STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY **EDMUND G. BROWN JR.**, *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

November 14, 2018

Ms. Eileen Sobeck
Executive Director
State Water Resources Control Board
1001 I Street
Sacramento, California 95814

Subject: Updated application for a Water Quality Certification

Dear Ms. Sobeck:

Pursuant to Section 401 of the Clean Water Act, the California Department of Water Resources (DWR) submits the attached updated information for DWR's application to the State Water Resources Control Board (SWRCB) for a Water Quality Certification for the State's California WaterFix program (submitted August 26, 2015). Construction of the proposed California WaterFix would involve the discharge of dredged or fill material into waters of the United States and thus requires a permit from the US Army Corps of Engineers (USACE), pursuant to Section 404 of the Clean Water Act. The permit under Section 404 may not be issued without obtaining certification from the state that the discharge is consistent with the applicable water quality standards. Therefore, DWR, as the project applicant for the permit under Section 404, is requesting this Section 401 water quality certification from the State Water Board consistent with the USACE's permit requirements.

DWR requests that you consider all information submitted and relied upon by DWR during the change petition hearings and provide DWR with a Water Quality Certification for the California WaterFix project upon completion the change petition hearings.
If you have any questions regarding the attached updated permit application or supporting documents, please contact me at 916-651-2987 or mike.bradbury@water.ca.gov.

Sincerely,

Michael Bradbury
Permit Program Manager II, California WaterFix

Attachments

cc: Russell Stein, Assistant Deputy Director, DWR
James Mizell, Sr. Attorney, Office of the Chief Counsel
Marcus Yee, California WaterFix Program Manager, DWR
Anne Marie Ore, Program Manager, SWRCB
Jeff Wetzel, Senior Water Resource Control Engineer, SWRCB

State Water Resources Control Board

CLEAN WATER ACT §401 WATER QUALITY CERTIFICATION APPLICATION FORM

(Use only for multi-regional projects, otherwise use the appropriate Regional Board application form)

1. APPLICANT/AGENT INFORMATION

a) Applicant: Michael Bradbury	b) Agent[1]:
Address: 901 P Street, Suite 411b	Address:
Sacramento, CA 95814	
Phone No. 916-651-2987	Phone No.
Fax No.	Fax No.
E-mail Address: mike.bradbury@water.ca.gov	E-mail Address:

Have you previously contacted the Regional Board staff regarding this project? If 'yes' provide information on date, person, and brief summary of subject matter.

DWR met with State and Regional Board staff on 1/6/2014 to discuss who would take jurisdiction over the section 401 certification for this project. DWR submitted an application on California WaterFix previously on September 23, 2015.

STATEMENT OF AUTHORIZATION

I hereby authorize _____ to act in my behalf as my agent in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.

_____ _____

Applicant's Signature Date

[1]Complete only if applicable

2. PROJECT DESCRIPTION

a) Project Title:

CALIFORNIA WATERFIX

b) Project Purpose:

SEE CONTINUATION SHEET

c) Project Activities:

SEE CONTINUATION SHEET

d) Proposed Schedule (start-up, duration, and completion dates):

SEE CONTINUATION SHEET

3. FEDERAL LICENSES/PERMITS

a) Federal Agency(ies)/File Number(s):

U.S. Army Corps of Engineers ____X____ Other_____

File No.(s) (if known) SPK-2008-00861_____

b) Permit Type(s) (please provide permit number(s) if known):

Nationwide Permit No.(s)_____ Regional General Permit No.(s) _____

Individual Permit ____X__ Other_____

c) Does the project require any Federal Application(s), Notification(s) or Correspondence?

Yes ___X__ (attach copy[ies]) No _____ (attach detailed explanation)

d) Provide copies of the license/permit/application. SEE CONTINUATION SHEET

4. OTHER LICENSES/PERMITS/AGREEMENTS

a) Please list all other required, including local regulatory approvals (submit final or draft copy if available). Include information on any De-watering, NPDES, and Storm Water permits.

Agency	License/Permit/Agreement	Permit No.	Approval Date
USFWS	Biological Opinion/Take Statement	08FBDT00-2016-F-0247	June 23, 2017
NMFS	Biological Opinion/Take Statement	WCR-2016-5506	June 16, 2017
CDFW	Streambed Alteration Agreement		Expected early 2019
CDFW	Section 2081(b) Take Permit	2081-2016-055-03	July 28, 2017
SWRCB	New Point of Diversion		Expected early 2019
SWRCB	NPDES Permit/De-Watering Plan		Pending
SWRCB	NPDES Permit/Storm Water Permit		Pending
CDFW and SWRCB	Instream Flow		Pending
CVFPB	Central Valley Flood Protection Board Encroachment		Pending
CA State Lands Commission	Lease of Sovereign		Pending
US Coast Guard	Private Aids to Navigation		Pending

b) Does the project require a Federal Energy Regulatory Commission (FERC) license or amendment to a FERC license?

No____X____ Yes_____ (attach application copy)

5. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Indicate CEQA Document (submit final or draft copy if available*):

Type of CEQA Document	Date of filing of Notice of Exemption/ Preparation and Name of Lead Agency
Statutory Exemption/Class Title	
Categorical Exemption/Class Title	
Negative Declaration	
Mitigated Negative Declaration	
Environmental Impact Report	December 16, 2016 - Department of Water Resources and U.S. Bureau of Reclamation released a Final EIR/EIS for California WaterFix. July 21, 2017 - Department of Water Resources Approved the California WaterFix and released a Notice of Determination. July 17, 2018 - Department of Water Resources released a Draft Supplemental EIR for the California WaterFix

Note: Ample time must be provided to the certifying agency to properly review a final copy of valid CEQA documentation before certification can occur.

6. APPLICATION FEE

Provide an initial deposit of $600.00 for the application. Please write a check made out to the State Water Resources Control Board.
Is a check enclosed? Yes _____ No. _____ X Check Number _____ Amount $ _____

7. PROJECT SITE DESCRIPTION – GENERAL (Include areas outside of US waters)

a) Project Location (attach map of suitable quality and detail):

City or Area Sacramento-San Joaquin Delta

County: Sacramento, San Joaquin, Contra Costa, and Alameda

Longitude/Latitude: The northern most component of the project is located at approximate Latitude 38.42° North and Longitude 121.51° West, while the southern-most component is located at approximate Latitude 37.80° North and Longitude 121.58° West.

b) Total Project Size: _____acres SEE CONTINUATION SHEET linear feet (if appropriate)

c) Site description of the entire project area (including areas outside of jurisdictional water of the US):
SEE CONTINUATION SHEET

8. WATER BODY IMPACT

a) **Water Body Name(s)[2]**:
Clearly indicate on a published map of suitable detail, quality, and scale (1:24K) to allow the certifying agency to easily identify the area(s) and water body(ies) receiving any discharge. SEE ATTACHED CONTINUATION SHEET, TAB C Table of Impacts, and TAB D: Mapbook of Impacts.

b) **Fill and Excavation:** Indicate in ACRES and/or LINEAR FEET the proposed waters to be impacted, and identify the impacts(s) as permanent and/or temporary for each water body type listed below:
SEE CONTINUATION SHEET

Water Body Type	Permanent Impact		Temporary Impact	
	Acres	Linear Feet	Acres	Linear Feet
Wetland[3]				
Streambed				
Lake/Reservoir				
Ocean/Estuary/Bay				
Riparian				
Non-Federal Waters				

Provide the name, title, and affiliation of person that carried out wetland delineation.
Jean Witzman, Program Manager I, California Department of Water Resources

c) **Dredging: Total** volume (cubic yards) of dredged material proposed for project.
SEE CONTINUATION SHEET

d) Provide information on the Q_2, Q_{10}, Q_{100} for pre- and post-project implementation.
SEE CONTINUATION SHEET

e) Indicate type(s) of material proposed to be discharged in waters of the United States:
Rock, concrete, clean soil, reusable tunnel material

[2]Both US Army Corps of Engineer's jurisdictional- and non-jurisdictional water bodies.

[3]Per US Army Corps of Engineer's wetland delineation protocol.

9. COMPENSATORY MITIGATION (Please complete attached Mitigation Checklist)

a) Is compensatory mitigation proposed? Yes _____x_____ No

b) Indicate in ACRES and LINEAR FEET (where appropriate) the total quantity of **waters of the United States** proposed to be Created, Restored, Enhanced, or Preserved. SEE CONTINUATION SHEET

Water Body Type	Created	Restored	Enhanced	Preserved
Wetland				
Streambed				
Lake/Reservoir				
Ocean/Estuary/Bay				
Riparian				
Non-Federal Waters				

c) If contributing to a Mitigation Bank provide the following: SEE CONTINUATION SHEET

Mitigation Bank Name:
Name of Mitigation Bank Operator:
Office Address of Operator/Phone Number:
Mitigation Bank Location (Latitude/Longitude, County, and City):
Mitigation Bank Water Body Type(s):
Mitigation Area (acres or linear feet) and cost (dollar):

d) Provide/attach a map with suitable detail, quality, and scale (1:24K) that will easily provide information as to the location(s) and water body(ies) of the mitigation area.

10. THREATENED/ENDANGERED SPECIES

a) Does the project require coordination with the US Fish and Wildlife Service or National Marine Fisheries Service under the Federal Endangered Species Act?

Yes __X__ (provide copies of Biological Report) No ____ (provide basis of determination)

b) Does the project require coordination with the State of California Department of Fish and Game under the California Endangered Species Act?

Yes __X___ (provide copies of Biological Report) No ____ (provide basis of determination)

11. OTHER ACTIONS/BEST MANAGEMENT PRACTICES (BMPs)

Briefly describe other actions/BMPs to be implemented to Avoid and/or Minimize impacts to waters of the United States, including preservation of habitats, erosion control measures, project scheduling, flow diversions, etc.

SEE CONTINUATION SHEET

12. PAST/FUTURE PROPOSALS BY THE APPLICANT

Briefly list/describe any projects carried out in the last 5 years or planned for implementation in the next 5 years that are in any way related to the proposed activity or may impact the same receiving body of water. Include estimated adverse impacts.

- Sherman and Twitchell Islands Fish Screens Project – Installation of fish screens on five existing agricultural diversions, two on Sherman Island, three on Twitchell Island. DWR
- Decker Island Tidal Restoration Project. DWR
- Restoration of Priority Freshwater Wetlands for Endangered Species at the Cosumnes River Preserve: Horseshoe Lake– restoration and enhancement of 110 acres of aquatic and upland habitat for GGS and other native species.
- Lower Cosumnes Floodplain Restoration Project: Cougar Wetlands- Reconnecting 154 acres of historic floodplain within the Cosumnes River Preserve to a more natural hydrologic regime by creating levee breaches along the Cosumnes River.
- Sacramento River Habitat Restoration and Levee Improvement Project: Sherman Island levee stations 6900+00 to 850+00 – excavation of toe trenches and placement of riprap on waterside slopes. RD 341
- Twitchell Island Levee Improvement Project: Twitchell Island levee – 5 miles of new foundation berm and setback levee behind the existing levee along the San Joaquin River. RD1601
- Lower Cosumnes River Floodplain Restoration Project – Riparian restoration of 850 acres within the floodplain on the west side of the Cosumnes River. Sacramento County
- Three Rivers Bouldin-Tyler Island Gas Pipeline Project – install 2,100 feet of a 4.5 inch diameter welded steel natural gas pipeline crossing the Mokelumne River.
- Sherman Island Whale's Mouth Wetland Restoration

All projects underwent individual environmental analysis and received 404, 401, 1602 permits as needed.

Applicant's Signature (or Agent)

14 Nov 2018
Date

For further information please email:
http://www.swrcb.ca.gov/water_issues/programs/cwa401/docs/staffdirectory.pdf

California WaterFix

Clean Water Act Section 401 Water Quality Certification
Continuation Sheet

Background

In October 2006, various state and federal agencies, water contractors, and other stakeholders initiated a process to develop the Bay Delta Conservation Plan (BDCP) to advance the planning goal of restoring ecological functions to the Delta and improving water supply reliability in the State of California. In July 2012, Governor Edmund G. Brown, Jr. and United States Secretary of the Interior Ken Salazar reaffirmed both the State and federal commitment to the BDCP as a comprehensive solution to achieve the dual goals of a reliable water supply for California and a healthy California Bay Delta ecosystem that supports the State's economy.

In December 2013, after several years of preparation, the Department of Water Resources (DWR or Applicant), the U.S. Bureau of Reclamation (Reclamation), the U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS), acting as joint lead agencies, published a draft of the BDCP and an associated Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS). The Draft EIR/EIS analyzed a total of 15 action alternatives, including Alternative 4, which was identified as DWR's preferred alternative. The 14 other action alternatives varied from Alternative 4 with respect to such factors as the number of proposed North Delta intakes, the types of conveyance facilities (e.g., surface canals versus underground pipelines), operational rules, and amounts of proposed habitat restoration.

Alternative 4 included the construction and operation of three new intakes located in the North Delta, forebays, and underground tunnels which would convey diverted water to the existing export facilities in the South Delta. The proposed operations for Alternative 4 reflected the outcome of many years of collaboration between DWR, Reclamation, the water contractors, USFWS, NMFS, and the California Department of Fish and Wildlife (CDFW). By July 2014, at the end of the public review period, the lead agencies had received extensive comments on the proposed BDCP from other agencies and members of the public. Many of these comments suggested improvements that could be made to the proposed project (i.e., Alternative 4, the BDCP). For example, some comments noted that Alternative 4 contemplated intensive construction activity on Staten Island, which is important wintering habitat for the Greater Sandhill Crane. Other comments suggested that DWR should pursue a permit with a term shorter than 50 years due to the level of uncertainty regarding both the future effects of climate change and the long-term effectiveness of habitat restoration in restoring fish populations. Still other comments suggested that the proposed conveyance facilities should be separated from the habitat restoration components of the BDCP, with the latter to be pursued separately.

Taking this public and agency input into account, the Lead Agencies substantially modified Alternative 4 and formulated three new sub-alternatives (2D, 4A, 5A). These sub-alternatives assume that incidental take authorizations would be issued for shorter durations than 50 years and propose habitat mitigation and restoration commensurate with impacts of the water conveyance facilities. Other important changes included: (i) the elimination of three pumping plants associated with new intake facilities; (ii) associated reductions in construction-related air pollutant emissions at intake sites; (iii) substantial reductions in the amount of construction occurring on Staten Island; and (iv) reductions in water quality effects.

Alternative 4A, as well as two other sub-alternatives (2D, and 5A), were developed by the Lead Agencies to embody a different implementation strategy, in which State and federal endangered species

incidental take authorizations would not be obtained through Section 10 of the Endangered Species Act (ESA) or through the Natural Community Conservation Planning Act (NCCPA), but rather through Section 7 of the ESA and Section 2081(b) of the California Endangered Species Act (CESA). These new sub-alternatives consisted of the construction and operation of new north Delta intakes and habitat restoration actions necessary to address the effects associated with the new facilities. This alternative implementation strategy contemplated that other State and federal programs will address broader habitat restoration goals identified for species recovery. Alternative 4A, which is known as "The California WaterFix" was identified as DWR and Reclamation's preferred alternative in the Partially Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS) released for public comment in July 2015.

The California WaterFix Final EIR/EIS was published and posted online on December 22, 2016. On December 30, 2016, the U.S. Bureau of Reclamation (Reclamation), in coordination with the DWR, issued a Notice of Availability, as required by the Council on Environmental Quality's (CEQ's) NEPA regulations (see 40 Code of Federal Regulations [CFR] Sections 1506.9 and 1506.10) stating that the Final EIR/EIS was made available to the public. The Final EIR/EIS was prepared jointly by DWR and Reclamation (together referred to as lead agencies) and presented potentially feasible alternatives, potential environmental impacts, and mitigation measures that would avoid or minimize significant or adverse impacts where feasible. It also provided responses to all substantive comments received on the 2013 Draft EIR/EIS and 2015 Partially Recirculated Draft EIR/Supplemental Draft EIS (RDEIR/SDEIS). All of these documents were prepared as joint federal and state environmental documents intended to satisfy both NEPA and CEQA.

Following posting of the December 2016 Final EIR/EIS and prior to DWR certifying the Final EIR, DWR published additional information in July 2017 (Developments after Publication of the Proposed Final EIR: http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Developments_after_Publication_of_the_Proposed_Final_EIR.sflb.ashx). This document was developed by DWR in compliance with CEQA and addressed developments that had occurred between the posting of the proposed Final EIR/EIS on December 22, 2016 and July 21, 2017, when DWR certified the Final EIR, which included the Developments after Publication of the Proposed Final Environmental Impact Report, and approved the California WaterFix (Final EIR/EIS Alternative 4A). On July 21, 2017, DWR certified the Final EIR, adopted Findings and a Statement of Overriding Considerations, adopted the Mitigation Monitoring and Reporting Program, approved California WaterFix (Alternative 4A) and filed a Notice of Determination (NOD) with the Governor's Office of Planning and Research (OPR). Reclamation has not yet adopted a Record of Decision (ROD) for the Final EIS or approved a project.

In an effort to further refine a facility element of California WaterFix following the July 21, 2017 NOD, DWR decided to improve the approved northern transmission lines that were identified in the certified Final EIR. These changes were made to utilize an existing Sacramento Municipal Utility District (SMUD) transmission line right-of-way and reduce the effects of constructing the approved transmission lines. On January 23, 2018, DWR approved these transmission line changes and filed an NOD with OPR for the California WaterFix Addendum to the Final EIR (Addendum). The Addendum summarized the transmission line refinements, the design of facilities, the need for the refinements, expected benefits of the modifications, and potential environmental effects compared with Alternative 4A described in the Final EIR/EIS.

In early 2018, DWR announced additional design improvements intended to further minimize the impacts of the WaterFix project on local communities and the environment through design improvements. A Draft Supplemental Environmental Impact Report/Environmental Impact Statement was prepared by DWR and Reclamation and is currently undergoing public review. As described in the Draft Supplemental EIR/EIS, the proposed refinements build on past modifications that significantly reduced the project's footprint and costs. The proposed design refinements include the following: consolidating reusable tunnel material areas to reduce the footprint and minimize impacts to Stone Lake National Wildlife Refuge; reducing impacts to salmon and smelt at the Clifton Court Forebay; reducing potential impacts to the town of Hood and a residential neighborhood on Kings Island; reducing the number of barge landing facilities in the Delta and reducing the number and size of powerlines required. The California WaterFix Draft Supplemental EIR/EIS has been prepared to meet the requirements of CEQA and National Environmental Policy Act (NEPA). The Administrative Draft Supplemental EIR/EIS document was posted on the California WaterFix website on June 12, 2018, for CEQA public review. This highlights DWR's continuing transparency and dedication to public and agency involvement. The CEQA public review period began on July 17, 2018 and concluded on September 17, 2018. Public review of the California WaterFix Draft Supplemental EIR/EIS for compliance with NEPA began on September 21, 2018, when the U.S Environmental Protection Agency posted the notice of availability in the Federal Register. The NEPA public comment period closes on November 5, 2018. A Final Supplemental EIR/EIS is expected in late 2018. This updated Section 401 Certification application continuation sheet is based on the project refinements analyzed in the Supplemental EIR/EIS.

The construction and operation of new conveyance facilities would help resolve many of the concerns with the current south Delta conveyance system, including reducing impacts to endangered and threatened species in the Delta through operational changes to the State Water Project (SWP) and Central Valley Project (CVP) and state-of-the-art fish screens to reduce entrainment at the new intakes. Implementing a dual conveyance system, in which water could be diverted from either the north or the south or both, depending on the needs of aquatic organisms, would align water operations to better reflect natural seasonal and east-west flow patterns. The new system is designed to reduce the impacts that occur through sole reliance on the southern diversion facilities and to allow for greater operational flexibility to enhance fish protection. The new conveyance facilities would also help protect critical water supplies against the threats of sea level rise and earthquakes.

Although the California WaterFix includes only those habitat restoration measures necessary to mitigate for the effects of the new conveyance facilities, habitat restoration is still recognized as a critical component of the State's long-term plans for the Delta. Such larger endeavors, however, will likely be implemented over time under actions separate and apart from the proposed project. The primary habitat restoration program, known as "California EcoRestore" (EcoRestore), will be overseen by the California Natural Resources Agency and implemented under the California Water Action Plan. Under EcoRestore, the State will pursue restoration of more than 30,000 acres of fish and wildlife habitat by 2020.

Additional 401 Water Quality Certification Application Data

The following information is provided as a supplement to the State Water Resources Control Board Clean Water Act Section 401 Water Quality Certification Application Form and is provided in the same order in which information is requested on the form.

BLOCK 2. PROJECT DESCRIPTION

B) Project Purpose

The context of the project is that one of the primary challenges facing California is how to address the increasingly significant and escalating conflict between the ecological needs of a range of at-risk Delta species and natural communities that have been and continue to be adversely affected by a wide range of human activities, while providing for more reliable water supplies for communities, agriculture, and industry.

This challenge must be addressed, in decisions made by DWR, CDFW, and the State Water Resources Control Board (State Water Board), as they endeavor to strike a reasonable balance between these competing public policy objectives and various actions taken within the Delta, including the proposed project. State policy regarding the Delta is summarized in the Sacramento–San Joaquin Delta Reform Act of 2009, which states:

> "it is the intent of the Legislature to provide for the sustainable management of the Sacramento-San Joaquin Delta ecosystem, to provide for a more reliable water supply for the state, to protect and enhance the quality of water supply from the Delta, and to establish a governance structure that will direct efforts across state agencies to develop a legally enforceable Delta Plan." (California Water Code, Section 85001, subd. [c]).
>
> The Delta "serves Californians concurrently as both the hub of the California water system and the most valuable estuary and wetland ecosystem on the west coast of North and South America." (California Water Code, Section 85002).

The ecological health of the Delta continues to be at risk and the conflicts between species protection and water use have become more pronounced. Other factors, such as the continuing subsidence of lands within the Delta, increasing seismic risks and levee failures, and sea level rise associated with climate change, serve to further exacerbate these conflicts. Simply put, the overall system as it is currently designed and operated does not appear to be sustainable from an environmental perspective, and so a proposal to implement a fundamental, systemic change to the current system is necessary. This change is necessary if California is to "[a]chieve the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem." (California Public Resources Code Section 29702, subd. [a]).

As a part of systemic change, the purposes of the proposed actions are to achieve the following:

1. Construction and operation of facilities and/or improvements for the movement of water entering the Delta from the Sacramento Valley watershed to the existing SWP and CVP pumping plants located in the southern Delta.
2. The activities described in 1) occurring in a manner that minimizes or avoids adverse effects to listed species, and allows for the protection, restoration and enhancement of aquatic, riparian and associated terrestrial natural communities and ecosystems.
3. Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of state and federal law and the terms and conditions of water delivery contracts held by SWP contractors and certain members of San Luis Delta Mendota Water Authority, and other existing applicable agreements.

These purposes reflect the intent to advance the coequal goals set forth in the Sacramento–San Joaquin Delta Reform Act of 2009 of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The above phrase—restore and protect the ability of the SWP and CVP to deliver up to full contract amounts—is related to the upper limit of legal CVP and SWP contractual water amounts and delineates an upper bound for development of EIR/EIS alternatives, not a target. It is not intended to imply that increased quantities of water will be delivered under the proposed project. As indicated by the “up to full contract amounts” phrase, alternatives need not be capable of delivering full contract amounts on average in order to meet the project purposes. Alternatives that depict design capacities or operational parameters that would result in deliveries of less than full contract amounts are consistent with this purpose.

The need for the action is derived from the multiple, and sometimes conflicting, challenges currently faced within the Delta. The Delta has long been an important resource for California, providing municipal, industrial, agricultural and recreational uses, fish and wildlife habitat, and water supply for large portions of the state. However, by several key criteria, the Delta is now widely perceived to be in crisis. There is an urgent need to improve the conditions for threatened and endangered fish species within the Delta. Improvements to the conveyance system are needed to respond to increased demands upon and risks to water supply reliability, water quality, and the aquatic ecosystem.

Delta Ecosystem Health and Productivity

Variability in the location and timing of flows, salinity, and habitat was common in the pre-European Delta. But for the past 70 years, the Delta has been managed as a tidal/freshwater system. During the same period, the ecological productivity for Delta native species and their habitats has been in decline. Removal of much of the variable pre-European heterogeneous mix of fresh and brackish habitats, necessary to support various life stages of some of the Delta native species, has had a limiting effect on the diversity of native habitat within the Delta. In addition, urban development, large upstream dams and storage reservoirs, diversions, hydraulic mining, and the development of a managed network of navigation, flood control, and irrigation canals have all affected water flow patterns and altered fish and

wildlife habitat availability. Most of the original tidal wetlands and many miles of sloughs in the Delta were removed by channelization and levee construction between the 1850s and 1930s. These physical changes, coupled with higher water exports and declines in water quality from urban and agricultural discharges and changes in constituent dilution capacity from managed inflows and diversions have stressed the natural system and led to a decline in ecological productivity.

Significant declines have been reported in economically important fish species such as Chinook salmon. Delta smelt, considered by many to be an indicator species for the health of the Delta ecosystem, is just one component species in the community-wide pelagic organism decline. Fishery resource changes may be attributable to numerous factors, including water management systems and facilities, water quality/chemistry alterations, and nonnative species introductions.

Water Supply Reliability

The distribution of precipitation and water demand in California is unbalanced. Most of the state's precipitation falls in the north, yet substantial amounts of water demand are located south and west of the Delta, including irrigation water for southern Central Valley agriculture, and municipal and industrial uses in southern California and the Bay Area. This supply/demand imbalance led to development of two major water projects: the SWP and the CVP.

Together, the SWP and CVP systems are two of the largest and most complex water projects in the nation and provide the infrastructure for the movement of water throughout much of California. They function under a suite of Congressional authorizations, interagency agreements, regulatory requirements, and contractual obligations that govern daily operations and seasonal performance. These include various authorizing legislation, the USFWS and NMFS Biological Opinions, including the Reasonable and Prudent Alternatives, and the water right permits issued by the State Water Board, among others.

The water rights of the SWP and CVP are conditioned by the State Water Board to protect the beneficial uses of water within the Delta under each respective project's water rights. In addition, under the COA, DWR and Reclamation coordinate their reservoir releases and Delta exports to enable each project to achieve benefit from their water supplies and to operate in a manner protective of beneficial uses as required by their water right permits.

The current and projected future inability of the SWP and CVP to deliver water to meet the demands of certain south of Delta CVP and SWP water contractors is a very real concern. More specifically, there is an overall declining ability to meet defined water supply delivery volumes and water quality criteria to support water users' needs for human consumption, manufacturing uses, recreation, and crop irrigation.

Delta Hydrology and Water Quality

Generally, Delta hydrodynamics are defined by complex interactions between tributary inflows, tides, in-Delta diversions, and SWP and CVP operations, including conveyance, pumping plants, and operations of channel barriers and gates. The degree to which each variable impacts the overall hydrology of the Delta varies daily, seasonally, and from year to year, depending on the magnitude of inflows, the tidal cycle, and the extent of pumping occurring at the SWP and CVP pumping plants. Changes in water inflow and outflow throughout the Delta affect the water quality within the Delta, particularly with regard to salinity. It has been estimated that seawater is pushing 3 to 15 miles farther inland since development began in the Delta over 150 years ago (Contra Costa Water District 6 2010).

Additionally, other water constituents of concern in the Delta have been identified through ongoing regulatory, monitoring, and environmental planning processes such as CALFED, planning functions of the State Water Board, and the CWA Section 303(d) list of state water bodies that do not meet applicable water quality standards. In June 2007 (with updates in February and May 2009), EPA gave final approval of a list of 18 chemical constituents identified in the Section 303(d) list for impaired Delta waters (State Water Resources Control Board 2007). Included in this list are dichlorodiphenyltrichloroethane (DDT) and other pesticides, mercury, polychlorinated biphenyls (PCBs), and selenium.

To further compound these challenges, fundamental changes to the Delta are certain to occur; the Delta is not a static ecological system. The anticipated effects of climate change will result in elevated sea levels, altered annual and inter-annual hydrological cycles, changed salinity and water temperature regimes in and around the Delta, and accelerated shifts in species composition and distribution. These changes add to the difficulty of resolving the intensifying conflict between the ecological needs of a range of at-risk Delta species and natural communities and the need to provide adequate and reliable water supplies for people, communities, agriculture, and industry. Anticipating, preparing for, and adapting to these changes are key underlying drivers for the proposed project.

C) PROJECT ACTIVITIES

The Project consists of the construction and operation of a dual-conveyance water delivery system that would modernize the hub of California's aging water supply system in a way that balances the needs of the Delta ecosystem and California's water supplies. The design of the new facilities has evolved over the years, due primarily to additional engineering analyses, environmental considerations, landowner concerns, and public comment. The original concept was the All Tunnel Option (ATO), which relied primarily on tunnels to convey the water through the Delta. The next concept was the Pipeline Tunnel Option (PTO), which included a combination of pipelines and tunnels. The third concept was the Modified Pipeline Tunnel Option (MPTO), which made significant changes to the earlier concepts, including reducing the number of intakes, increasing the size of the tunnels in the gravity-feed portion of the system, decreasing the size of the intermediate forebay, and eliminating an intermediate pumping plant.

The conveyance facility alignment for the Project is currently identified as the "California WaterFix Byron Tract Forebay Option," or "WaterFix BTO" in DWR's Conceptual Engineering Report (Attachment 2, July

2018) which analyzes the project. This latest configuration optimizes the earlier MPTO design concept by establishing a new Byron Tract Forebay (BTF) at the south end of the Delta conveyance system, eliminating the need for any WaterFix related work inside Clifton Court Forebay, reconfiguring the Reusable Tunnel Material (RTM) storage locations so as to minimize wetland impacts, constructing new tunnels and connection channels south of BTF to convey water from BTF to the Banks and Jones Pumping Plants, and adjusting the North Tunnel alignment to avoid sensitive receptors. Changes to the conveyance facilities resulting from the optimization in alignment and features, include the following:

- A new forebay located on Byron Tract will be constructed instead of dividing, dredging, and expanding Clifton Court Forebay;
- The configuration and location of RTM storage areas will be changed, including RTM storage sites on Byron Tract, Bouldin Island, and Glanville Tract;
- RTM will no longer be stored on Zacharias Island;
- Channels will be constructed to convey water from the new south tunnels outlet structure to the SWP and CVP pumping plants;
- The area required for transmission lines will substantially decrease.
- The location and footprint of the control structures on the inlet channels to the SWP and CVP pumping plants has changed;
- The proposed project will require two fewer barge unloading sites; and
- The portion of the tunnel alignment near Hood will be moved to the east to avoid crossing under the community and to avoid affecting municipal water wells. The portion of the tunnel alignment under Staten, Bouldin, and Venice Islands will also be moved to the east of the previous alignment.

The Draft Supplemental EIR/EIS proposed project (Attachment 7) also includes the installation of a permanent gate at the Head of Old River to ensure fish remain in the San Joaquin River, rather than enter the South Delta through Old River and also to maintain water quality.

The proposed project consists of the following facilities:

- Three on-bank intake facilities along the Sacramento River in the north Delta that include fish-screens.
- Two gravity-flow water conveyance tunnels (North Tunnels) that connect the intakes to an Intermediate Forebay.
- An Intermediate Forebay (IF) which receives water from the North Tunnels and passes the water to gravity-flow dual Main Tunnels.
- Dual Main Tunnels that connect the IF to Byron Tract Forebay.
- Four deposit sites for tunnel material excavated from the North Tunnels and Dual Main Tunnels.
- A Pumping Plant located at the northeast corner of Byron Tract Forebay.
- Two tunnels connecting the Byron Tract Forebay to a feeder canal that carries water to the California Aqueduct and Delta-Mendota Canal intakes.
- A permanent operable gate at the Head of Old River.
- Construction and maintenance-related dredging.

The water conveyance facilities have been designed to meet the following criteria:

- Deliver up to 9,000 cubic feet per second (cfs) from the Sacramento River in the north Delta to the south Delta export pumping plants.
- Divert water from the Sacramento River through fish-screened intakes.
- Transport water through conveyance facilities isolated from existing rivers and sloughs.
- Deliver water to the SWP and CVP export pumping plants' intake channels downstream of their respective fish collection facilities.
- Withstand a 200-year flood event taking into account sea level rise (SLR) predictions.
- Reliance on gravitational flow through the North and Main Tunnels.

The physical characteristics of each of the proposed project's facilities are described below.

Intakes

The three Intake Facilities (Intakes No. 2, 3, and 5) will each have a capacity of 3,000 cfs as proposed by DWR and a team of experts, including State and federal fish agency biologists, called the Fish Facilities Technical Team (FFTT). The Intake Facilities are proposed for sites along the Sacramento River which were selected in coordination with the FFTT. Intake numbering is consistent with the earlier Pipeline/Tunnel Option (PTO) and Modified Pipeline/Tunnel Option (MPTO) CER numbering system.

Each Intake Facility will consist of the following:

- A fish-screened intake structure that employs state-of-the-art on-bank fish screens, sized to provide an approach velocity of 0.2 feet/second under design diversion conditions.
- Twelve large gravity collector box conduits that will include flow meters and control gates, and will convey flow to the sedimentation system.
- A sedimentation system consisting of gravity settling basin to capture sand-sized sediment and a drying lagoon for sediment drying and disposal.
- Drop shaft structures to convey water from the sedimentation basins into the North Tunnel system

Water will pass through baffled fish screens and flow under the modified levee and rerouted Highway 160 through gated box conduits. Water will exit the box conduits into one of two sediment basins, then flow to the discharge shaft that leads to the tunnel system. Electric power will be supplied through a substation with transformers and switching equipment that will be located at each site. A fuel station will be constructed at each intake site.

Tunnels

The North Tunnels, which consist of three separate tunnel reaches totaling approximately 14 miles, connect the three Intake Facilities to the Intermediate Forebay. Two parallel Main Tunnels, each approximately 30 miles long, connect the Intermediate Forebay to the Byron Tract Forebay. The North Tunnels consist of two single-bore 28-foot and one single-bore 40-foot inside diameter (ID) tunnels. The Main Tunnels are twin-bore 40-foot ID tunnels. The inlets and outlets would be equipped with isolation structures to allow for the tunnels to be dewatered, maintained, and inspected.

As part of the construction of the tunnels, five temporary barge landings would be constructed at locations adjacent to construction work areas for the delivery of construction materials. Each of the five proposed barge landings would include in-water and over-water structures, such as piling dolphins, docks, ramps, and possibly conveyors for loading and unloading materials; and vehicles and other machinery. Construction of the five barge landings would involve piles at each landing. A concrete batch-plant and a fuel station would be constructed at tunnel launch shaft sites located on Byron Tract, Bouldin Island, Intermediate Forebay, and intake site 2.

Shafts are required along the proposed tunnel alignment to facilitate construction, operation, and maintenance of the water conveyance system. During the construction phase, shafts are used to launch the tunnel boring machines (TBMs) to initiate tunnel mining, support their operation, retrieve the TBMs on completion of the tunnel drive, and provide access for TBM repairs. After construction, the permanent shafts are finished to a much smaller diameter (approximately 20 feet) and will provide ventilation, facilitate tunnel dewatering/filling, and provide operation and maintenance access.

If major TBM repairs are needed, contractors will be able to access their equipment from the surface using temporary construction access shafts. These shafts will be located along the tunnel alignment. Once tunneling is complete, the upper portion of the construction access shafts will be removed down to approximately 10 ft. below the ground surface and backfilled to pre-construction conditions. Safe haven sites have been identified along the tunnel alignments. A safe haven does not include a shaft. It is only an area reserved for the tunnel contractor to do deep grouting on the tunnel alignment, if necessary.

Locations and Disposal of Tunnel Material

There are currently four disposal sites identified, and excavated tunnel material will be transported to spoil sites a maximum of 12,000 feet from launch shafts, primarily by conveyor. The daily volume of tunnel material withdrawn from the tunneling operations at any one shaft location would vary, with an average volume of approximately 3,000 cubic yards per day per shaft location. Proximity to the tunnel shafts is required to reduce truck traffic associated with the transport the material to a remote disposal site. Transport of the material to the RTM storage sites would be nearly continuous during mining or advancement of the TBM. The material would be carried on a conveyor belt from the tunnel boring machines to the base of the launching shaft and then to a work area. The material would be segregated for transport to treatment area as appropriate. The material would be stacked to a height of between 6 and 15 feet, depending on storage location. If feasible, the tunnel material will be reused during the construction of various habitat restoration and creation efforts within the Delta. The northern most Reusable Tunnel Material (RTM) area is adjacent to Intake 1 and a tunnel work area. This RTM area is approximately 53 acres. Moving south, the RTM area adjacent to the Intermediate Forebay and Spillway footprint consists of two sites: one north of Twin Cities Road (~275 acres) and the other south of Twin Cities Road (~77 acres). There are three separate RTM areas on Bouldin Island. The area of each individual site beginning from the western most site, moving east, is approximately 334 acres, 619 acres, and 251 acres, respectively. The southernmost RTM area is located near the Byron Tract Forebay footprint and consists of two separate RTM sites located west and north of BTF. The western and northern sites are approximately 154 and 625 acres, respectively. RTM at the BTF Pumping Plant shaft, South Tunnel RTM, and excess excavated material at the downstream connection channels at BTF area

will be disposed in disposal/borrow areas on Byron Tract, both north and southwest of BTF. Off-road earth moving and hauling equipment will move the material from the channels to the disposal areas.

Intermediate Forebay

The proposed Intermediate Forebay (IF) would be located on the Glanville Tract, east of the Pearson District and west of Interstate 5. The IF serves as an atmospheric break in the system from the inlet to the dual Main Tunnels. This break in the system allows the flows from each Intake to merge and be distributed equally to each barrel of the Main Tunnels, improving operational stability in the Byron Tract pumping plant, and allowing for independent operation of each of the North Tunnels and the Main Tunnels. The Intermediate Forebay also provides a location to dampen hydraulic surges that may occur if the BTF pumping facilities unexpectedly shutdown, such as following a power outage at the pump plant. The IF would have no regulating gates controlling gravitational flow to the Main Tunnels. Instead, all flow control is done at the Intake Facilities. Therefore, no daily operational storage would be necessary at IF beyond that necessary to accommodate water surface changes at the downstream Byron Tract Forebay. The IF would have a bottom elevation of -20 feet and would be 28 acres in size. The sizing of the facility reflects the smallest practicable area that would accommodate construction of the inlet and outlet structures and provide sufficient reduction in velocity to capture sand-sized sediment not otherwise captured at the Intake Facilities.

Byron Tract Forebay

The BTF provides the daily operational storage required to equalize and balance differences between the south Delta inflow and water exported by the SWP and CVP pumps. Depending on the operating water levels (maximum and minimum), the BTF has been preliminary sized for an operational storage capacity range of approximately 5,960 to 8,350 acre-feet (AF), with an approximate water storage surface area of nominally 810 acres, depending on depth.

Existing operating conditions at the exporting pumping plants would limit that the normal BTF operating range to approximately 10 feet (elevation +2.5 to +12.5 feet). This operating range results in a maximum of approximately 8,350 AF of potential active storage in BTF. The maximum water surface elevation (WSE) at BTF can be lowered to reduce the active storage in the forebay. For example, an operating range of +2.5 to +10 feet would result in approximately 5,960 acre-feet of active storage.

BTF is connected to a conveyance system that includes tunnels and open channels that lead to the existing export pumping stations.

Clifton Court Forebay

The WaterFix BTO does not include any revisions to Clifton Court Forebay itself. Modifications will be made to some of the existing outlet channels from this forebay to ensure that both isolated North Delta, isolated south Delta, and dual-mode operation of the facilities can be achieved. In cases where the Banks PP is pumping water from the south Delta diversions, Clifton Court will be utilized within its current configuration which includes a gated entrance from the West Canal, the main body of water, and the Skinner fish facility.

Conveyance System to Existing Export Pumping Plants
From BTF, two 40 feet ID tunnels and connection channels will convey flow to the existing export pumping plants. The two 40 feet ID tunnels are approximately 1.6 miles in length each and terminate at an outlet structure on the connection channels. The connection channel that will be located between the tunnel outlet structure and the Banks PP Intake Channel is approximately 0.5 miles in length. The connection channel between the tunnel outlet structure and the Jones PP Intake Channel is approximately 0.9 miles in length.

Head of Old River Gate[1]
An Operable Gate with control gates at the Head of Old River will reduce migration of San Joaquin River watershed salmonids into the South Delta through the Old River. The gate is located where the San Joaquin River and Old River diverge. The gate is approximately 210 feet long and 30 feet wide. It consists of five independent 125 foot bottom-hinged gates, with fish passage structure, boat lock with gates at each end, control building, boat lock operator's building, and communications antenna, as well as floating and pile-supported warning signs, water level recorders, and navigation lights. For details on how the Operable Gate would be operated please refer to Exhibit DWR-1143Rev2 (California WaterFix Project Change in Point Of Diversion Hearing exhibits: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/petitioners_exhibit/dwr/dwr-1143rev2.pdf).

Dredging will be required to construct the facilities. Depending on the rate of sedimentation, need of maintenance dredging is estimated as every 3 to 5 years. Figures showing engineering details of the Draft Supplemental EIR/EIS proposed project are shown in Volume II of the Conceptual Engineering Report Byron Tract Forebay Option (Attachment 2).

Electrical Power Facilities
The high voltage power supply required to operate the tunnel boring machines (TBMs) will be provided by Sacramento Municipal Utility District (SMUD), and Western Area Power Administration (WAPA). SMUD will provide temporary power supplies for TBMs in the northern portion of the project, roughly from the Intermediate Forebay to the three intakes, with new power transmission lines and equipment originating at its Franklin substation. WAPA will provide temporary TBM power from its Tracy substation up to Bouldin Island shaft locations, with power drops along the tunnel alignment. WAPA will also provide permanent operational power to the Byron Tract Forebay pumping plant.

D) PROJECT SCHEDULE

In addition to the CEQA/NEPA process, a number of permits and authorizations are required prior to DWR beginning construction of the California WaterFix Project. DWR is continuing to coordinate compliance with the various regulatory requirements related to these permits. In particular, Section 85088 of the California Water Code (Delta Reform Act) requires that the State Water Board "issues an order approving a change in the point of diversion of the State Water Project and the federal Central Valley Project [prior to the commencement of the] construction of any diversion, conveyance, or other

[1] Head of Old River Gate is sometimes referred to as Head of Old River Barrier (HORB), including in project maps and figures.

facility necessary to divert and convey water pursuant to the change in point of diversion." Because no construction can begin prior to completion of the change petition process (which the State Water Board has mentioned are, for complex proceedings, often multiyear processes), DWR is pursuing all necessary permits prior to completion of the State Water Board change petition process. On August 26, 2015, DWR and Reclamation submitted a petition for the change in point of diversion to the State Water Board, and these hearings are currently on-going. (California WaterFix – Water Right Petition: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/water_right_petition.html).

The Project construction schedule is based on 5% design and may be refined as facility designs progress.

Table 1 – Preliminary Project Construction Schedule

Facility Component	Year	Duration (Days)
Procurement		
Pumps	1	Approximately 2.25 years
Construction		
Site Prep, Roads, Barges, Utilities	1	Approximately 1.4 years
Temporary Power	1	Approximately 1.4 years
Intakes	5	Approximately 6 years
North Tunnels	4	Approximately 7 years
Intermediate Forebay	8	Approximately 4.5 years
Main Tunnels	3	Approximately 7.7 years
Pumping Plants	3	Approximately 8 years
Byron Tract Forebay	3	Approximately 2.5 years
South Tunnels	6	Approximately 2 years
Connection Channel to Export Facilities	8	Approximately 1.5 years
Permanent Power	9	Approximately 1 years
Start Up Commissioning	13	Approximately 1 years

BLOCK 7. PROJECT SITE DESCRIPTION -- GENERAL

A) Project Location

Sacramento-San Joaquin Delta in Sacramento, Contra Costa, San Joaquin, and Alameda Counties

The location of the proposed project is shown in **TAB E, California WaterFix Mapbook M3-4**. The northern most component of the project is located at approximate Latitude 38.42° North and Longitude 121.51° West, while the southern-most component is located at approximate Latitude 37.80° North and Longitude 121.58° West. The location of each waterway and wetland crossing is included on the Table of Impacts, **TAB C**.

B) Total Project Size 7214 acres linear feet: see Block 8

C) Site Description of the entire project area

The project is located within the Sacramento-San Joaquin Delta, a region composed of 57 leveed island tracts and 700 miles of sloughs and winding channels. Although most of the Delta's historical wetlands have been converted to agricultural uses, the Delta continues to support many types of aquatic resources. Waterways include tidally influenced rivers and sloughs, nontidal irrigation ditches, ponds and lakes. Wetlands include tidal and nontidal emergent marshes, forested wetlands and scrub-shrub, alkaline wetlands, vernal pools, and other seasonal wetlands.

BLOCK 8. WATERBODY IMPACT

The Project is located in the Sacramento/San Joaquin Delta and crosses several waterways and other aquatic resources within the Delta. The waterbodies and other aquatic resources affected by the proposed project can be found at **TAB C, Table of Impacts**, and **TAB D, Map Book of Impacts**.

A) Water Body Name(s)

The following named waterbodies will be affected by discharge related to the proposed project: Italian Slough, Old River, San Joaquin River, North Victoria Canal, Potato Slough, Connection Slough, Middle River, and the Sacramento River. A mapbook identifying all aquatic features located within the project footprint has been provided as **TAB D, Mapbook of Impacts.**

B) Fill and Excavation

Construction of the proposed project would result in the unavoidable impacts to waters of the U.S. DWR mapped several types of Waters of the U.S. within the delineation review area. Descriptions of the mapped aquatic types are provided below, including general characterizations of the associated vegetation expected to occur within each type of aquatic habitat. Based on the Corps verified delineation, DWR has calculated the surface area of each type of waters of the U.S. that would be filled as a result of the proposed project.

Types of Waters of the U.S. Within the Project Area

Perennial Wetlands

Perennial wetlands are dominated by persistent hydrophytic vegetation. Three types of perennial wetlands were mapped in the Project Area based on the growth form of the vegetation.

- **Emergent Wetland -** Emergent wetlands are dominated by emergent marsh plants such as tules and cattails, or native or ruderal hydrophytic herbaceous forbs. Nontidal emergent wetlands occur above the waterline in ditches or other nontidal channels, at the edge of ponds or lakes, or where seepage occurs on the landside of levees. Tidal emergent wetlands occur in the vegetated zone along tidal or muted tidal channels, in areas such as mud flats, waterside levee toes, and in-channel islands.
- **Scrub-Shrub Wetlands -** Scrub-shrub wetlands are dominated by woody vegetation that is less than 6 m tall and includes riparian shrubs such as native blackberries, dogwoods, buttonbush, and California wild rose, as well as willow and cottonwood seedlings or saplings. Scrub-shrub wetlands may occur in depressions or other nontidal areas such as the banks of ditches and the

edges of ponds or lakes. This plant community also occurs in tidally influenced areas along tidal channels and on in-channel islands.

- **Forested Wetlands -** Forested wetlands are defined by woody vegetation that is 6 m tall or taller. Riparian trees in the study area include: Goodding's willow, arroyo willow, sandbar willow, and Fremont's cottonwood. Forested wetlands are found in areas with tidal and nontidal water regimes, as described for scrub-shrub wetlands.

Seasonal Wetlands

Three types of seasonal wetlands were mapped in the study area. Seasonal wetlands are usually dry for part of the year and therefore exhibit vegetation that is patchy or not persistent throughout the year. Strongly alkaline or saline conditions may also cause the soil to be barren of vegetation in some areas.

- **Vernal Pool -** Vernal pool wetlands are depressions with an impervious soil horizon close to the surface. These depressions fill with rainwater and may remain inundated through spring or early summer; they often occur in complexes of many small pools that are hydrologically interconnected. Vernal pools support distinct plant species adapted to the characteristic flooding and drying cycles of the habitat. The vernal pools in the project area are located south and west of Clifton Court Forebay and have been somewhat disturbed by past land use activities.
- **Seasonal Wetland -** A type of seasonal wetland occurs in the central Delta within plowed agricultural fields. Although a system of pumps and drainage ditches controls water levels on the subsided islands, a high water table persists in some areas. Upland crops are planted in the surrounding fields but hydrophytic ruderal forbs become established in the wet areas, and crops usually fail if planted there. The vegetation in these wetlands consists mostly of annual weedy wetland species.
- **Alkaline Wetland** - Alkaline wetlands are a type of seasonal wetland influenced by strongly alkaline or saline soils. Alkaline wetlands support alkaline or saline tolerant species such as iodine bush and alkali heath, but may also have large unvegetated areas that are seasonally ponded or saturated.

Nontidal Waters

In the Delta five types of nontidal waters were mapped as the open water portion of either naturally occurring features or unnatural features that were excavated and/or diked. Nontidal waters may occur in depressions of various sizes or in channels with either intermittent or perennially flowing water. The vegetation associated with these waters is discussed separately in the Wetlands section.

- **Agricultural Ditches -** Throughout the Delta there are many ditches constructed for the purpose of irrigating and/or draining agricultural land. The mapped ditches range in size from one to 22 meters wide. They are generally unvegetated with mud bottoms, but may support floating species such as duckweed or water hyacinth.
- **Natural Channels -** Nontidal natural channels exist on the northeast and southwest edges of the Project Area. These include a section of the Cosumnes River and several small channels linking other water features. All of these features flow intermittently. The substrate in natural channels may be mud, or sand, gravel, and cobbles. These channels are generally unvegetated, but may have inclusions of emergent wetland, scrub-shrub, or forest wetlands. However, if these

inclusions were large enough to be mapped, they were included in the delineation under those specific habitat types.

- **Depressions -** Depressions are ponds that are permanently, seasonally, or artificially wet, with little to no rooted vegetation on a mud or sand bottom. They may be artificially filled or result from a high water table. Depressions are less than 20 acres in size with a depth of less than 2 meters. These water bodies are often created in grazing lands for use as stock ponds, and may be diked or otherwise artificially impounded.
- **Lakes -** Lakes have characteristics similar to depressions, but are greater than 20 acres in size and may have a wave-formed shoreline.

Tidal Waters

Tidal waters are the open water portions of aquatic features that are influenced by the rise and fall of the tides. Man-made structures such as gates or culverts may restrict tidal influence to various degrees.

- **Tidal Channels -** Tidal channels may be naturally occurring perennial riverine waterways, though most have been modified with leveed banks and often reinforced with rock revetment. Water velocity and depth fluctuates under tidal influence, and the channel bottom is generally comprised of mud or sand. Tidal channels that have been created by excavation are usually straight rather than sinuous, and usually have heavily diked or reinforced banks. These excavated channels were often created to provide for navigation, water conveyance, material for levees, or to raise the land surface on adjacent property. Tidal channels are largely unvegetated, or may support floating or submerged aquatic vegetation.
- **Conveyance Channels -** Several large rock-lined conveyance channels were mapped in the study area. These constructed water features were mapped along with all other aquatic resources in the Project Area because they may be subject to some tidal effects and therefore may be considered jurisdictional by the Army Corps of Engineers. These features are unvegetated.
- **Clifton Court Forebay -** Clifton Court Forebay, a constructed reservoir, is a highly modified perennial water body which is semi-enclosed by land, and engineered to be periodically open to tidal influences via a moveable gate structure. The Forebay is characterized by an artificial rock shore (rock revetment) and an aquatic bed of varying depths. The forebay is largely unvegetated, however, emergent perennials such as cattails and tules are found in shallow areas, and submerged aquatics such as Brazilian waterweed are found in areas of moderate depth.

Surface Area of Discharge of Fill Material

The proposed project will result in the discharge of fill material into approximately 192.93 acres of waters of the U.S. The acres of waters that would be affected are shown in detail in Table 2 below, as are the acres of dredged or excavated features. Some of the impacts may be overestimated; for example, the location or configuration of some launch pads or safe havens may be modified to further avoid wetlands and other waters, and barge landings are currently designed to be constructed on piles only, which would reduce the amount of estimated fill acreage. Additionally, temporary construction features for this project will eventually be restored to pre-project conditions, but the fill will likely be in place for multiple years; therefore, all fills have been considered permanent for the purposes of this calculation.

Table 2 - Acres of Filled or Excavated/Dredged Waters

Habitat Type	Fill Acreage	Excavation/Dredge Only Acreage
Agricultural Ditch	75.51	0.26
Alkaline Wetland	0	0
Clifton Court Forebay	0	0
Conveyance Channel	10.82	8.05
Depression	0.11	0
Emergent Wetland	5.52	0
Forested Wetland	2.00	0
Lake	0	0
Natural Channel	0	0
Scrub-Shrub	3.70	0.16
Seasonal Wetland	54.51	0
Tidal Channel	40.76	15.2
Vernal Pool	0	0
SUM	**192.93**	**23.67**

Linear impacts occurring along channels are due to intakes, barge landings, an operable gate, and control structures. These impacts total approximately 32,000 feet.

C) Dredging

The banks of the Sacramento River will be excavated in order to accommodate construction of the three intake structures. However, this excavation will take place within the dewatered area behind the cofferdam; there will be no dredging within flowing waters during construction. Dredging activities within flowing waters would primarily be conducted in response to accumulation of sediment at facilities after they have been constructed. The following table (Table 3) includes estimated dredge volumes related to maintenance of constructed facilities.

Table 3 - Estimated dredge volumes related to maintenance of constructed facilities

Facility	Anticipated Maintenance Interval	Volume to be Dredged
Head of Old River Gate	Every 3-5 years	Up to 1500 cubic yards per event
Intake 2	Not more than once per year	Up to 1200 cubic yards per event
Intake 3	Not more than once per year	Up to 950 cubic yards per event
Intake 5	Not more than once per year	Up to 1200 cubic yards per event

A formal dredging plan with further details on specific maintenance dredging activities will be developed prior to dredging activities. Guidelines related to dredging activities, including compliance with in-water work windows and turbidity standards are described further in the Final EIR/EIS, Appendix 3B,

Environmental Commitments, under Disposal and Reuse of Spoils, Reusable Tunnel Material (RTM), and Dredged Material (Attachment 1).

Head of Old River Gate
Dredging up to 150 feet upstream and 350 feet downstream from the site is necessary to clear the area for construction and placement of the fish control gate. In total, up to 1,500 cubic yards of material is estimated to be dredged.

Depending on the rate of sedimentation, need of maintenance dredging is estimated as every 3 to 5 years, removing no more than 400 cubic yards of materials. Maintenance dredging around the gate would be necessary to clear out sediment deposits and will be conducted using a sealed clamshell dredge. As stated above, a formal dredging plan with further details on specific maintenance dredging activities would be developed prior to dredging activities.

D) Info on Q2, Q10, Q100

Because of the nature of this project, calculation of pre-and post-project flows do not apply in the typical sense. None of the project components requiring a physical land disturbance will result in a change to the 2-year, 10-year, or 100-year peak flows of the hydrology of those work areas. Further, flow rates in the Sacramento River are not expected to change as a result of construction activities of project facilities. However, the operation of the three diversions in the Sacramento River, each of which can divert up to 3,000 cfs, will decrease flow downstream of the diversions.

The following changes are proposed, subject to regulatory permitting:

If Pre-project flow is:	Post-project flow would be:
64,000 cfs	>/= 55,000 cfs
35,000 cfs	>/= 26,000 cfs
20,000 cfs	>/= 13,000 cfs
15,000 cfs	>/= 12,000 cfs
9000 cfs	>/= 8460 cfs
5000 cfs	>/= 5000 cfs

Flows greater than 64,000 cfs above the project intakes would decrease </= 9000 cfs below the project intakes. Because average 2-year, 10-year, and 100-year peak flows exceed 35,000 cfs, the expected change in the peak flows would be a decrease of </= 9000 cfs.

E) Types of material to be discharged into waters of the state by each facility are shown in Table 4 and Table 5 below.

Table 4 – Estimate of Permanent Fill Volume into Waters of the U.S.

	Estimate Assumptions	Fill Volume (cubic yards)	Fill Material
Connection Channel (Canal)			
Agricultural Ditch	3 foot depth	2,411	clean soil, rock, and concrete
Conveyance Channel	engineering calculation	34,623	clean soil, rock, and concrete
Concrete Batch Plants			
Agricultural Ditch	3 foot depth	11,065	clean soil, rock, and concrete
Control Structures			
Conveyance Channel	engineering calculation	450	clean soil, rock, and concrete
Byron Tract and Intermediate Forebays			
Agricultural Ditch	3 foot depth	32,787*	clean soil, rock, and concrete
Emergent Wetland	3 foot depth	6,593*	clean soil, rock, and concrete
Seasonal Wetland	1 foot depth	11,627*	clean soil, rock, and concrete
Intakes 2, 3, and 5			
Agricultural Ditch	3 foot depth	2,354	clean soil, rock, and concrete
Depression	6 foot depth	84	clean soil, rock, and concrete
Forested Wetlands	2 foot depth	363	clean soil, rock, and concrete
Scrub-shrub	1 foot depth	2,566	clean soil, rock, and concrete
Tidal Channel	engineering calculation	195,360	clean soil, rock, and concrete
Head of Old River Operable Gate			
Tidal Channel	engineering calculation	650	clean soil, rock, and concrete
Reusable Tunnel Material			
Agricultural Ditch	3 foot depth	130,447	Reusable tunnel material
Emergent Wetland	3 foot depth	1,907	Reusable tunnel material
Seasonal Wetland	1 foot depth	3,612	Reusable tunnel material
Hwy 12 Road Interchange			
Agricultural Ditch	3 foot depth	4,571	clean soil, rock, and concrete
Seasonal Wetland	1 foot depth	14,394	clean soil, rock, and concrete
Shaft Locations			
Agricultural Ditch	3 foot depth	5,180	clean soil, rock, and concrete
Emergent Wetland	3 foot depth	499	clean soil, rock, and concrete
Permanent Fill Total		**461,543**	

***** Fill volumes for the forebays were calculated based on the engineering footprint of the forebay embankments and inlet/outlet structures only. Fill volumes were not calculated for the portion of the forebays which are planned to be excavated below existing grade.

Table 5 – Estimate of Temporary Fill Volume into Waters of the US

	Estimate Assumptions	Fill Volume (cubic yards)	Fill Material
Connection Channel (Canal) Work Area			
Agricultural Ditch	3 foot depth	1966	clean soil
Capacitor Bank Substation			
Agricultural Ditch	3 foot depth	108	clean soil, rock, and concrete
Concrete Batch Plants			
Agricultural Ditch	3 foot depth	2,789	clean soil, rock, and concrete
Emergent Wetland	3 foot depth	4,306	clean soil, rock, and concrete
Forest	2 foot depth	1,447	clean soil, rock, and concrete
Scrub-shrub	1 foot depth	1,081	clean soil, rock, and concrete
Fuel Stations			
Agricultural Ditch	3 foot depth	221	clean soil, rock, and concrete
Intake Work Areas			
Agricultural Ditch	3 foot depth	2,360	clean soil
Depression	6 foot depth	959	clean soil
Forest	2 foot depth	1,767	clean soil
Scrub-Shrub	1 foot depth	5,585	clean soil
Safe Haven Work Areas			
Agricultural Ditch	3 foot depth	6,426	clean soil
Emergent Wetland	3 foot depth	177	clean soil
Forest	2 foot depth	32	clean soil
Seasonal Wetland	1 foot depth	5,171	clean soil
Tunnel Work Areas			
Agricultural Ditch	3 foot depth	14,448	clean soil
Emergent Wetland	3 foot depth	65	clean soil
Forest	2 foot depth	2,868	clean soil
Scrub-shrub	1 foot depth	663	clean soil
Seasonal Wetland	1 foot depth	15,839	clean soil
Temporary Fill Total		**68,278**	

BLOCK 9. COMPENSATORY MITIGATION

The proposed project conforms to the general rule that avoidance, minimization, and compensation are to be applied in a sequential fashion. The Applicant has designed the proposed project to avoid and minimize impacts to waters of the United States where practicable. The Applicant will provide compensatory mitigation for any unavoidable effects.

In 2008, the Corps and the EPA issued regulations, known as the “Mitigation Rule”, governing compensatory mitigation for activities authorized by permits issued by the Corps (33 CFR §§325, 332).

In 2015, the Corps' South Pacific Division issued "Regional Compensatory Mitigation and Monitoring Guidelines (Final January 12, 2015)" (Division Guidelines) to supplement the Mitigation Rule. Compensatory mitigation under the Mitigation Rule and Division Guidelines fulfill the long standing national goal of replacing the loss of wetland and other aquatic resource acreages and functions, known as the "no net loss" goal (National Wetlands Mitigation Action Plan (December 24, 2002)). To achieve the no net loss goal, the Corps and EPA have concluded that, where appropriate and practicable, compensatory mitigation "should provide, at a minimum, one for one functional replacement (i.e., no net loss of values), with an adequate margin of safety."[2] The long-term objective of the no net loss policy is to increase wetland acreages and functions nationally.

The Mitigation Rule defines compensatory mitigation as (1) restoring existing wetlands or reestablishing former wetlands; (2) creating new wetlands in upland areas; (3) enhancing the functional values of degraded wetlands; and (4) preserving existing aquatic resources. Restoration is generally the preferable form of compensatory mitigation because the likelihood of success is greater while the impacts to potentially ecologically important uplands are less, as compared to creation. Moreover, the potential gains in terms of aquatic resources functions are often greater with restoration as compared to enhancement and preservation (33 CFR §332.3(a)(2)). The Mitigation Rule and Division Guidelines stress the benefits of a watershed approach to compensatory mitigation, and the preference for compensatory mitigation to be located in the same watershed as the site of the impact site and where it is most likely to successfully replace lost functions and services (33 CFR §332.3; Division Guidelines, §3.2).

Wetland Functions

Mitigation will be provided to compensate for the loss of acreage and functions associated with unavoidable construction-related impacts to waters of the United States. Wetland functions are defined as a process or series of processes that take place within a wetland, such as those related to the storage of water, transformation of nutrients, growth of living matter, and diversity of wetland plants. Functions can be grouped broadly as habitat, hydrologic, or water quality.

Not all wetlands perform all functions nor do they perform all functions equally well. The location and size of a wetland may determine the nature of the wetland function. For example, the geographic location may determine habitat functions, and the location of a wetland within a watershed may determine its hydrologic or water-quality functions. Many factors determine how well a wetland will perform these functions: climatic conditions, quantity and quality of water entering the wetland, and disturbances or alteration within the wetland or the surrounding ecosystem. Wetland disturbances may be the result of natural conditions, such as an extended drought, or of human activities, such as land clearing, dredging, or the introduction of nonnative species. Wetlands are among the most productive

[4] Memorandum of Agreement between the Environmental Protection Agency and the USACE concerning the Determination of Mitigation under the Clean Water Act Section 404(b)(1) Guidelines, 55 Fed. Reg. 9210, 9212 (1990) ("Mitigation MOA").

habitats in the world, providing food, water, and shelter for fish, shellfish, birds, and mammals, and serving as a breeding ground and nursery for numerous species. Many endangered plant and animal species are dependent on wetland habitats for their survival. Hydrologic functions are those related to the quantity of water that enters, is stored in, or leaves a wetland. These functions include such factors as the reduction of flow velocity, the role of wetlands as ground-water recharge or discharge areas, and the influence of wetlands on atmospheric processes. Water-quality functions include the trapping of sediment, pollution control, and the biochemical processes that take place as water enters, is stored in, or leaves a wetland.

The Applicant has conducted a qualitative functional assessment to assign a relative ranking system to the wetlands and other waters for which a discharge is being proposed, based on the following functional value groups:

> Low functional value: most agricultural ditches, seasonal and emergent wetlands within agricultural fields, Clifton Court Forebay, and constructed conveyance channels and other highly disturbed aquatic features.
>
> Medium functional value: emergent, forest, scrub-shrub, depressions, and alkaline wetlands that are moderately disturbed or fragmented aquatic features and agricultural ditches that have developed adjacent marsh or riparian habitat.
>
> High functional value: tidal channels, lakes, emergent, forest, scrub-shrub, depressions, alkaline wetlands and vernal pools that are relatively undisturbed.

The qualitative functional assessment of the aquatic features within the surface footprint is summarized in Table 6. The majority of the impacts (approximately 72%) are low or moderate functional habitats.

Table 6 - Qualitative functional assessment of the aquatic features

	FUNCTIONAL VALUE (ACRES)		
Aquatic Habitat Type	**High**	**Medium**	**Low**
Agricultural Ditch	0	21.20	54.57
Alkaline Wetland	0	0	0
Clifton Court Forebay	0	0	0
Conveyance Channel	0	0	18.88
Depression	0	0.11	0
Emergent Wetland	0	0.05	5.47
Forested Wetland	0.40	1.61	0
Lake	0	0	0
Natural Channel	0	0	0
Scrub-Shrub	3.32	0.54	0
Seasonal Wetland	0	0.30	54.22
Tidal Channel	55.96	0	0
Vernal Pool	0	0	0
SUM	59.68	23.81	133.14

Additional analysis may be conducted during development of a compensatory mitigation plan. The assessment of existing functions will be compared to the functions expected to result from the proposed mitigation for the purpose of demonstrating that the compensatory mitigation will, at a minimum, fully replace the function of the waters proposed to be filled.

Compensatory Mitigation

Compensatory mitigation will be proposed to off-set the impacts associated with the construction of the project. In some cases, restoration actions designed to provide habitat for species may also serve as compensatory mitigation for the loss of waters of the United States and State (e.g. created emergent marsh may function as both habitat for delta smelt, as well as compensatory mitigation for physical impacts to emergent marsh habitat). The proposed compensatory mitigation will be subject to specific success criteria, success monitoring, long-term preservation, and long-term maintenance and monitoring pursuant to the requirements of the Mitigation Rule. In some cases, proposed mitigation is likely to afford significantly higher function and value than that of waters proposed for discharge.

Compensation ratios, which are developed by the Corps, are guided by type, condition, and location of replacement habitat as compared to type, condition and location of impacted habitat. Compensatory mitigation usually includes restoration, creation, or rehabilitation of aquatic habitat. The Corps does not typically accept preservation as the only form of mitigation; use of preservation as mitigation typically requires a very high ratio of replacement to impact. It is anticipated that mitigation ratios will be at a minimum of 1:1, depending on the factors listed above. Based on preliminary discussions with the Corps, it is anticipated that ratios will be developed for each affected habitat type, and further, for each functional ranking (see Table 6 above) within each habitat type.

Typically, impacted habitat is replaced with in-kind habitat. Impacts to some lower functioning habitat types, such as seasonal wetland and agricultural ditches may be mitigated out-of-kind with higher functioning habitat types.

The Applicant will propose compensatory mitigation using one or more of the following methods:

- Purchase of credits for restored/created/rehabilitated habitat at an approved wetland mitigation bank;
- On-site (adjacent to the project footprint) restoration or rehabilitation of wetlands converted to uplands due to past land use activities (such as agriculture) or functionally degraded by such activities;
- On-site (adjacent to the project footprint) creation of aquatic habitat;
- Off-site (within the Delta) restoration or rehabilitation of wetlands converted to uplands due to past land use activities (such as agriculture) or functionally degraded by such activities;
- Off-site (within the Delta) creation of aquatic habitat;
- Payment into the Corps' Fee-in-Lieu program.

Purchase of Credits or Payment into In-lieu Fee Program

DWR may purchase bank credits and/or make payments into an in-lieu fee program to compensate for impacts. The Applicant would utilize programs that have been Corps-approved and have service areas that encompass areas impacted by the proposed project.

On-Site Restoration, Rehabilitation and/or Creation

Much of the Delta consists of degraded or converted habitat that is generally functioning as upland. DWR would seek opportunities to conduct on-site restoration, rehabilitation, and/or creation in areas adjacent to project footprints. It is anticipated that some of the compensatory mitigation would fall into this category.

Off-Site Restoration, Rehabilitation and/or Creation

Within the immediate vicinity of the project area, much of the land has been subject to agricultural or other land uses which have degraded or even converted wetlands that existed historically. DWR would evaluate sites within the Delta to determine their potential for restoration, rehabilitation, and/or creation. It is anticipated that most of the compensatory mitigation obligation would be satisfied through this approach.

Impacts Resulting from the Construction of Compensatory Mitigation

The restoration, rehabilitation, and/or creation of aquatic habitat during the construction of the compensatory mitigation would result in relatively minor environmental impacts. Expected impacts include noise and air quality during construction, the conversion of upland to aquatic habitat, and potential changes to existing channel hydraulics where levees will be breeched or lowered to create weirs.

BLOCK 10. THREATENED/ENDANGERED SPECIES

DWR is responsible for the operations and maintenance of the State Water Project (SWP) and the Bureau of Reclamation (Reclamation), an agency of the U. S. Department of the Interior, is responsible for operations and maintenance of the Central Valley Project (CVP). Reclamation will serve as the lead federal agency for the Federal Endangered Species Act Section 7 consultation. DWR will serve as the lead agency for the California Endangered Species Act Section 2081 consultation.

A) In conjunction with DWR, Reclamation has initiated formal consultation with both the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) regarding the potential effect of the construction and operation of the new facilities on federally listed species and designated critical habitat. The Section 7 consultation regarding these new facilities covers all potential ESA-related impacts associated with construction and new operations, including impacts that may occur as a result of the issuance of USACE permits. Please refer to the NMFS California WaterFix Biological Opinion (Attachment 4) and USFWS Biological Opinion for the California WaterFix (Attachment 5).

B) DWR has initiated formal consultation with the California Department of Fish and Wildlife (CDFW) regarding the potential effect of construction and operation of the new facilities on State listed species. The Section 2081 consultation regarding these new facilities covers all potential CESA-related impacts associated with the construction and new operations. An Incidental Take Permit was issued to DWR for California WaterFix in July of 2017(Attachment 3).

BLOCK 11. OTHER ACTIONS/BEST MANAGEMENT PRACTICES (BMPs)

Avoidance and Minimization Measures/Environmental Commitments

The Project has been designed to avoid impacts to waters of the United States to the maximum extent practicable. Recent project refinements, presented in the Draft Supplemental EIR/EIS, further reduce impacts to waters of the United States. Numerous iterations of footprint locations for each of the conveyance components were evaluated to maximize the use of upland areas. Once construction begins, measures will be implemented to further avoid and minimize impacts to waters of the State as well as to special status species. The environmental commitments and avoidance and minimization measures (AMMs) will be implemented at all phases of the project, including siting, design, construction, and operations and maintenance. The Final Mitigation Monitoring and Reporting Program (DWR, 2017) describes environmental commitments and avoidance and minimization measures that will be implemented throughout construction of the Project (Attachment 7). The AMMs that pertain specifically to waters of the State are summarized in the Table 7 below. Detailed descriptions of the AMMs listed below, as well as additional project environmental commitments and mitigation measures specific to waters of the State are included in **TAB F – Avoidance and Minimization Measures, Environmental Commitments, and Mitigation Measures Relevant to Waters of the State**.

Table 7 – Summary of the Relevant Avoidance and Minimization Measures (Final MMRP numbering)

Number	Title	Summary
AMM1	Worker Awareness Training	Includes procedures and training requirements to educate construction personnel on the types of sensitive resources in the project area, the applicable environmental rules and regulations, and the measures required to avoid and minimize effects on these resources.
AMM2	Construction Best Management Practices and Monitoring	Standard practices and measures that will be implemented prior, during, and after construction to avoid or minimize effects of construction activities on sensitive resources (e.g., species, habitat), and monitoring protocols for verifying the protection provided by the implemented measures.
AMM3	Stormwater Pollution Prevention Plan	Includes measures that will be implemented to minimize pollutants in stormwater discharges during and after construction, and that will be incorporated into a

		stormwater pollution prevention plan to prevent water quality degradation related to pollutant delivery from project area runoff to receiving waters.
AMM4	Erosion and Sediment Control Plan	Includes measures that will be implemented for ground-disturbing activities to control short-term and long-term erosion and sedimentation effects and to restore soils and vegetation in areas affected by construction activities, and that will be incorporated into plans developed and implemented as part of the National Pollutant Discharge Elimination System permitting process for covered activities.
AMM5	Spill Prevention, Containment, and Countermeasure Plan	Includes measures to prevent and respond to spills of hazardous material that could affect waters of the United States, including navigable waters, as well as emergency notification procedures.
AMM6	Disposal and Reuse of Spoils, Reusable Tunnel Material, and Dredged Material	Includes measures for handling, storage, beneficial reuse, and disposal of excavation or dredge spoils and reusable tunnel material, including procedures for the chemical characterization of this material or the decant water to comply with permit requirements, and reducing potential effects on aquatic habitat, as well as specific measures to avoid and minimize effects on species in the areas where reusable tunnel material would be used or disposed.
AMM7	Barge Operations Plan	Includes measures to avoid or minimize effects on aquatic species and habitat related to barge operations, by establishing specific protocols for the operation of all project-related vessels at the construction and/or barge landing sites. Also includes monitoring protocols to verify compliance with the plan and procedures for contingency plans.
AMM10	Restoration of Temporarily Affected Natural Communities	Restore and monitor natural communities in the Plan Area that are temporarily affected by construction activities. Measures will be incorporated into restoration and monitoring plans and will include methods for stockpiling and storing topsoil, restoring soil conditions, and revegetating disturbed areas; schedules for monitoring and maintenance; strategies for adaptive management; reporting requirements; and success criteria.
AMM12	Vernal Pool Crustaceans	Includes provisions to require project design to minimize indirect effects on vernal pool habitat, avoid effects on

		core recovery areas, minimize ground disturbing activities or alterations to hydrology, conduct protocol-level surveys, and redesign the project to ensure that habitat loss is minimized where practicable.
AMM30	Transmission Line Design and Alignment Guidelines	Design the alignment of proposed transmission lines to minimize impacts on sensitive terrestrial and aquatic habitats when siting poles and towers. Restore disturbed areas to preconstruction conditions.
AMM34	Construction Site Security	Provide all security personnel with environmental training similar to that of onsite construction workers, so that they understand the environmental conditions and issues associated with the various areas for which they are responsible at a given time.
AMM36	Notification of Activities in Waterways	Before in-water construction or maintenance activities begin, notify appropriate agency representatives if these activities could affect water quality or aquatic species.

TABS included with this submittal

TAB A: Updated California WaterFix Water Quality Certification Form
TAB B: Updated California WaterFix Section 401 Water Quality Certification Continuation Sheet (this document)
TAB C: Table of Impacts
TAB D: Mapbook of Impacts
TAB E: California WaterFix Mapbook M3-4
TAB F: Avoidance and Minimization Measures, Environmental Commitments, and Mitigation Measures Relevant to Waters of the State
TAB G: Updated Section 404 Application Continuation Sheet for California WaterFix (November 2018)

Additional References to Support the Updated Section 401 Continuation Sheet

Attachment 1: Final BDCP/California WaterFix EIR/EIS, Volume 1 (December 2016)

- Exhibit SWRCB-102 (https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/exhibit102/exhibit102_vol1.html)
- Exhibit SWRCB-108 (Developments after Publication of the Proposed Final Environmental Impact Report, July 2017) (https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_staff/feir_developmentsJuly2017.pdf)

Attachment 2: Conceptual Engineering Report Byron Tract Forebay Option Volume 1, Volume 2, and Volume 3 (July 2018)

- Volume 1: Exhibit DWR-1304 (https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/petitioners_exhibit/dwr/part2_rebuttal/dwr_1304.pdf)
- Volume 2: Exhibit DWR-1305 (https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/petitioners_exhibit/dwr/part2_rebuttal/dwr_1305.pdf)
- Volume 3: Exhibit DWR-1306 (https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/petitioners_exhibit/dwr/part2_rebuttal/dwr_1306.pdf)

Attachment 3: California Endangered Species Act Incidental Take Permit for California WaterFix

- Exhibit SWRCB-107 (https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/exhibit107/)

Attachment 4: National Marine Fisheries Service Biological Opinion for California WaterFix

- Exhibit SWRCB-106 (https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/exhibit106/)

Attachment 5: US Fish and Wildlife Service Biological Opinion for California WaterFix

- Exhibit SWRCB-105 (https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_staff/usfws_bo.pdf)

Attachment 6: Draft Supplemental California WaterFix EIR/EIS (July 2018)

- https://www.californiawaterfix.com/resources/draft-supplemental-environmental-impact-report-environmental-impact-statement/

Attachment 7: Final Mitigation, Monitoring, and Reporting Program (July 2017) for California WaterFix

- Exhibit SWRCB-111 (https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_staff/cwf_mmrp.pdf)

Attachment 8: DWR Notice of Determination and associated Approval documents for California WaterFix (July 2017)

- Exhibit SWRCB-112 (DWR's CEQA Notice Of Determination) (https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_staff/ceqa_nod.pdf)
- Exhibit SWRCB-109 (DWR's CEQA Decision Document (https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_staff/ceqa_decision.pdf)