of construction work. Therefore, under Alternative 1 the likelihood of encountering previously unidentified contaminated soil or groundwater would be increased compared to the proposed Project.	**Reduced** Alternative 2 would require a lesser scale of construction activities compared to the proposed Project resulting in decreased excavation as compared to the proposed Project which also reduces the chances of encountering previously unidentified contaminated soils and groundwater. As such, impacts would be reduced under Alternative 2 compared to the proposed Project.	**Increased** Implementation of Alternative 3 would create different amounts of habitat areas than the proposed Project and would require a higher magnitude and intensity of construction work. Therefore, under Alternative 3 the likelihood of encountering previously unidentified contaminated soil or groundwater would be increased compared to the proposed Project.
3.9-3: Implementation of the proposed Project could interfere with emergency response access or with an adopted emergency response or evacuation plan (including those located in or near State responsibility areas or land classified as very high Fire Hazard Severity Zone) or result in inadequate emergency access.	**Less than Significant** Implementation of the proposed Project would not interfere with emergency response access or with an adopted emergency response or evacuation plan. The proposed Project would not result in street closures or lane blockages, given that the number of vehicle trips is limited because of the rural nature of the surrounding area. In addition, the proposed Project area is not located along an emergency response access or evacuation route.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, there would be no impacts to emergency response or an adopted emergency response or evacuation plan.	**Similar** Similar to the proposed Project, Alternative 1 would be sited within the proposed Project area and therefore would not interfere with emergency response access or with an adopted emergency response or evacuation plan.	**Similar** Similar to the proposed Project, Alternative 2 would be sited within the proposed Project area and therefore would not interfere with emergency response access or with an adopted emergency response or evacuation plan.	**Similar** Similar to the proposed Project, Alternative 3 would be sited within the proposed Project area and therefore would not interfere with emergency response access or with an adopted emergency response or evacuation plan.

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.9-4: Implementation of the proposed Project could create vector habitat that would pose a significant public health hazard.	**Less than Significant** Implementation of the proposed Project would not create a vector habitat that would pose a significant public health hazard. Larger events of stagnant water associated with proposed Project construction and operations would likely occur in the winter, when less mosquito breeding occurs than in the warmer spring and summer seasons. Further, standing water during construction would be temporary and infrequent. In addition, the proposed Project area is not located adjacent to a populated area.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, no creation of vector habitat would occur.	**Reduced** For constructed restoration elements, construction of approximately 1,000 acres of tidal habitat restoration, compared to approximately 460.7 acres under the proposed Project, would result in less managed floodplain habitat that holds water for the purposes of agriculture and managed wetlands for waterfowl. Therefore, Alternative 1 would result in less areas to be actively managed to reduce vector habitat that would pose a significant public health hazard. However, given the Alternative would be sited within the proposed Project area, it is not expected to result in the creation of a vector habitat that would pose a significant public health hazard.	**Similar** Similar to the proposed Project, Alternative 2 would be sited within the proposed Project area and is not expected to result in the creation of a vector habitat that would pose a significant public health hazard.	**Similar or Increased** While Alternative 3 could lead to reduced circulation and the potential creation of vector habitat that would need to be actively managed, similar to the proposed Project, Alternative 3 would be sited within the proposed Project area and would not be expected to result in the creation of a vector habitat that would pose a significant public health hazard.
3.10 Hydrology and Water Quality					
3.10-1: Implementation of the proposed Project could substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that could result in substantial on- or off-site erosion or siltation; substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding; create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or impede or redirect flood flows.	**Less than Significant with Implementation of General Protection Measures** Construction activities associated with the proposed Project would temporarily alter the existing drainage pattern of the localized area. However, the implementation of general protection measures would reduce this impact is less than significant.	**No Impact** The temporary construction impacts associated with the construction of the proposed Project restoration elements would not occur and there would be no impacts to existing drainage patterns, rates of runoff, or flood flows.	**Increased** Alternative 1 would maximize the tidal habitat restoration goal by creating approximately 1,000 acres of tidal wetlands, as compared to approximately 460.7 acres under the proposed Project. The earthmoving and ground disturbance required to construct a design that maximizes tidal wetland area would result in a greater magnitude and intensity of construction activities and associated with a longer construction duration, which would increase construction-related impacts as compared to the proposed Project. Therefore, under Alternative 1 impacts to drainage patterns due to construction activities would be increased.	**Reduced** Alternative 2 would require a lesser scale of construction activities compared to the proposed Project due to the preservation of existing grades across a larger portion of the floodplain and transition zone habitat areas. All other construction activities would be similar to those described for the proposed Project. Alternative 2 requires a smaller footprint of direct ground disturbance and so fewer existing floodplain habitats would be altered or converted to aquatic habitats compared to the proposed Project.	**Similar or Increased** The magnitude and intensity of construction-related activities would be similar to or greater than the proposed Project while excavation would not be needed to create tidal channels, earthwork associated with excavation needed to lower berms and, potentially, to depress rice fields on Capitol Oil to maintain their function, would be similar or greater in magnitude. Therefore, temporary impacts to drainage patterns from construction activities would be similar or increase under Alternative 3.

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.10-2: Implementation of the proposed Project could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the proposed Project may impede sustainable groundwater management of the basin or obstruct implementation of a sustainable groundwater management plan.	**Less than Significant** Construction activities associated with the proposed Project would require temporary dewatering, but preconstruction conditions would resume or be improved upon after construction. Thus, construction of the proposed Project is not anticipated to substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that sustainable groundwater management is impeded. Implementation of general protection measures would further ensure this impact to less than significant.	**No Impact** The temporary construction impacts associated with the construction of the proposed Project restoration elements would not occur and no impacts to groundwater, groundwater management, or groundwater sustainability would occur.	**Increased** The earthmoving and ground disturbance required to construct a design that maximizes tidal wetland area would result in a greater magnitude and intensity of construction activities which could include dewatering activities. Therefore, under Alternative 1 impacts to groundwater, groundwater management, and groundwater sustainability due to construction activities would be increased compared to the proposed Project, but would remain less than significant.	**Reduced** Alternative 2 would reduce construction-related impacts as compared to the proposed Project across all impacts due to the reduced earthwork and associated construction activity. As such fewer dewatering activities are expected to occur and impacts on groundwater and groundwater sustainability would be reduced as compared to the proposed Project.	**Similar or Increased** The magnitude and intensity of construction-related activities would be similar to or greater than the proposed Project while excavation would not be needed to create tidal channels, earthwork associated with excavation needed to lower berms and, potentially, to depress rice fields on Capitol Oil to maintain their function, would be similar or greater in magnitude. Therefore, temporary groundwater and groundwater sustainability impacts such as those from dewatering would be similar to the proposed Project or would increase under Alternative 3, but would remain less than significant.
3.10-3: Implementation of the proposed Project could result in the release of pollutants into surface water and/or groundwater that could violate water quality standards or waste discharge requirements, substantially degrade water quality, or obstruct implementation of a water quality control plan.	**Less than Significant with Implementation of General Protection Measures** Construction, operations, monitoring, and maintenance activities associated with the proposed Project could result in temporary effects on water quality by releasing pollutants into surface water or groundwater. However, the implementation of general protection measures would reduce this impact to less than significant.	**No Impact** None of the proposed Project restoration elements would be constructed and there would be no impacts to water quality, and no conflicts with a water quality control plan would occur.	**Increased** The earthmoving and ground disturbance required to construct a design that maximizes tidal wetland area would result in a greater magnitude and intensity of construction activities and associated with a longer construction duration, which would increase construction-related impacts as compared to the proposed Project Additionally, long-term operations, maintenance, and monitoring activities would generally be consistent with the proposed Project. Therefore, Alternative 1 would result in increased construction-related impacts associated with potential violation of water quality standards or waste discharge requirements compared to the proposed Project.	**Reduced** Alternative 2 would reduce construction-related impacts as compared to the proposed Project across all impacts and long-term operations, monitoring, and maintenance activities would generally be same as the proposed Project. As such Alternative 2 would result in decreased impacts related to potential violation of water quality standards or waste discharge requirements compared to the proposed Project.	**Similar or Increased** The magnitude and intensity of construction-related activities would be similar to or greater than the proposed Project and additional excavation would be needed. In addition, long-term maintenance would be required to maintain the managed irrigation and drainage system, similar to the proposed Project. Therefore, impacts related to associated with potential violation of water quality standards or waste discharge requirements would be similar or greater to the proposed Project.

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.11 Recreation					
3.11-1: Implementation of the proposed Project could directly impair, degrade, or eliminate recreational resources, facilities, and opportunities.	**Less than Significant** Implementation of the proposed Project would not directly impair, degrade, or eliminate recreation resources, facilities, or opportunities. Impacts from construction activities would be temporary and constructed restoration elements and ongoing operations and maintenance of the proposed Project would support similar recreational opportunities as compared to existing conditions.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, no impacts on recreational resources, facilities, or opportunities would occur.	**Increased** Alternative 1 the area maintained for recreational land uses would be minimized substantially compared to the proposed Project. Additional constructed restoration elements would also eliminate some of the managed wetlands available for recreation that currently exist in the proposed Project area resulting in increased recreation resource impacts under Alternative 1.	**Similar** Similar to the proposed Project, implementation of Alternative 2 would not directly impair, degrade, or eliminate recreation resources, facilities, or opportunities. Under Alternative 2, impacts to recreation resources from construction activities would be less intense than the proposed Project; however, impacts from constructed restoration elements and ongoing operations, maintenance, and monitoring activities would be consistent with the proposed Project.	**Increased** Once constructed, Alternative 3 would result in a significant loss of recreation resources as compared to the proposed Project, because managed wetlands would become inoperable once tidal connectivity is restored and berms are removed to reduce flood encroachments. Therefore, impacts to recreation resources would increase under Alternative 3.
3.11-2: Implementation of the proposed Project could alter recreational resources or facilities or require the construction or expansion of recreational facilities that could result in environmental impacts.	**Less than Significant** Implementation of the proposed Project would not alter recreation resources or facilities or require the expansion of recreational facilities. Impacts from construction activities on recreation resources would be temporary and ongoing operations and maintenance would continue similar recreational uses.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, no construction or expansion of recreational resources would be required.	**Increased** The area maintained for recreational land uses in managed wetlands would be less than the proposed Project. Additionally additional constructed tidal wetland restoration elements would also eliminate some of the managed wetlands available for recreation that currently exist on the proposed Project area. As such, Alternative 1 would result in a reduction of on-site recreation resources, but not to the extent that new recreational facilities would be needed elsewhere.	**Similar** Similar to the proposed Project, implementation of Alternative 2 would not alter recreation resources or facilities or require the expansion of recreational facilities. Under Alternative 2, impacts from construction activities would be less intense than the proposed Project; however, impacts from constructed restoration elements and ongoing operations, maintenance, and monitoring activities would be consistent with the proposed Project.	**Increased** Once constructed, Alternative 3 would result in a significant loss of recreation resources as compared to the proposed Project, because managed wetlands would become inoperable once tidal connectivity is restored and berms are removed to reduce flood encroachments. While Alternative 3 would result in a reduction of on-site resources this impact would not be to the extent that new recreational facilities would be needed elsewhere.
3.11-3: Implementation of the proposed Project could increase the use of existing recreational resources and facilities such that substantial physical deterioration would occur or be accelerated.	**Less than Significant** Implementation of the proposed Project would not increase the use of existing recreational resources and facilities such that substantial physical deterioration would occur or be accelerated. Impacts from construction activities on recreation resources would be temporary and ongoing operations and maintenance would continue similar recreational uses.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, no physical deterioration of recreational resources and facilities would occur.	**Similar** Similar to the proposed Project, implementation of Alternative 1 is not expected to increase the use of existing recreational resources and facilities such that substantial physical deterioration would occur or be accelerated.	**Similar** Similar to the proposed Project, implementation of Alternative 2 is not expected to increase the use of existing recreational resources and facilities such that substantial physical deterioration would occur or be accelerated.	**Similar** Similar to the proposed Project, implementation of Alternative 3 is not expected to increase the use of existing recreational resources and facilities such that substantial physical deterioration would occur or be accelerated.

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.12 Tribal Cultural Resources					
3.12-1: Implementation of the proposed Project could cause a substantial adverse change in the significance of a Tribal cultural resource, as defined in PRC Section 21074.	**Less than Significant with Implementation of Mitigation Measures** Implementation of the proposed Project could unearth, expose, or disturb previously unrecorded subsurface Tribal cultural resources. However, implementation of Mitigation Measures TCR-2 and CUL-4 would reduce this impact to less than significant.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, no impacts on Tribal cultural resources would occur.	**Increased** Implementation of Alternative 1 would require a higher magnitude and intensity of construction work (i.e., the amount of earthwork and excavated material would be nearly three times greater than the proposed Project). Increased excavation also increases the chances of encountering previously unrecorded Tribal cultural resources. As such, impacts to Tribal cultural resources are expected to be greater under Alternative 1 compared to the proposed Project.	**Reduced** Alternative 2 would require a lesser scale of construction activities compared to the proposed Project resulting in decreased excavation as compared to the proposed Project which also reduces the chances of encountering previously unrecorded Tribal cultural resources. As such, impacts would be reduced under Alternative 2 compared to the proposed Project.	**Reduced** Alternative 1 would result in additional construction activities; however, these activities would occur in less sensitive areas. The changes to the nature and location of construction activities under Alternative 3 would focus excavation in previously disturbed and managed rice fields and adjacent berms, thus potentially decreasing the chances of encountering unrecorded subsurface Tribal cultural resources as compared to the proposed Project.
3.13 Utilities and Service Systems					
3.13-1: Implementation of the proposed Project could require or result in the construction or relocation of new or expanded water or electric power facilities, the construction or relocation of which could cause significant environmental effects.	**Less than Significant** Implementation of the proposed Project would not require or result in the construction or relocation of new or expanded water or electric power facilities. Impacts from construction activities would be temporary and would use portable generators or existing facilities for power; any relocations of existing utilities would occur in previously disturbed areas. Post-construction monitoring and maintenance activities and would not require or result in the construction or relocation of water or electric power facilities.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, no new or expanded water or electric power facilities would be required.	**Similar** Similar to the proposed Project, Implementation of Alternative 1 would not require or result in the construction or relocation of new or expanded water or electric power facilities.	**Similar** Similar to the proposed Project, Implementation of Alternative 1 would not require or result in the construction or relocation of new or expanded water or electric power facilities.	**Similar** Similar to the proposed Project, Implementation of Alternative 1 would not require or result in the construction or relocation of new or expanded water or electric power facilities.

Resource Topic	Proposed Project	No Project Alternative	Alternative 1: Maximize Tidal Habitat Restoration	Alternative 2: Maximize Multibenefit Land Uses	Alternative 3: Maximize Flood Benefits
3.13-2: Implementation of the proposed Project could result in insufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years.	**Less than Significant** Implementation of the proposed Project would not result in insufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years. Construction activities would be temporary, constructed restoration elements would decrease the demand for pumped water on-site, and ongoing operations, monitoring, and maintenance of these facilities would be similar to existing conditions and would not create a substantial additional water demand.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, there would be no impacts which could result in insufficient water supplies.	**Similar and Reduced** Similar to the proposed Project, Alternative 1 would not result in insufficient water supplies available during normal, dry, and multiple dry years. Similar to the proposed Project construction activities would require use of water such as for dust mitigation; these activities would be temporary and cease following the completion of construction. However, Alternative 1 would reduce the amount of irrigation water needed for the long-term operations, monitoring, and maintenance activities within the proposed Project area due to the reduction in managed floodplain habitat elements associated with agriculture and managed wetlands for waterfowl.	**Similar** Similar to the proposed Project, Alternative 2 would not result in insufficient water supplies available during normal, dry, and multiple dry years.	**Similar** Similar to the proposed Project, Alternative 3 would not result in insufficient water supplies available to serve during normal, dry, and multiple dry years.
3.13-3: The proposed Project could be served by a landfill with insufficient permitted capacity to accommodate the Project's solid waste disposal needs and could fail to comply with federal, State, and local statutes and regulations related to solid waste.	**Less than Significant** Implementation of the proposed Project would not be served by a landfill with insufficient permitted capacity, nor would it fail to comply with federal, State, and local statutes and regulations related to solid waste.	**No Impact** Under the No Project Alternative, the proposed Project would not be implemented; therefore, there would be no impacts which could result in insufficient solid waste disposal capacity.	**Similar** Similar to the proposed Project, Implementation of Alternative 1 would not be served by a landfill with insufficient permitted capacity, nor would it fail to comply with federal, State, and local statutes and regulations related to solid waste.	**Similar** Similar to the proposed Project, Implementation of Alternative 1 would not be served by a landfill with insufficient permitted capacity, nor would it fail to comply with federal, State, and local statutes and regulations related to solid waste.	**Similar** Similar to the proposed Project, Implementation of Alternative 1 would not be served by a landfill with insufficient permitted capacity, nor would it fail to comply with federal, State, and local statutes and regulations related to solid waste.

SOURCE: Compiled by Environmental Science Associates in 2025

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CHAPTER 6
List of Preparers and Persons Consulted

6.1 Lead Agency

California Department of Water Resources

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Charlotte Biggs	Assistant Deputy Director
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David Pesavento	Supervising Engineer, Water Resources
Eric Pierce	Engineering Geologist
Jackie Wait	Senior Environmental Scientist
John Wheat	Attorney III
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Keanna Levy	Senior Right of Way Agent (Specialist)
Kelley Soule	Branch Chief
Kim Gazzaniga	Senior Environmental Scientist
Kyle Graham	Senior Program Manager
Mariko Falke	Assistant Tribal Affairs Executive Manager
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Monica Nolte	Senior Cultural Resource Specialist
Omar Fernandez	Senior Right of Way Agent (Specialist)
Rachel Taylor	Attorney IV
Shivcharan Sandhu	Senior Engineer, Water Resources
Stephanie Mclaughlin	Environmental Scientist
Tyler Anthony	Senior Environmental Scientist (Specialist)

6.2 Applicant

Ecosystem Investment Partners

David Urban	Managing Director
Stephanie Freed	Western Director of Operations
Veronica Pearson	Principal Project Manager

6.3 Legal Counsel to Applicant

Mitchell Chadwick, LLP

Braiden Chadwick	Partner
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6.4 EIR Consultants

Environmental Science Associates

Maureen Downing-Kunz	Project Director
Catherine C. McEfee	Project Manager
Meredith Parkin	CEQA Strategy
Alisa Moore	Alternative Analysis
Amy Langford	Cultural Resources Inventory Report
Brent Davis	Hydraulic and Hydrologic Modeling
Cheri Velzy	Air Quality and Greenhouse Gas Emissions
Chris Fitzer	Biological Resources-Aquatic
Chuck Hughes	Biological Resources-Terrestrial
Daniel Huang	Biological Resources-Terrestrial
Edward Divita	Project Design Coordination
Emily Kline	Hazards and Hazardous Materials, Utilities and Service Systems
Frank Pimental	Geographic Information Systems (GIS), Figures
Gregory Weissmann	Hydraulic and Hydrologic Modeling
Heidi Koenig	Cultural Resources, Tribal Cultural Resources
Jason Weiner	Hydrology and Water Quality
John Pritchard	Project Description, Hydraulic and Hydrologic Modeling
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Julie Nichols	Technical Editor
Jyothi Iyer	Air Quality and Greenhouse Gas Emissions
Kathy Cleveland	Cultural Resources Inventory Report
Kelley Sterle	Hydrology and Water Quality, Cumulative Analysis
Kristine Olsen	Publications
Madison Castelazo	Air Quality and Greenhouse Gas Emissions
Matt Mates	Cultural Resources Inventory Report
Matthew Brennan	Wind-wave modeling
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Yi Liu	Wind-wave Modeling

Resource Management Associates - Tide's End Multibenefit Restoration Project Modeling Evaluation of Stage and Water Quality Impacts

Stacie Carter, P.E.	Technical Manager, Lead Water Resources Engineer
Richard Rachiele	Lead Hydraulic Modeler

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CHAPTER 7
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