

**DEPARTMENT OF WATER RESOURCES**

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August 24, 2015

Mr. Michael Jewell  
Chief, Regulatory Branch  
U.S. Army Corps of Engineers  
Sacramento District  
1325 J Street  
Sacramento, California 95814

Dear Mr. Jewell:

Pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act (33 U.S.C. 403), the California Department of Water Resources (DWR) submits the attached application to the U.S. Army Corps of Engineers (Corps) for a Department of the Army individual permit (33 C.F.R 325) to allow for the implementation of key components of the State's California WaterFix program. Specifically, DWR is seeking authorizations from the Corps necessary for the construction and operation of new water conveyance facilities that will be part of the State Water Project (SWP) and operated in coordination with the U.S. Bureau of Reclamation's (Reclamation's) operation of the Central Valley Project (CVP). The California WaterFix is a critical element of a broader State effort to meet the goals of providing for a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem.

### Background

The proposed project reflects the culmination of a multiyear planning process that began in 2006 between DWR, the California Natural Resources Agency, Reclamation, public water agencies, State and federal fish and wildlife agencies, non-governmental organizations, agricultural interests, and the public. The planning process, which was called the Bay Delta Conservation Plan (BDCP) program, was initiated in response to the increasingly significant and escalating conflict between the needs of a range of at-risk Delta species and natural communities adversely affected by a wide range of human activities and the need for more reliable water supplies in California for communities, agriculture, and industry.

Nearly ten years later, the ecological health of the Delta continues to be at risk, and the conflicts between species protection and Delta water exports have become more pronounced, as evidenced by years of litigation regarding the intersection of endangered species laws and the operational criteria of the SWP and CVP. Other factors, such as the continuing subsidence of lands within the Delta, increasing seismic risks and levee vulnerabilities, and rising sea levels caused by climate change, have served to further exacerbate these conflicts. The actions proposed by DWR in this permit application, which are referred to as the California WaterFix, would bring about fundamental, systemic change to the current system, putting the State on a course 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]).

### Proposed Conveyance Facilities

The new SWP water conveyance facilities proposed under the California WaterFix and reflected in DWR's application would introduce new operational flexibility into the SWP and CVP, enabling SWP or CVP water to be diverted from the Sacramento River in the north Delta and conveyed to the south Delta or to be directly diverted in the south Delta at existing SWP and CVP facilities. Water would be diverted through one of three new fish-screened intakes located on the east bank of the Sacramento River between Clarksburg and Courtland. These intakes, each with a capacity of 3,000 cfs, would be situated on the river bank and would range from 1,259 to 1,667 feet in length. The intakes would consist of a reinforced concrete structure subdivided into individual bays that would be isolated from each other and operated independently. Two tunnels would be constructed to convey water by gravity from the intake facilities to the south Delta where it would flow into the north cell of a redesigned Clifton Court Forebay. This redesign of the forebay would allow for water flowing from the north Delta facilities to be isolated from water entering Clifton Court Forebay from the south Delta.

### Ecological and Water Supply Benefits

The proposed project would result in substantially improved conditions in the Delta for endangered and threatened species and afford greater water supply reliability for the State. With respect to at-risk species, the new conveyance facilities would provide the following benefits:

- Increased operational flexibility for the SWP/CVP through a "dual conveyance" system that allows water managers to shift between intakes to minimize entrainment of at-risk fish species
- Reduction in reverse Old and Middle River flows through adjustments to water operations to better reflect natural seasonal flow patterns
- Siting of new diversions in areas outside of the primary habitat for Delta Smelt and Longfin Smelt
- Integration of state-of-the-art fish screens at each intake to minimize entrainment

The proposed project would also advance the State's water supply goals by:

- Upgrading the SWP/CVP water conveyance system in a manner that improves the ability to capture water during wet years

- Protecting against water supply disruptions associated with catastrophic system failures caused by earthquakes or failed levees
- Protecting against water supply disruptions associated with sea level rise caused by climate change

Based on the foregoing benefits, the implementation of the California WaterFix would represent an important step forward in the State's efforts to resolve the longstanding conflicts within the Delta.

#### Consistency with Requirements of CWA Section 404 and RHA Section 10

DWR believes that the attached application is complete and consistent with the regulatory requirements of CWA Section 404 and RHA Section 10. As set out in the application, DWR has designed the proposed project to avoid impacts to waters of the United States to the maximum extent practicable and has developed measures to minimize any unavoidable impacts. DWR will submit a plan to the Corps that sets out an approach to mitigating for any unavoidable impacts to waters, including an assessment of the functions and values that will be provided by such mitigation to meet the "no net loss" goal established by the Corps and the Environmental Protection Agency. DWR will also submit to the Corps an analysis of alternatives to the proposed project to assist the Corps in its determination that the Section 404 Guidelines have been met.

#### National Environmental Policy Act (NEPA) Environmental Review

As you know, DWR and Reclamation recently released for public review and comment the *BDCP/California WaterFix Partially Recirculated Draft Environmental Impact Report / Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS)*. The comment period is scheduled to end on October 30, 2015. It is DWR and Reclamation's expectation that the final EIR/EIS will be sufficiently comprehensive to satisfy the Corps' environmental review responsibilities under NEPA regarding the issuance of permits pursuant to this application. We understand that the Corps intends to issue a Public Notice of the application to coincide with the public review period on the RDEIR/SDEIS.

DWR has provided the following supporting documents to Zach Simmons, Corps point of contact for this project, in both hard copy and digital format:

- TAB A - Form 4345, Application for Department of the Army Permit
- TAB B - Continuation sheet for Form 4345
- TAB C - Table of impacts

- TAB D - Map book showing impacts
- TAB E - Figures
  - Fig 1 – ES1 from project Conceptual Engineering Report
  - Fig 2 – 3-1 from project Conceptual Engineering Report
- TAB F - Project Conceptual Engineering Report (on disk)

DWR looks forward to continuing to work with the Corps as it develops further documentation to support this application and comply with the regulatory requirements of CWA Section 404 and RHA Section 10. We appreciate the effort that the Corps has invested in the BDCP/California WaterFix programs and we look forward to successful completion of this critical endeavor.

If you have any questions regarding the accompanying permit application, please contact Michael Bradbury, California WaterFix Permit Manager, at 916-651-2987 or [mike.bradbury@water.ca.gov](mailto:mike.bradbury@water.ca.gov).

Sincerely,



Cassandra Enos  
Program Manager  
BDCP/California WaterFix

cc. Zachary Simmons, USACE

Attachments



17. DIRECTIONS TO THE SITE

See Continuation Sheet

18. Nature of Activity (Description of project, include all features)

The construction and operation of the California WaterFix water conveyance project and the associated habitat creation, restoration and enhancement.

See Continuation Sheet for project details, including details on each of the project components, and construction timing.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

See Continuation Sheet for detail of the reason for the project.

**USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED**

20. Reason(s) for Discharge

Discharge of fill material into waters of the United States is required to construct various components of the proposed project.

See Continuation Sheet for details.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type	Type	Type
Amount in Cubic Yards	Amount in Cubic Yards	Amount in Cubic Yards

See Continuation Sheet.

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres See Continuation Sheet.

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

See Continuation Sheet.

24. Is Any Portion of the Work Already Complete?  Yes  No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- See Continuation Sheet.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
USFWS	Continuation Sheet				
NMFS					
SRWCB					
CDFWS					

\* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

\_\_\_\_\_  
SIGNATURE OF APPLICANT

\_\_\_\_\_  
DATE

\_\_\_\_\_  
SIGNATURE OF AGENT

\_\_\_\_\_  
DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

# California WaterFix

## Clean Water Act Section 404 Application

### Continuation Sheet for ENG FORM 4345

#### A. 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, DWR, Reclamation, USFWS, and 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 three new intakes located in the North Delta and two parallel underground pipelines 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 CDFW. By July 2014, at the end of the public review period, the Lead Agencies had received 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 of the comments urged that the Lead Agencies reduce the level and scope of the construction activities, such as number of intakes, as means of reducing air quality and noise impacts. Other comments noted that Alternative 4 contemplated intensive construction activity on Staten Island, which is important wintering habitat for the Greater Sandhill Crane. Many commenters argued that, because the proposed project would lead to significant, unavoidable water quality effects, DWR could not obtain various approvals needed for the project to succeed (e.g., approval by the State Water Resources Control Board for new points of diversion for the north Delta intakes). Others 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 include: (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.



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The proposed project (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 consist 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 contemplates 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” is 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 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 SWP and CVP and state of the art fish screens to reduce entrainment. 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 Alternatives 4A, 2D, and 5A include 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 is called California EcoRestore (EcoRestore), which 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.

## **B. Design Overview**

The proposed 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.

# California WaterFix

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### Continuation Sheet for ENG FORM 4345

The conveyance facility alignment in the proposed project (Alternative 4A) is identified as the “Dual Conveyance Facility Modified Pipeline/Tunnel Option – Clifton Court Forebay Pumping Plant Option,” or “MPTO/CCO” in DWR’s Conceptual Engineering Report which analyzes the project. This latest configuration optimizes the earlier MPTO design concept to better utilize the Clifton Court Forebay. Changes to the conveyance facilities resulting from the optimization in alignment and features, include the following:

- Larger north tunnels for gravity feed system;
- Reduction of the internal hydrostatic head within the tunnel system;
- Optimized intermediate forebay;
- Relocation of RTM sites off of Staten Island
- Consolidated pumping plant at Clifton Court Forebay (CCF);
- Modification to the CCF; and
- Elimination of the pumping plants at the intakes.

The proposed project also includes the installation of a permanent barrier at the Head of Old River (HORB) to ensure fish remain in the San Joaquin River, rather than enter the South Delta through Old River.

Based on the construction schedule, DWR will seek CWA Section 404 and RHA Section 10 authorizations in phases. It is understood that the components of the project which will require 408 authorization cannot be approved under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act until the 408 authorization is obtained. Based on current information, DWR expects to seek permits pursuant to the following phases :

- Phase 1 – Construction of the Pumping Plant at Clifton Court Forebay
- Phase 2 – Construction of the North Tunnels, Intermediate Forebay, and Dual Main Tunnels; Disposal of Tunnel Material; CCF Dredging; and the modification of the existing CCF to create two forebays
- Phase 3 – Construction of the Intakes and Head of Old River Barrier

### C. Additional Application Form 4345 Data

The following information is provided as a supplement to **ENG FORM 4345** and is provided in the same order in which information is requested on the form.

#### Block 13. NAME OF WATERBODY

The proposed project is located in the Sacramento/San Joaquin Delta and crosses several waterways and wetland features within the Delta. A comprehensive list of each waterbody/wetland affected by the proposed project can be found at **TAB C, Table of Impacts**, and **TAB D, Map Book of Impacts**. Named waterbodies include Italian Slough, Old River, West Canal, San Joaquin River, North Victoria Canal, Potato Slough, Connection Slough, Middle River, Snodgrass Slough, and the Sacramento River.

# California WaterFix

## Clean Water Act Section 404 Application Continuation Sheet for ENG FORM 4345

### Block 15. LOCATION OF PROJECT

The location of the proposed project is shown on **Figure 1 of TAB E, Project Figures**. 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 at TAB C.

### Block 16. OTHER LOCATION DESCRIPTIONS

The components of the proposed project are located within Sacramento, San Joaquin, Contra Costa and Alameda Counties.

### Block 17. DIRECTIONS TO THE SITE

Portions of the proposed project work area can be accessed by public roads such as State Route 160, Highway 12, and Highway 4; but much of the project area is currently accessible only by private roadway. See the figures at TAB E for locational information.

### Block 18. NATURE OF ACTIVITY

The proposed project will include the following:

- Three Intake Facilities along the Sacramento River in the north Delta with fish-screened on-bank intake structures.
- Two gravity-flow water conveyance tunnels (North Tunnels) that connect the intakes to an Intermediate Forebay.
- The Intermediate Forebay (IF) which receives water from the North Tunnels, equalizes pressure, and passes the water to the dual gravity-flow Main Tunnels.
- Dual Main Tunnels connecting the IF to Clifton Court Forebay (CCF).
- A Pumping Plant located at the northeast corner of CCF.
- Eleven disposal sites for tunnel material excavated from the North Tunnels and Dual Main Tunnels.
- Division of CCF into two parts: North Clifton Court Forebay (NCCF) and South Clifton Court Forebay (SCCF).
- A permanent operational barrier at the Head of Old River.

The water conveyance facilities included in the proposed project assume the following:

- The MPTO/CCO delivers up to 9,000 cubic feet per second (cfs) from the Sacramento River in the north Delta to the south Delta export pumping plants.
- The proposed project is engineered to:
  - Transport water through conveyance facilities isolated from existing rivers and sloughs.
  - Divert water from the Sacramento River through fish-screened intakes.
  - 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 the sea level rise (SLR) predicted from climate change.

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## Clean Water Act Section 404 Application Continuation Sheet for ENG FORM 4345

- Use gravitational flow through the Main Tunnels.

The physical characteristics of each of the proposed project's components 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) 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.
- Twelve large gravity collector box conduits that will extend through the levee to 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.

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 through an afterbay 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.

### North and Main Tunnel Alignments

The proposed conveyance tunnels consist of the North Tunnels, which consist of three separate tunnel reaches totaling approximately 14 miles that connect the three Intake Facilities to the IF, and two parallel Main Tunnels to the NCCF, each approximately 30 miles long. The North Tunnels are two single-bore 28-foot and one single-bore 40-foot inside diameter (ID) tunnels. The Main Tunnels are twin-bore 40-foot inside diameter tunnels. The inlets and outlets would be equipped with isolation structures to allow 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.

### Disposal of Tunnel Material

The material excavated from both the North Tunnels and the Dual Main Tunnels will be disposed of near the tunnel boring machines' launch shafts. Proximity to the tunnel shafts is required to reduce truck traffic associated with the transport the material to a remote disposal site. There are currently 11 disposal sites identified, and excavated tunnel material will be transported to spoil sites a maximum of 16,000 feet from launch shafts, primarily by conveyor. The daily volume of tunnel material withdrawn

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from the tunneling operations at any one shaft location would vary, with an average volume of approximately 6,000 cubic yards per day. 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 six 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.

#### 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 Clifton Court pumping plant, and allowing for independent operation of each of the North Tunnels and the Main Tunnels. The IF would have no regulating gates controlling gravitational flow to the Main Tunnels; therefore, no daily operational storage would be necessary at IF beyond that necessary to accommodate water surface changes at the downstream NCCF. 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.

#### Clifton Court Forebay

The Clifton Court Forebay (CCF), which has a water surface area of approximately 2215 acres, will be expanded by approximately 590 acres to the southeast of the existing forebay to create a new overall footprint of approximately 2805 acres. The existing CCF will be dredged, and the expansion area excavated, to design depths of -8 feet for the north cell (the NCCF) and -10 feet for the south cell (the SCCF). A new embankment would be constructed around the perimeter of the forebay, and coffer dam would divide the forebay into two sections, the NCCF and the SCCF; the new forebay sections would have a surface area of 822 acres and 1756 acres, respectively. Water from the Dual Main Tunnels would be pulled from the tunnels' terminus by the Clifton Court Pumping Plant at the northeastern end of the NCCF, south of Victoria Island, and enter the NCCF. Water flow from the tunnels into the NCCF by gravity only would be feasible when the Sacramento River is at exceptionally high stages.

The NCCF 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. Preliminary calculations indicate an operational storage capacity range of approximately 4,300 to 10,200 acre-feet (AF), with an approximate water storage surface area of 822 acres, depending on depth. Constraints on the exporting pumping plants fixed a normal forebay operating range of 7.0 feet (elevation +0.50 to +7.5 feet). This operating range would allow for approximately 4,300 AF of potential active storage in the NCCF. Additional operating storage up to 10,200 AF may be obtained by operating NCCF at a range of up to 9.0 feet, which would be within the efficient operating range of both NCCF and the export pumping plants.

The SCCF has been designed to be hydraulically dependent on Delta waterways and to be operated under the same criteria as the existing CCF. The SCCF would incorporate part of Byron Tract located on

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the south side of the existing CCF. The SCCF would draw its supply from the West Canal using intake gates and would provide flow to Banks PP. SCCF would have an approximate water storage surface area of 1756 acres at maximum water elevation. Constraints on the exporting pumping plants limit the normal operating range to 7.0 feet (elevation +1.1 to +8.1 feet). This operating range would allow for approximately 14,000 AF of potential active storage in SCCF. Additional operating storage could be created with increase to the existing operating range.

An emergency spillway would be constructed in the NCCF east side embankment, south of the CCPP fill pad. The spillway has been sized to carry emergency overflow (9,000 cfs, the maximum inflow) to the Old River, so a containment area is not necessary. The shallow foundation beneath this existing structure requires improvements to prevent strength loss and seismic settlement. The ground improvement would be to elevation -50.0 feet within the footprint of the structure and beyond the structure by a distance of approximately 25 feet. The work would be performed within the sheet pile installed for embankment filling.

#### Head of Old River Barrier

The proposed project includes the construction of a barrier at the Head of Old River, which would consist of fish and flow control gates as well as a small boat lock to allow recreational boat passage during operation of the gates. The barrier gates would be operated from October 1 through June 15 each year. From June 16 through September 30, the gates would be open.

Additional information and figures regarding the engineering details of the proposed project can be found on the compact disk at **TAB F, Conceptual Engineering Report**, Modified Pipeline/Tunnel Option – Clifton Court Forebay Pumping Plant, Volume 1, dated April 1, 2015.

#### **Block 19. PROJECT PURPOSE**

Consistent with the information requested on FORM 4345, this section sets out the purpose and need for the proposed project. Applicant will submit a separate Basic and Overall Project Purpose Statement as part of the analysis of alternatives it conducts to assist the Corps in making determinations pursuant to the Section 404(b)(1) Guidelines.

One of the primary challenges facing California is how to comprehensively 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 people, 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:

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“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 Delta water exports 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]).

This section presents the Lead Agencies’ Project Objectives, which are required by the State CEQA Guidelines, and the Purpose and Need Statement, which is required by the CEQ NEPA Regulations.

#### ***Purpose and Need***

Just as CEQA requires an EIR to include a statement of “project objectives” as described above, NEPA requires that an EIS include a statement of “purpose and need” to which the federal agency is responding in proposing the alternatives, including the proposed action (40 CFR 1502.13). This purpose statement of the proposed action and project need described below, are consistent with the above project objectives in Section 1.1.4.1.

#### ***Purpose Statement***

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. Operation of the existing and potential new SWP facilities and existing CVP Delta facilities.
3. The activities described in 1) and 2) 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.
4. 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

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contractors and certain members of San Luis Delta Mendota Water Authority, and other existing applicable agreements.

The above Purpose statement reflects 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.

#### ***Project Need***

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



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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. Regulations for the combined SWP and CVP operations are intended to protect the beneficial uses of Delta water, which include municipal, industrial, and agricultural water uses, fish and wildlife uses, environmental protection, flood management, navigation, water quality, power, and recreation.

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. It is the responsibility of the SWP and CVP to meet these obligations regardless of hydrologic conditions. In 2006, Governor Schwarzenegger's Executive Order S-17-06 created the Delta Vision Task Force to address some of the issues facing the Delta. In the closing days of the Task Force's work, the State Water Board presented information indicating that quantities totaling several times the average annual unimpaired flows in the Delta watershed could be available to water users based on the face value of water permits already issued. However, the hydrology, the SWP and CVP water contracts, and environmental regulations control actual quantities that could be made available for use and diversion.

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

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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 increasingly 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.

#### **Block 20. REASON FOR DISCHARGE**

The construction of the proposed project would result in the discharge of fill material. Discharge of fill material would be associated with the construction of the intake facilities on the banks of the Sacramento River; grading at intake locations, construction of the intermediate forebay, pumping plant, and at tunnels (drive, vent, and reception shafts); disposal of excavated tunnel material; and installation of the HOR Barrier. In addition, fill would be placed into the existing CCF to create two separate forebays. Both forebays are proposed to be dredged.

#### **Block 21. TYPE OF MATERIAL BEING DISCHARGED AND AMOUNT IN CUBIC YARDS**

The material proposed for discharge consists of clean soil, rock, concrete, grout, sheet piles, and reusable tunnel material. The total amount of fill material to be discharged into Waters of the U.S. during construction of the conveyance facilities, and disposal of excavated material, is estimated to be 15,022,645 cubic yards. The amount of fill material to be discharged in Waters of the U.S. at given locations for the specific facilities is estimated below in Table 1.

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**Table 1. Estimate of Fill into Waters of the U.S.**

Facility-- Hybrid Constructability	CY Fill	Estimate Assumptions	Fill Material
Barge Unloading Facility	260000	Engineering calculation	Clean soil and rock
Work Areas	97009	1 foot deep	Clean soil, rock, concrete
Concrete Batch Plant	7464	1 foot deep	Clean soil, rock, concrete
Control Structure	9759	1 foot deep	Clean soil, rock, concrete
Forebay and Spillway	1793	1 foot deep	Clean soil, rock, concrete
Forebay Embankment	11192500	Engineering calculation	Clean soil and rock
Forebay Overflow Structure	9689	Engineering calculation	Concrete and rock
Fuel Station	1490	1 foot deep	Clean soil, rock, concrete
Intake	141675	Engineering calculation	Concrete
Intake end curves/walls	180000	Engineering calculation	Clean soil and rock
Operable Barrier	12230	Engineering calculation	Clean rock and grout
Operable barrier sheet piles		Engineering calculation	Sheet piles 32,146 sq feet
Power trans/PGE	8029	1 foot deep	Clean soil, rock, concrete
Reusable Tunnel Material	2099259	6 feet deep	Reusable tunnel material
additional dredge material from CCF	241193	additional 13 feet	Dredged material
Road Interchange	15917	1 foot deep	Clean soil, rock, concrete
Shaft Locations	53724	1 foot deep	Clean soil, rock, concrete
additional at Pumping Plant	660000	Engineering calculation	Clean soil, rock, concrete
Transmission Line	27427	1 foot deep, assume max 17.08 acre footprint	Clean soil, rock, concrete
Tunnel Conveyor Facility	3487	1 foot deep	Clean soil, rock, concrete
Canal		Excavation, no fill needed	
Forebay		Excavation, no fill needed	
Forebay Dredging Area		Excavation, no fill needed	
New Forebay		Excavation, no fill needed	
<b>Total Fill</b>	<b>15022645</b>		

#### **Block 22. SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED**

Construction of the proposed project would result in the unavoidable fill of waters of the U.S. DWR has mapped several types of waters of the United States that are located within the project area.

Descriptions of the mapped waters are provided below, including general characterizations of the associated vegetation expected to occur within each type of aquatic habitat.

#### ***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

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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

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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.

The proposed project will result in permanent impact to approximately 774 acres of waters of the United States and temporary impact to approximately 1,931 acres of waters. The impacts are shown in detail in Table 2 below.

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**Table 2. Approximate Impact Acreages**

Habitat Type	Permanent Impact	Temporary Impacts Treated as Permanent <sup>1</sup>	Temporary Impact <sup>2</sup>
Agricultural Ditch	46	17	0
Alkaline Wetland	20	0	0
Clifton Court Forebay	258	0	1931
Conveyance Channel	8	3	0
Depression	29	7	0
Emergent Wetland	57	32	0
Forest	8	9	0
Lake	23	0	0
Scrub-Shrub	13	5	0
Seasonal Wetland	115	25	0
Tidal Channel	19	81	0
Vernal Pool	0.3	0	0
<b>Total<sup>3</sup></b>	<b>596.3</b>	<b>179</b>	<b>1931</b>

Of the permanent impacts, 179 acres are temporary impacts treated as permanent because the temporary impacts are expected to last over one year. These impact sites will eventually be restored to pre-project conditions; however, due to the duration of effect, the impacts are treated as permanent. Impacts to 52 acres of pond and lake habitat is actually conversion from open water to a mosaic of wetlands types (e.g. seasonal wetland, scrub-shrub, riparian, emergent marsh) at four lakes that were created as a result of the construction of Interstate 5 in 1979. This conversion is a part of the planned

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<sup>1</sup> Temporary impacts treated as permanent are temporary impacts expected to last over one year. These impact sites will eventually be restored to pre-project conditions; however, due to the duration of effect, compensatory mitigation will be included for these areas.

<sup>2</sup> Temporary impacts are due to dredging Clifton Court Forebay.

<sup>3</sup> Some of these impact totals are overestimated. For example, transmission lines have been mapped as a 150-foot wide corridor, although the actual footprint would be 100' X150' for power pole pads that are spaced 450' apart for 69kV lines and 750' apart for 230kV lines; a narrow access road may also follow the transmission line alignment. The location of some pads may be changed to avoid wetlands. Impacts to Tidal Channels are also overestimated due to errors in mapping access roads on levees; the project footprint is not intended to impact the channels.

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mitigation for Phase 2, as discussed in Block 23, Compensatory Mitigation, below. All of the temporary impact is due to the dredging of Clifton Court Forebay.

Wetlands and other aquatic features provide many functions, such as providing habitat, storing and conveying water, and trapping sediment. Wetlands that are undisturbed, with natural hydrologic connections and native species, tend to have a higher functional value than disturbed wetlands. A qualitative functional assessment of the mapped wetlands in the Project Area sorted the impacted wetlands into three 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 impacted aquatic features is summarized in Table 3. The majority of the permanent impacts (approximately 72%) are to either low or moderate functional habitats. The largest single permanent impact (258 acres) is to Clifton Court Forebay, which as described above, is a man-made feature with extremely limited habitat function. The second largest permanent impact (115 acres) is to seasonal wetlands, which occur within plowed agricultural fields.

**Table 3. Qualitative Functional Assessment of Impacted Aquatic Features**

Type	Total impacted acres	High Function	Medium Function	Low Function
Agricultural Ditch	63		7	56
Alkaline Wetland	20	9	9	2
Clifton Court Forebay	258			258
Conveyance Channel	11			11
Depression	36	29	7	
Emergent Wetland	89	36	26	27
Forest	17	11	6	
Lake	23	23		
Scrub-Shrub	18	10	6	3
Seasonal Wetland	140			140
Tidal Channel	100	100		
Vernal Pool	0.3	0.2		<0.1
<b>Totals</b>	<b>775.3</b>	<b>218</b>	<b>61</b>	<b>497</b>
<b>Percent of Total</b>		<b>28%</b>	<b>8%</b>	<b>64%</b>

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#### **Block 23. DESCRIPTION OF AVOIDANCE, MINIMIZATION, AND COMPENSATION**

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 waters of the United States where practicable and minimize any unavoidable impacts. The applicant will provide compensatory mitigation for any remaining impacts.

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.”<sup>4</sup> 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).

#### ***Avoidance and Minimization Measures***

The proposed project has been designed to avoid impacts to waters of the United States to the maximum extent practicable. 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 United States as well as to special status species. The AMMs will be implemented at all phases of the project, including siting, design, construction, and operations and maintenance. The AMMs that pertain specifically to waters of the United States are summarized in the Table 3 below.

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<sup>4</sup> 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”).



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**Table 3. Summary of the Avoidance and Minimization Measures**

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

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		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.

Measures that will be implemented to avoid and minimize impacts to aquatic species and species which utilize aquatic habitats such as California tiger salamander, giant garter snake, California red legged frog, western pond turtle, riparian woodrat, riparian brush rabbit, Suisun shrew, and salt marsh harvest mouse, will also serve to reduce project impacts to waters of the United States.

#### ***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

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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 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. 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 physical 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 (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

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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 2 above) within each habitat type.

Typically, impacted habitat is replaced with in-kind habitat; consistent with this approach, for example, the applicant expects to mitigate for permanent impacts to Clifton Court Forebay with waters created through the expansion of CCF into North CCF and South CCF. 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

The applicant 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. The applicant 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. The applicant 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.

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DWR will submit to the Corps its approach to compensatory mitigation that contemplates implementation in several phases. Phase 1 mitigation would address the construction of the pumping plant at CCF, which will impact approximately 34 acres of wetlands and waters. Phase 2 mitigation would compensate for impacts associated with the construction of the north tunnels, intermediate forebay, dual main tunnels; disposal of tunnel material; dredging of CCF and construction of two forebays. These activities would result in 698.3 acres of impact. Phase 3 mitigation would cover impacts associated with the construction of the intakes and the Head of Old River Barrier, which would impact approximately 43 acres of waters and wetlands.

It is anticipated that the impacts associated with Phase 1 would be mitigated through the purchase of credits at an existing Corps-approved mitigation bank. The 34 acres of impact consists of 24 acres of emergent wetland, 7 acres of scrub-shrub, 2 acres of forest, and one acre of depression (pond). DWR proposes to purchase floodplain mosaic wetland credits (which include perennial emergent marsh, scrub shrub wetland, riparian forest, and waters of the US (non-wetland)) at a ratio of 1:1 to appropriate compensate for Phase 1 impacts. The service area for the Consumnes Floodplain Mitigation Bank, operated by Westervelt Ecological Services, incorporates the areas where impacts would occur at CCF, providing one potential option for DWR to purchase credits from an approved mitigation bank.

DWR is currently assessing two privately held tracts of land for their potential to support restoration and creation of waters to satisfy most of the compensatory mitigation necessary for Phases 2 and 3. One tract is located in the north Delta, while the other is located in the central Delta. Both are currently farmed.

Construction of wetlands at the tract in the north Delta would likely include sculpting the interior of the tract to elevations that would support a mosaic of habitat types, including woody riparian, scrub-shrub, seasonal wetland, emergent wetland, and open water. One or more breach or notch in the existing (non-project) levee at the lowest end of the island would be excavated to allow for water to enter the island. Much of the island would be subject to the ebb and flow of the tide and created habitats would mimic that of natural habitats in the area. The sculpting would be designed to ensure that no fish would be entrapped as water receded at low tide.

Construction of wetlands at the tract in the central Delta would utilize the low elevation of the interior of the island to create seasonal wetland and emergent marsh habitat through excavation. In other locations on this island, setback levees might be constructed such that the existing (non-project) levees could be removed or breached in multiple locations resulting in the creation of riparian, scrub-shrub, and emergent wetlands. If portions of the existing levee can be left intact, the result would be the creation of new in-channel islands which would be an important, high function resource within the Delta where existing in-channel islands are subject to erosion and degradation.

DWR also proposes to provide additional compensatory mitigation from within the four lakes that were created during the construction of Interstate 5. Currently each of the lakes is open water with sparse or no edge vegetation (either emergent wetland or riparian vegetation). It is envisioned that excavated

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tunnel material would be used to partially fill the open water, resulting in a mosaic of open water, emergent wetland, seasonal wetland, scrub-shrub, and riparian habitats.

As mentioned above, the permanent impacts associated with work at Clifton Court Forebay would be mitigated through the expansion of CCF into North CCF and South CCF.

A comprehensive conceptual mitigation plan for the proposed project is currently being developed and will be submitted to the Corps for review and comment upon completion. At this time, it is expected that there will be two final mitigation plans; one for Phase 1, and one for Phases 2 and 3. The final mitigation plan for Phase 1 will identify the bank where credits would be purchased and include an analysis of the functional value of those credits in relationship to the functions lost at CCF through the construction of the pumping plant. The final mitigation plan for Phases 2 and 3 will identify the location, type, and amount of habitat to be created and will include all thirteen components identified in the Mitigation Rule.

### 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 breached or lowered to create weirs.

### **Block 25. ADDRESSES OF ADJOINING PROPERTY OWNERS**

Please see **TAB G, Adjacent Landowner Mailing List**.

### **Block 26. LIST OF OTHER CERTIFICATES/APPROVALS**

AGENCY	TYPE OF APPROVAL	STATUS
USFWS	Biological Opinion/Take Statement	Pending
NMFS	Biological Opinion/Take Statement	Pending
CDFW	2081(b) Take Permit	Pending
CDFW	Streambed Alteration Agreement	Pending
SWRCB	New Point of Diversion	Pending
SWRCB	Water Quality Certification/WDR	Pending

### **D. Additional Information**

In addition to the supplemental data above, the following **additional information** is provided to assist the Corps in the permit process. Much of this information was presented in Appendix E of the Partially Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS) for the Bay Delta Conservation Plan.

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#### 1. RIVERS AND HARBORS ACT SECTION 10

The Applicant has examined potential impacts to navigation both during construction and during the operation of the conveyance facilities described as the proposed project. These effects are set out in the RDEIR/SDEIS and include assessments regarding changes in water surface elevation and sedimentation associated with the proposed project.

#### Potential Effects to Water Surface Elevations Caused During Construction of the Intakes

The construction of Intakes 2, 3, and 5 will require the installation of coffer dams at each location. Cofferdams will be used to isolate construction areas from the Sacramento River and allow for the sites to be dewatered. The installation of the coffer dams will likely cause localized water elevation changes upstream of and adjacent to each coffer dam. These localized surface elevation changes will not exceed a 0.10 foot increase above existing conditions at any intake location even at high river flows (when surface elevation changes would be expected to be highest). Because this maximum increase in elevation would be entirely localized, downstream surface elevation changes during intake construction would be insignificant and changes to river depth and width at any location would also be insignificant. Consequently, boat passage and river use in the Sacramento River and its tributaries would not be affected.

#### Potential Effects to Water Surface Elevations Caused by Intakes During Operation

The hydraulic modeling scenario for this analysis assumed five intakes because that is the maximum number of intakes included under any alternative evaluated in the RDEIR/SDEIS. The modeling also assumed the highest North Delta diversion capacity allowed under any alternative. The proposed project consists of fewer intakes and lower diversion capacity (three intakes and 9,000 cfs maximum diversion capacity), and as such, would have a smaller effect on surface water elevations than the model indicates. Under the proposed project, operation of Intakes 2, 3 and 4 may potentially have localized effects on water surface elevation during certain operational regimes and at certain river flows. While intake operations and pumping levels would be dictated by many factors, Sacramento River diversions would be limited during low flows by operational rules. To further minimize the intake effects on river surface elevations, intakes were designed as on-bank structures and were placed so that river flood and flow characteristics would be minimally altered.

Based on hydrologic modelling, even at the lowest river flows (taking into account both seasonal and tidal variations) and at maximum intake operation (full diversions at each of five alternative intakes), estimates are that boat draft depths of at least 16.5 feet would be maintained within the Sacramento River. This river depth has occurred historically and has been adequate to support navigation along the Sacramento River. Additionally, under these same intake divisions/river flows, water surface elevations would be lowered by no more than 0.7 feet, which represents a localized and maximum estimate. Surface elevations downstream of the intakes would be affected less, and during higher river flow and lower intake diversions, river depths would be greater than the minimum estimate.

The minimal changes in surface water elevation anticipated under the proposed project, even assuming a maximum lowering of 0.7 feet, would not likely expose any currently unexposed natural or man-made

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features that would affect or impede navigation. There would be no new snags or obstructions that would impede navigation.

Moreover, even when operating at maximum capacity, the intakes would not alter flows in a way that would affect commercial vessels or recreational watercraft. The intakes are designed to ensure pumping velocities would have minimal impacts to aquatic species. It is unlikely that changes in flow velocity would be perceptible to operators of marine vessels or recreational watercraft or otherwise affect navigation.

#### Potential Effects on Navigation Caused by Sedimentation, Facility Construction

##### *Intakes*

Construction for Intakes 2, 3, and 5 would require the installation of coffer dams at each location. Cofferdams would be used to isolate each construction area from the Sacramento River and to allow for the de-watering of the construction area. Construction of coffer dams require sheet pile driving that would cause an incremental increase in suspension of bed sediments. These effects would be temporary and would not have an effect on navigation. Sheet piles at the edge of the levee embankment would likely change eddy currents locally, but rock slope in the transition zone would limit those currents and potential changes to bed load dynamics. As a result, erosion and sedimentation into the Sacramento River during intake construction would be minimal.

Any potential increases in sedimentation would be further minimized by limiting the duration of in-water construction activities and through the implementation of the environmental commitments identified in the RDEIR/SDEIS pertaining to water quality. Such commitments would serve to control short-term and long-term erosion and sedimentation effects and ensure the restoration of soils and vegetation in areas affected by construction activities following construction (AMM4, as described above in Table 2). Erosion and sediment control plans would be prepared for construction activities, each taking into account site-specific conditions such as proximity to surface water, erosion potential, drainage, etc. These plans would meet all applicable regulatory requirements regarding erosion control, including BMPs for erosion and sediment control.

Implementation of Mitigation Measure SW-4 identified in the RDEIR/SDEIS (Implement Measures to Reduce Runoff and Sedimentation) will further ensure that impacts from sedimentation are minimal.

##### *Barge Facilities*

Under the proposed project, five temporary barge landings would be constructed at locations adjacent to construction work areas to facilitate 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 placing piles at each landing.

To address potential erosion and sedimentation impacts from barge facility construction associated with the proposed project, the applicant would effectuate the development and implementation of a Barge



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Operations Plan for facility construction. The components of the Barge Operations Plan are described in the RDEIR/SDEIS Appendix 3B, *Environmental Commitments*. This commitment is reflected in AMM7, *Barge Operations Plan*, as described in Table 2 above. This plan would be developed and implemented by the construction contractors per standard DWR contract specifications. Fleeting facilities would be either docking facilities built through pile and wharves or loaded and unloaded using landward positioned cranes. In either case, through AMM7 and the Environmental Commitments, impacts to sedimentation through construction related activities would be localized and minimal. Implementation of Mitigation Measure SW-4 would further ensure that impacts from sedimentation are minimal.

#### *Clifton Court Forebay*

Clifton Court Forebay would be dredged and redesigned to provide an area where water flowing from the new north Delta facilities would be isolated from water diverted from south Delta channels. Clifton Court Forebay is a “navigable water” because it is subject to the ebb and flow of the tide. The use of the forebay is limited to maintenance operations and is not open to commercial or recreational navigation.

#### *Potential Effects on Navigation Caused by Sedimentation, During Operations*

##### *Intakes*

Sediment loads are present in the Sacramento River as bed loads or distributed within the water column. The Sacramento River is sediment “starved” for most of the year since upstream reservoirs act as settling basins for suspended sediments. In most cases, sediment load is concentrated on the river bed and this bed load depends on several factors including particle size, particle density and flow velocity. To exclude bed loads from entering intake structures during operation, design criteria for the intakes require that the lowest point of the screen be placed above the river bed in such a way that there is no change in bed sediment erosion/distribution patterns. Additionally, screen locations would be placed on the outer bends of the river to minimize scour, erosion and sediment loading at those locations. Flow control baffles at intakes would be adjusted to control sedimentation near the screens as needed and air jets at screens are proposed to re-suspend sediments as needed. Implementation of Mitigation Measure SW-4 (Implement Measures to Reduce Runoff and Sedimentation) would further ensure that impacts from sedimentation are minimal.

#### *Potential Navigation Impacts from Construction and Operations of Head of Old River Barrier*

The project proposes work at the Head of Old River including the construction of fish and flow control gates as well as a small boat lock to allow recreational boat passage. An analysis of potential impacts of this work on navigation was completed in 2005 by Jones and Stokes (*South Delta Improvements Program Vol I: Environmental Impact Statement/Environmental Impact Report*. Draft. October. (J&S 020533.02.) State Clearinghouse #2002092065. Sacramento, CA.) (“SDIP EIR/EIS”). The SDIP EIR/EIS analyzed whether the proposed barrier/gates facility and locks would cause a change in south Delta flows or water level, river flows or surface water elevations that would result in substantial changes to existing recreational or commercial boating activity and opportunities.

The changes in access to Delta waterways by boats and other vessels during construction and operation of the gates, during channel dredging activities, and attributable to changes in water levels/depths were

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addressed. Most of the waterways in the immediate project vicinity are public waterways navigable by recreational craft, including rowboats, large houseboats, and cabin cruisers. These waterways are also navigable by smaller commercial vessels, including towing and salvage vessels, clamshell dredges, dredges for repair and maintenance of levees and channels, and pile-driving vessels. Boat access points in the project area include River's End Marina, located south of the confluence of the DMC with Old River; Tracy Oasis Marina Resort, located west of Tracy Boulevard, on the south side of Grant Line/Fabian and Bell Canal; and possibly at Heinbockel Harbor, located on the west side of Tracy Boulevard and the north side of Old River

According to a California Department of Parks and Recreation (DPR) survey, minimal boat launching and use occurs in the project area. The channels within the project area are too small to accommodate large commercial vessels, and because the channels are also part of an existing temporary barriers project, larger vessels cannot use these channels when the barriers are in place. A boat lock at the proposed facility would ensure boat access upstream of the gate regardless of gate operations. In this regard, upstream boat access could improve over current conditions. Additionally, from June 16 through September 30, the gates will be open and no boat lock operations will be necessary.

With respect to both recreational and commercial navigation, and based on analysis provided in the SDIP EIR/EIS, boat access impacts during facility construction would be less than significant (p. 5.8-14, 5.8-18, 5.8-21), impacts to navigation caused by water level changes during barrier operation would be less than significant (p. 5.8-15, 5.8-19, 5.8-22), impact to non-recreational boaters due to temporary dredging operation would be less than significant (p. 5.8-16, 5.8-19, 5.8-22), and impacts on recreation as a result of constructing and operating any of the alternatives would not be significant (p. 7.4-1).

Construction of the operable barrier could result in increased sedimentation near the gates. Maintenance dredging around the gate would be necessary to clear out sediment deposits. Dredging around the gates would be conducted using a sealed clamshell dredge. Depending on the rate of sedimentation, maintenance would occur every 3 to 5 years. 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 RDEIR/SDEIS Appendix 3B, *Environmental Commitments*, under *Disposal and Reuse of Spoils, Reusable Tunnel Material (RTM), and Dredged Material*. These activities would ensure that sedimentation would not result in an adverse impact to navigation.

#### Potential Cumulative Effects on Navigation

As explained above and with respect to the construction and operation of these facilities, the proposed project would not result in adverse effects to navigation due to water level elevation changes or altered sedimentation patterns. It is highly unlikely that other projects would combine with these impacts of the project to result in cumulative effects on navigation. This is because the minimal effects of these elements of the project on navigation are localized and would combine only with probable future projects if the projects were located immediately adjacent to the project components. There are no other reasonably foreseeable projects proposed to be located near or adjacent to the planned facilities.

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### 2. NEPA

The California Department of Water Resources and the U.S. Bureau of Reclamation, as state and federal lead agencies under CEQA and NEPA, respectively, released the Partially Recirculated Draft Environmental Impact Report / Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS) for the project in July 2015.

The RDEIR/SDEIS provides supplemental analysis and information regarding the various alternatives analyzed in the previously circulated Draft EIR/EIS and introduces three new sub-alternatives – 4A, 2D, and 5A. As explained in the RDEIR/SDEIS, the proposed project (the California WaterFix), which was developed in response to public and agency input, replaced Alternative 4 (the proposed Bay Delta Conservation Plan) as the CEQA Preferred Alternative. The proposed project is also the NEPA Preferred Alternative, a designation that was not attached to any of the alternatives presented in the Draft EIR/EIS. The entire environmental analysis for the proposed project is included in the RDEIR/SDEIS.

Also included as part of the RDEIR/SDEIS is Appendix E, *Supplemental Information for USACE Permitting Requirements*, which includes information and analysis relevant to the Corps' permitting for the proposed project. Appendix E was developed specific to informational needs to facilitate USACE decision-making under the Clean Water Act and Rivers and Harbors Act, and associated authorizations. The purpose of the Appendix is to present all information relevant to the Corps' permitting for the proposed project as efficiently as possible. Additionally, the RDEIR/SDEIS carries forward informational needs to facilitate USACE decision-making for all other alternatives considered.

Appendix E provides an overview of the material needed for the Corps' permitting process under the authority of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act and identifies the stage of the permitting process at which the material will be available and presented.

Appendix E also provides specific environmental review information for the proposed project regarding impacts to waters of the United States, a conceptual description of compensatory mitigation, compliance with Section 106 of the National Historic Preservation Act, Section 10 of the Rivers and Harbor Act, and Section 14 of the Rivers and Harbors Act (codified in 33 USC 408 and commonly referred to as "Section 408").

### 3. ENDANGERED SPECIES

Section 7 of the ESA provides that each federal agency must ensure, in consultation with the Secretary of the Interior and/or Commerce, that any actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of areas determined to be critical habitat (16 USC 1536(a)(2)). Section 7 requires federal agencies to engage in formal consultation with USFWS or NMFS for any proposed actions that are likely to adversely affect listed 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). DWR and Reclamation coordinate the operations of these water conveyance systems. DWR has proposed certain modifications and

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improvements to the SWP, including the construction and operation of three supplemental intakes and associated conveyance facilities and a new head of Old River barrier. Once constructed, these new facilities will result in changes to the operations of both CVP and SWP. As described in this Application, the construction and operation of the new facilities will require USACE authorizations under Section 404 of the Clean Water Act and Section 10 and Section 14 of the Rivers and Harbors Act.

Reclamation will serve as the lead federal agency for the Section 7 consultation. In conjunction with DWR, Reclamation will initiate 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 is intended to cover 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.

#### 4. CULTURAL RESOURCES

The National Historic Preservation Act (NHPA), 16 U.S.C. §§ 470a to 470w-6, is the primary federal law governing the preservation of cultural and historic resources in the United States. The law establishes a national preservation program and a system of procedural protections which encourage the identification and protection of cultural and historic resources of national, state, tribal and local significance. Primary components of the act include:

- Articulation of a national policy governing the protection of historic and cultural resources.
- Establishment of a comprehensive program for identifying historic and cultural resources for listing in the National Register of Historic Places.
- Creation of a federal-state/tribal-local partnership for implementing programs established by the act.
- Requirement that federal agencies take into consideration actions that could adversely affect historic properties listed or eligible for listing on the National Register of Historic Places, known as the Section 106 Review Process.
- Establishment of the Advisory Council on Historic Preservation, which oversees federal agency responsibilities governing the Section 106 Review Process.
- Placement of specific stewardship responsibilities on federal agencies for historic properties owned or within their control (Section 110 of the NHPA).

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by ACHP. Revised regulations, "Protection of Historic Properties" (36 CFR Part 800), became effective August 5, 2004, and are summarized below. The responsible federal agency first determines whether it has an undertaking that is a type of activity that could affect historic properties. Historic properties are properties that are included in the National Register of Historic Places or that meet the criteria for the National Register. If so, it must identify the appropriate State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO) to consult with during the process. It should also plan to involve the public, and identify other potential

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consulting parties. If it determines that it has no undertaking, or that its undertaking is a type of activity that has no potential to affect historic properties, the agency has no further Section 106 obligations.

#### Programmatic Agreement (PA)

The US Army Corps of Engineers (USACE), as the federal lead agency for CWA Section 404 permitting the water conveyance facility, is responsible for Section 106 compliance. When a project is complex, such that the normal Section 106 review process is not appropriate, the Section 106 implementing regulations (36 CFR 800.14(b)) allow for the development of a programmatic agreement (PA) to ensure Section 106 compliance. Relative to the currently proposed conveyance facility, preparation of a PA is applicable when effects on historic properties cannot be fully determined prior to approval of an undertaking (36 CFR 800.14(b)(1)(ii)), or when nonfederal parties are delegated major decision-making responsibilities (36 CFR 800.14(b)(1)(iii)).

USACE, in collaboration with DWR, is developing a draft Section 106 PA for the conveyance facility. The PA provides for the identification of historic properties within the Area of Potential Effect (APE) of the selected Project alternative prior to construction initiation, and the development of avoidance, protection, or mitigation measures for those historic properties that could be adversely affected by the Project. Treatment plans will be prepared to address impacts to NRHP-eligible archaeological, built environment, and Traditional Cultural Property (TCP) resources within the APE. The PA details how many of the day-to-day responsibilities for Section 106 compliance are delegated to DWR by USACE.

#### Tribal Consultation

An important element of the PA involves consultation with Native American tribes and members of the public who have a demonstrated interest in the undertaking, as required under 36 CFR 800.2(c)(2) and 36 CFR 800.2(d), respectively. Native American tribes are those tribal entities who are federally recognized (36 CFR 800.16(m)). Native American tribes who have not received federal recognition, or individuals of Native American descent who are not affiliated with any tribal organization, are considered members of the interested public, as are other entities such as historical societies, local governments, or businesses and individuals. The PA ensures that USACE will fully involve federally recognized tribes at a government-to-government level throughout the Section 106 process. Similarly, the PA delegates responsibility for consultation with tribes and individuals without federal recognition to DWR.

Participation in the Section 106 process by Native American tribes or individuals with an ancestral affiliation with the Project area is described in the PA. Native Americans will be invited to participate in the development and implementation of the terms of the PA, including inventory reports, evaluation plans and reports, and during the resolution of adverse effects through the development of treatment plans for those resources within the APE that are either exclusively or partially affiliated with prehistoric or ethnographic resources. Participation may take place during public meetings, at meetings organized only for Native American tribes as a group, or at meetings with single tribes or individuals; meetings may be informal or may be identified as formal government-to-government consultations, depending on the participants involved. Native American tribes, both federally recognized and those without federal

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recognition, and with individuals with a demonstrated ancestral tie to the project area will be invited to be concurring parties to the PA. However, these entities are not required to be concurring parties in order to participate in the processes described in the PA, and they may request to become concurring parties at any time during the process.

#### 5. ANALYSIS OF ALTERNATIVES

The Applicant is in the process of developing an analysis of alternatives pursuant to the Section 404(b)(1) Guidelines (40 C.F.R. section 230.10(a)-(d)). The analysis of alternatives will be submitted to the Corps separate from this application.

#### 6. 408 AUTHORIZATION

The purpose of review under Section 408 is to ensure that an action would not impair the usefulness of a federal civil work under the Corps' authority, and would not be injurious to the public interest. Specifically related to this project, the primary issue is to maintain the integrity of the SRFCP and SJRFCP and their function for flood risk reduction. Section 408 review provides that alteration of any one part of the system would not substantially increase flood risk for any part of the system.

The elements of the requester's preferred alternative for a new water conveyance facility that may trigger Section 408 permission specific to federal civil works for flood risk reduction are:

- 3 new water intake structures on the east levee of the Sacramento River, a federal project levee (part of the SRFCP)
- channel margin habitat enhancement to mitigate for habitat effects resulting from the intakes
- tunnel construction under the San Joaquin River Deep Water Channel
- Head of Old River Barrier, an in-channel structure placed between federal project levees (part of the SJRFCP)
- barge landing on the San Joaquin River Deep Water Channel

A detailed hydraulic study per Corps' standards for Section 408 NEPA analysis is not available at this time. The informational requirements under the Section 408 process necessarily includes a detailed level of engineering design, as well as a detailed level of analysis related to effects to the Corp's civil works projects and indirect hydraulic effects. The information contained in the current CEQA/NEPA documents will not fully meet this level of detail and additional informational submittals and analysis may be necessary. As a result of these submittals, prior to final 408 permission, additional NEPA compliance by the Corps may be required. It is understood that the components of the project which would require 408 authorization cannot be approved under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act until the 408 authorization is obtained.