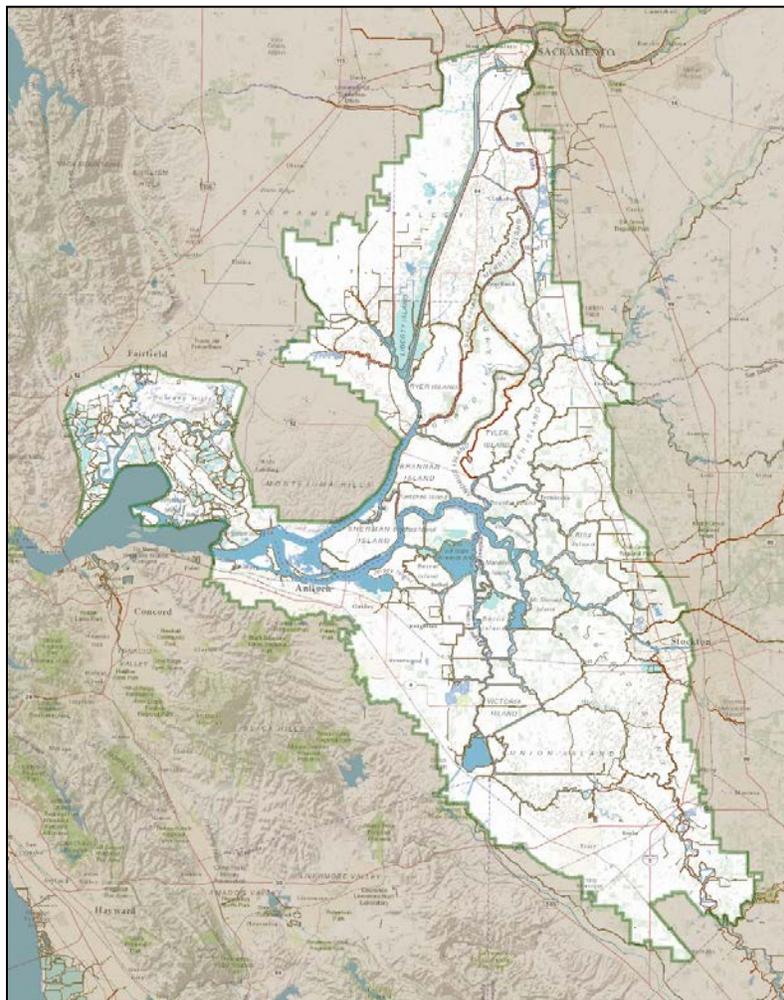

Delta Islands and Levees Feasibility Study, California

Draft Feasibility Report and Environmental Impact Statement

April 2014



U.S. Army Corps
of Engineers
Sacramento District



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Type of Statement. Draft Feasibility Report and Environmental Impact Statement

Lead Federal Agency: U.S. Army Corps of Engineers, Sacramento District

Lead State Agency: California Department of Water Resources

Proposed Action: The U.S. Army Corps of Engineers and the California Department of Water Resources propose to restore approximately 89.5 acres of lost or degraded tidal marsh habitat in the west central portion of the Sacramento-San Joaquin Delta. The restoration work would involve transporting and placing dredged material into open water habitat to restore 80.3 acres and 9.2 acres of tidal marsh at Big Break and Little Franks Tract, respectively, in the Delta. The work would be conducted over 5 years as part of the annual operation and maintenance (O&M) dredging of the Stockton Deep Water Ship Channel. Previously stockpiled dredged material from existing dredged material storage sites would also be placed in conjunction with O&M.

Abstract: The draft report describes the affected environment in the Big Break and Little Franks Tract area; evaluates the direct, indirect, and cumulative environmental effects and the benefits of the tentatively selected plan and two alternative plans; and recommends avoidance, minimization, and mitigation measures. Most potential adverse effects would either be short term and insignificant, or would be avoided or reduced to less than significance using best management practices. Beneficial effects on vegetation and wildlife, special status species, other resources, and the historic floodplain from the alternative plans are also discussed.

Public Review and Comment: The draft report is available for a 45-day public review from April 18 to June 2, 2014. The document may be viewed on the Sacramento District's website at <http://www.spk.usace.army.mil/Missions/CivilWorks/SacramentoSanJoaquinDelta>. A CD copy of the draft report is also available upon request. The Corps will host public meetings in Clarksburg and Sacramento on May 7 and 9, 2014, respectively. All comments received will be considered and incorporated into the final report, as appropriate, and specific responses will be included in a comments and responses appendix. Questions and comments may be sent to: U.S. Army Corps of Engineers, Sacramento District, Attn: Mr. Robert Kidd, 1325 J Street, Sacramento, California 95814; phone: (916) 557-5100; or email: deltastudy@usace.army.mil.

EXECUTIVE SUMMARY

This report: (1) identifies flood risk management and ecosystem restoration problems and opportunities in the Sacramento – San Joaquin River Delta (Delta); (2) develops and evaluates measures to solve identified problems; (3) formulates and compares alternatives for ecosystem restoration; and (4) identifies a Tentatively Selected Plan (TSP) for implementation. This integrated Feasibility Report/Environmental Impact Statement (FR/EIS) describes the planning process followed to identify the Federal interest in the TSP and serves as the environmental compliance document under the National Environmental Policy Act (NEPA). This FR/EIS is being concurrently released for public review, internal policy review, Agency Technical Review (ATR), and Independent External Peer Review (IEPR). Pending comments received during these reviews, the FR/EIS will be finalized to present the recommended plan for eventual authorization.

Background

The U.S. Army Corps of Engineers (USACE) initiated the Feasibility Study in 2006 at the request of the California Department of Water Resources (DWR), the non-Federal sponsor for the study. USACE is the lead agency for the Feasibility Study and is also the lead under NEPA. Numerous other agencies, organizations, and individuals have participated in the study including the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS).

The Delta (Figure ES-1) is part of the largest estuary on the West Coast of the United States; is home to hundreds of species of fish, birds, mammals and reptiles; and is considered an ecosystem of national significance. Agricultural land irrigated by Delta water contributes billions of dollars in production for the Nation. Two deep water ports in the Delta serve as important marine terminals for dry bulk cargo vessels transporting agricultural products through the Delta's deep draft navigation channels to world markets. Delta levees protect thousands of acres of orchards, farms, and vineyards as well as critical infrastructure including state and interstate highways, major rail lines, natural gas fields, gas and fuel pipelines, water conveyance infrastructure, drinking water pipelines, and numerous towns, businesses and homes.

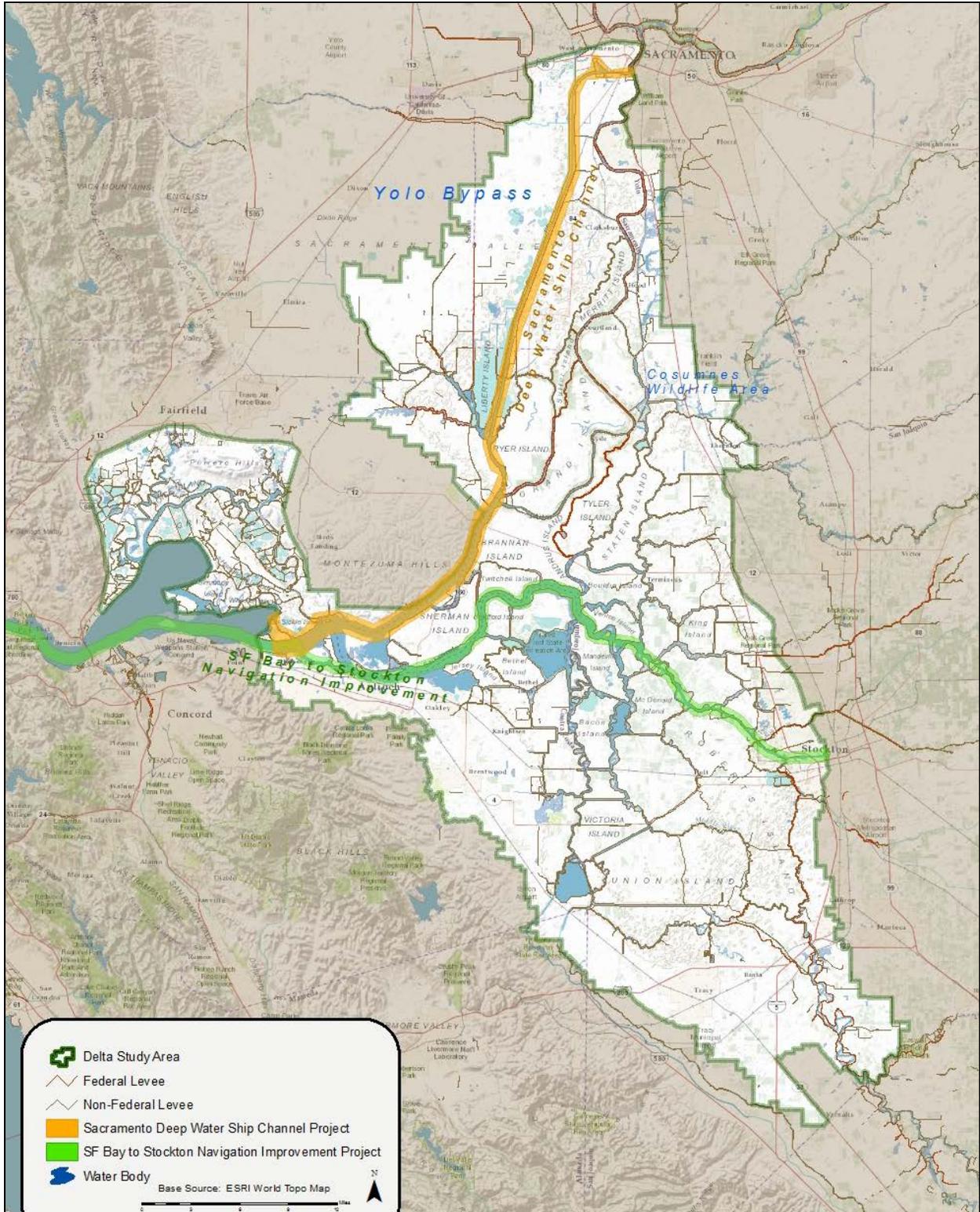


Figure ES-1. The Delta Study Area

The Delta is a web of channels and reclaimed islands at the confluence of the Sacramento, San Joaquin, Cosumnes, Mokelumne, and Calaveras Rivers. Forty percent of California's land area is contained within the watersheds of these rivers. The Delta covers about 738,000 acres and is interlaced with hundreds of miles of waterways. Much of the land is below sea level and protected by a network of 1,100 miles of levees which have been constructed over the past 150 years to manage the flow of water through the Delta. The land behind the levees is predominantly agricultural (corn, wheat, vineyards, cattle) and waterways provide recreational outlets for nearby urban areas and essential habitat for fish and wildlife, including Federally listed species under the Endangered Species Act. The Delta is also the largest single source of California's water supply, providing 25 million Californians with drinking water and irrigating millions of acres of farmland in the Central Valley. In addition, more than 500,000 people live within the Delta and rely upon it for water, recreation, and livelihood. The majority of that population is in the greater Sacramento and Stockton areas and is the focus of other USACE Flood Risk Management studies, though there are communities within the Delta. Several Delta towns, known as "legacy communities," are listed in the national registry of historic places.

Historically, the Delta was defined by tidal wetlands, primarily comprised of peat soils. The Swamp and Overflow Land Act of 1850 transferred ownership of all Federally owned swamp and overflow land, including Delta marshes, from the Federal Government to private parties agreeing to drain the land and turn it to productive, presumably agricultural, use. This Act began the reclamation of wetlands in the Delta through the construction of levees and drainage channels, typically by the new land owners. The majority of levees in the Delta are still privately owned and maintained. Nearly three fourths of the Delta is now in agriculture.

Consideration of Alternative Plans

During the feasibility study, the Federal planning process for development of water resource projects was followed to identify a TSP for implementation. Following definition of ecosystem restoration and flood related problems and opportunities, specific planning objectives and planning constraints were identified. Various management measures were then identified to achieve the planning objectives and avoid the planning constraints. Management measures were screened based on how well they met the study objectives and cost effectiveness. Several categories of measures were dropped from further consideration at that point, including structural flood risk management measures. The retained management measures were combined to form alternative plans, which were focused on restoration of intertidal marsh habitat. Alternative plans were then compared through cost effectiveness and incremental cost analyses based on costs and outputs.

Tentatively Selected Plan

The tentatively selected National Environmental Restoration (NER) plan (Alternative 6) is the most reasonably efficient contribution to the California Delta, an ecosystem of national significance, restoring 89.5 acres of intertidal marsh habitat in the Delta at a cost of \$29M. The TSP (Figure ES-2) provides a unique opportunity to restore intertidal marsh, habitat which is

now largely non-existent in this ecosystem of national significance. Prior to levee construction in the late 19th and early 20th centuries, the Delta was comprised almost solely of tidal marsh. As levees were constructed, floodplains were disconnected from the waterways and land began to subside and compact as it was farmed and developed for human use. Delta lands are now as much as 20 feet below sea level, much too low for tidal marsh habitat without incorporation of subsidence reversal, which is typically cost prohibitive. For this reason, restoration of tidal marsh has been very limited throughout the central Delta in particular, where subsidence is most extensive and also where tidal marsh was historically most prevalent. The Tentatively Selected Plan links the proposed ecosystem restoration actions to historic and ongoing USACE navigation projects, providing a cost effective mechanism to implement otherwise costly subsidence reversal, resulting in restoration of habitat for multiple Federally listed species, notably salmonids and Delta smelt. The restored habitat would also benefit the millions of migratory fowl on the Pacific Flyway as they travel through the Delta, part of the largest estuary on the West Coast.

The national significance of the Delta has been demonstrated many times through decades of Federal authorizations and partnerships. The CALFED Bay-Delta Program, which emerged from water crises of the 1990s, is a unique collaboration among 25 State and Federal agencies to improve California's water supply and the ecological health of the Bay-Delta. The San Francisco Estuary Partnership is a coalition of resource agencies, non-profits, citizens, and scientists working to protect, restore, and enhance water quality and fish and wildlife habitat in the Bay-Delta. Most recently, the 2009 California Bay-Delta Memorandum of Understanding Among Federal Agencies named the Bay-Delta "among the most important estuary ecosystems in the Nation" and committed the Federal agencies to work in partnership with the State and stakeholders to carry out the vision of "a healthy and sustainable Bay-Delta ecosystem that provides for a high-quality, reliable, and sustainable long-term water supply for California, and restores the environmental integrity and sustainability of the system." The Tentatively Selected Plan recommends Federal action to restore 89.5 acres tidal marsh, one of the most sought after habitat types in this unique, important estuary.

The principle features of the TSP are: (1) placement of 500,000 cubic yards of fill material into Big Break from Operations and Maintenance dredging from the Stockton Deep Water Ship Channel to restore tidal habitat elevations; (2) placement of 124,000 cubic yards of fill material into Big Break via pumping previously dredged material from the McCormick dredged material placement site; (3) placement of 210,000 cubic yards of fill material into Big Break via pumping previously dredged material from the Scour dredged material placement site; (4) placement of 125,000 cubic yards of fill material into Big Break via pumping previously dredged material from the Decker dredged material placement site; and (5) placement of 153,000 cubic yards of fill material into Little Frank's Tract via pumping previously dredged material from the Bradford dredged material placement site.

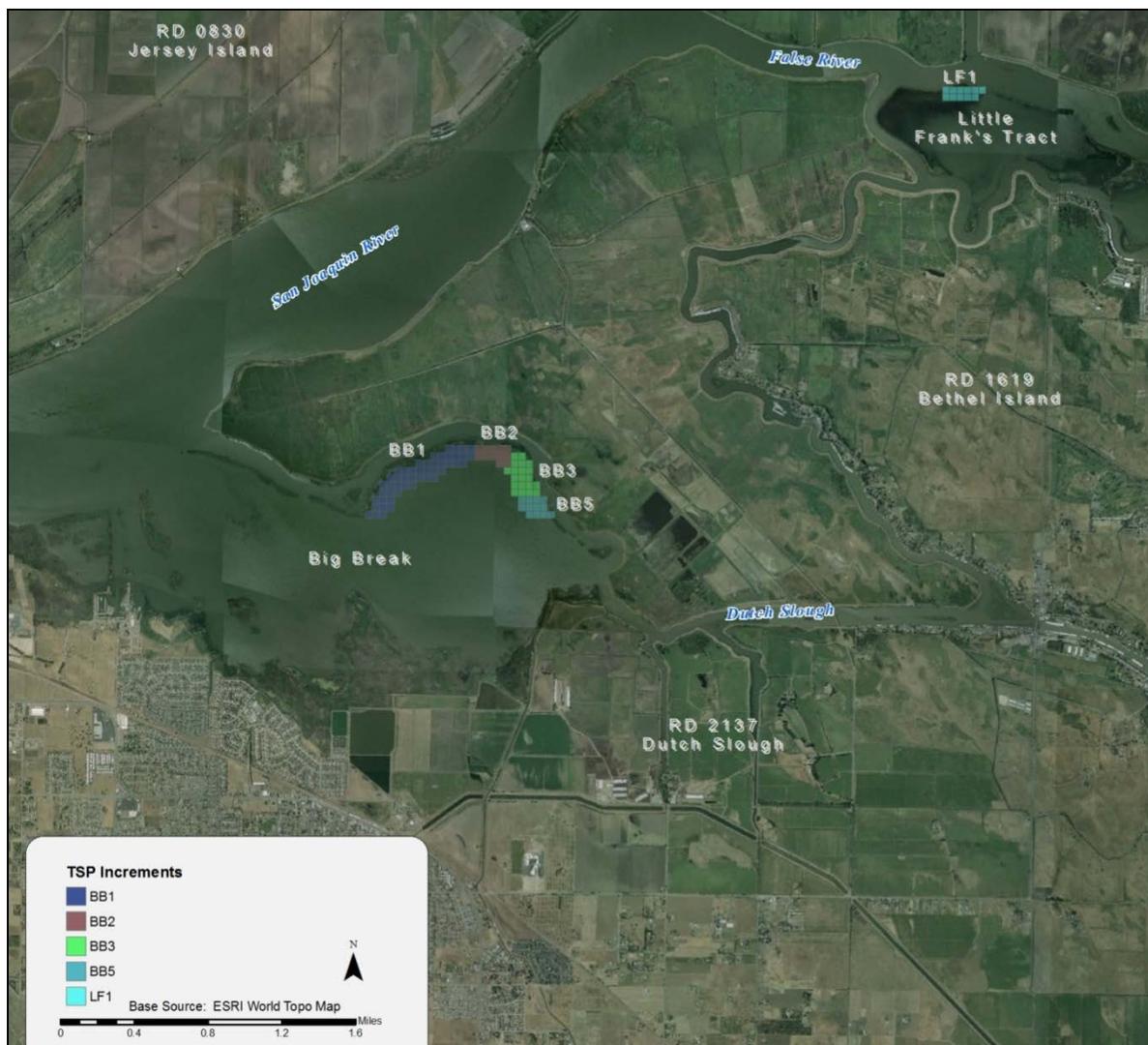


Figure ES-2. The Tentatively Selected Plan.

Environmental Effects

The effects to the environment have been considered throughout the study and opportunities have been evaluated to provide environmental restoration, as described above. The proposed alternatives, while providing long-term benefits to the Delta, would also have short-term effects on some resources. Various mitigation measures have been considered including construction timing, location of fill material placement, material source selection sites, and avoidance of certain areas. A summary of impacts, mitigation measures, and level of impacts with mitigation is provided in Table ES-1.

In all cases, the potential adverse environmental effects would be reduced to a less-than-significant level through project design, construction practices, preconstruction surveys and analysis, regulatory requirements, and best management practices. No compensatory mitigation would be required. A geotechnical analysis of underlying substrates and water quality analysis

of construction activities and methods would be conducted during the preconstruction, engineering, and design phase to further refine potential impact analysis. A National Pollutant Discharge Elimination System general construction permit would be required. A Storm Water Pollution Prevention Plan and Spill Prevention Control and Countermeasures Plan would be developed by the contractor prior to construction.

Jurisdictional wetlands occur in the proposed footprint of the TSP. A Section 404(b)(1) analysis has been conducted for the TSP (Alternative 6) to analyze potential effects that could occur from the placement of dredged materials in open water habitat. Potential impacts to vegetation communities and special status species have been greatly reduced through construction design. Direct impacts to nesting birds and other sensitive species would be avoided by implementing preconstruction surveys and scheduling of construction activities. USACE has determined that the TSP is likely to have adverse short-term effects to Delta smelt; however, it would have long-term benefits once the intertidal marsh habitat is established. The TSP would also affect, but is not likely to adversely affect listed salmonids, green sturgeon, giant garter snake and other special status species with the potential to occur in the area. Coordination with USFWS and NMFS has been ongoing throughout the study. A biological assessment was prepared for Delta smelt and submitted to USFWS to initiate consultation. Informal consultation with NMFS will take place during public and agency review of this document.

Impacts to agricultural land would be minimized by avoiding active farm lands when placing any temporary pipelines. If any land is temporarily disturbed during construction, it would be returned to agricultural production after construction. The TSP is located in an estuary area where urban populations are not present. Because of the lack of population in the area, it has been determined that no affect would occur to socioeconomic, environmental justice, noise, aesthetics, and public utilities and services. Additionally, the TSP proposes to create tidal marsh lands and therefore does not contribute to occupancy, modification, or development of flood plains, and therefore, the project is in compliance with Executive Order 11988.

Table ES-1. Summary of Potential Effects and Mitigation Measures.

| Potential Effects | Mitigation Measures | Effects with Mitigation |
|--|---|--------------------------------------|
| VEGETATION AND WILDLIFE | | |
| Alternative 2 & 6 | | |
| Construction related habitat disturbance or wildlife mortality, or increased invasive species spread | 1 – Exclusion fencing to keep sensitive species away from construction activities. 2 – Removal of invasive species at existing remnant levees and at material source sites. 3 – Implementation of BMP’s. | Less than Significant/ Beneficial |
| SPECIAL STATUS SPECIES | | |
| Alternative 2 & 6 | | |
| Construction related disturbance effecting habitat, growth, survival or reproductive success of special status plants or wildlife | 1 – Preconstruction surveys for special status plants. 2 – Preconstruction species surveys. 3 – Timing work windows between migratory and mating/spawning patterns. 4 – Installing construction buffers and exclusion fencing. | Less than Significant/ Beneficial |
| WATER QUALITY | | |
| Alternative 2 & 6 | | |
| Placement of dredged material could degrade surface water quality, affect salinity, and/or alter erosion and sedimentation rates in the project area | 1 – Placement of silt curtains, hay bales, or similar methods to contain dredge material. 2 – Implement a Storm Water Pollution Prevention Plan. 3 – Conduct water quality monitoring during construction. | Less than Significant |
| AIR QUALITY | | |
| Alternative 2 & 6 | | |
| Temporary increase of criteria pollutants during construction | 1 – Implement Sacramento Metropolitan Air Quality Management District and Bay Area Air Quality Management District basic construction emission | Less than Significant |

| | | |
|---|---|-----------------------|
| | <p>control practices. 2 – Implement fugitive dust mitigation measures. 3 – Implement basic construction emission control practices to control diesel exhaust emissions. 4 – Use electric equipment when possible.</p> | |
| CLIMATE CHANGE | | |
| Alternative 2 & 6 | | |
| Temporary increase in GHG emissions during construction | <p>1 – Use electric vehicles and equipment when possible. 2 – Follow Sacramento Metropolitan Air Quality Management District and Bay Area Air Quality Management District recommended greenhouse gas reduction measures.</p> | Less than Significant |
| TRANSPORATION AND NAVIGATION | | |
| Alternative 2 | | |
| Temporary disruption to Deep Water Ship Channel (DWSC) commerce activities and creation of safety hazards | <p>1 – Any in-water pipes will be weighted to the channel bottom to ensure necessary clearance for shipping vessel hulls.</p> | Less than Significant |
| Alternative 6 | | |
| Temporary disruption to navigation and commerce activities in the DWSC, Sacramento River, and San Joaquin River, and creation of safety hazards | <p>1 – Work vessels will coordinate with commerce shipping schedules and move all equipment clear of the channel to allow safe passage for other vessels. 2 – All equipment will be moved clear of the channel to allow safe passage for other vessels. 3 – Any in-water pipes will be weighted to the channel bottom to ensure necessary clearance for shipping vessel hulls. 4-Coordination with the California Department of Transportation (CalTrans) prior to the installation of the pipes across the road. Additionally, the contractor would be required to obtain any required permits and approvals from CalTrans.</p> | Less than Significant |
| RECREATION | | |

| | | |
|---|---|-----------------------|
| Alternative 2 & 6 | | |
| Preclude recreational activities within and around Big Break and Little Franks Tract | <p>1 – Preconstruction coordination with the U.S. Coast Guard to keep water sport activities safe.</p> <p>2 – Preconstruction coordination with local recreation facilities to inform boaters and anglers of construction.</p> <p>3-Provide project safety information including maps of any restricted access areas.</p> | Less than Significant |
| CULTURAL RESOURCES | | |
| Alternative 2 & 6 | | |
| CULTURAL RESOURCES | | |
| Any adverse effects on cultural resources that are listed or eligible for listing in the National Registry of Historic Places (i.e., historic properties) are considered to be significant impacts. Effects are considered to be adverse if they alter, directly or indirectly, any of the characteristics of a cultural resource that qualify that resource for the NRHP so that the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association is diminished. | <p>1 – The area of potential effects has been inventoried, and it has been determined that no significant cultural resources exist within it.</p> <p>2 – Surface pipeline placement will be subject to archaeological monitoring to ensure that no previously unknown archaeological sites are impacted.</p> <p>3 – If previously unidentified cultural resources are discovered during ground disturbing activities, all construction in the vicinity of the find would be halted immediately and the USACE would follow the procedures outlined under 36 CFR 800.</p> | Less than significant |

Estimated Cost and Cost Sharing

Investment cost accounts from the draft Micro Computer-Aided Cost Engineering System (MCACES) cost estimate for the TSP are displayed in Table ES-2 below.

Table ES-2. Estimated Costs of Tentatively Selected Plan.

| MCACES Account ² | Description | Total First Cost ¹ (\$1,000s) |
|-----------------------------|---|--|
| 01 | Lands and Damages ³ | 3,460 |
| 02 | Relocations ⁴ | 0 |
| 06 | Fish and Wildlife ⁵ | 20,547 |
| 18 | Cultural Resources Data Recovery ⁶ | 205 |
| 30 | Planning, Engineering, Design ⁷ | 3,091 |
| 31 | Construction Management ⁸ | 1,714 |
| | Total First Cost | 29,018 |

¹Based on October 2013 price levels.

²MCACES is the software program and associated format used by the USACE in developing cost estimates. Costs are divided into various categories identified as "accounts." Detailed costs estimates are presented Cost Engineering Appendix.

³Real Estate land costs, which includes fees, but no damages.

⁴No relocations required in TSP.

⁵TSP categorized as Fish and Wildlife in its entirety.

⁶Assumes 1 percent of 06 Account.

⁷15 percent of 06 Account.

⁸8.5 percent 06 Account.

The estimated total project first cost for the recommended plan is \$29,018,000. A summary of costs and benefits of the TSP is presented in Table ES-3. Federal costs are capped at 65% of the NER plan first cost plus Cultural Resource Data Recovery (100% Federal cost) which is estimated to be \$18,933,000 (Table ES-4).

Table ES-3. Economic Costs and Benefits of Tentatively Selected Plan.

| Item | Costs (\$1,000s) | Benefits |
|--|------------------|-------------|
| Investment Cost | | |
| First Cost ¹ | 29,018 | |
| Interest During Construction (3.5%) | 3,017 | |
| Total | 32,035 | |
| Annual Cost | | |
| Interest and Amortization (3.5% over 50 year period of analysis) | 1,366 | |
| OMRR&R ² | TBD | |
| Subtotal | 1,366 | |
| Annual Benefits | | 88.1 AAHU's |
| Non-monetary (Ecosystem) | | |

¹Excludes Cultural Resource Data Recovery; Oct 2013 price level.

²Operation, Maintenance, Repair, Replacement, and Rehabilitation; OMRR&R costs, anticipated to be minimal, will be determined through development of the Monitoring and Adaptive Management Plan prior to the Final Report.

Table ES-4. Summary of Cost-Sharing Responsibilities of the Tentatively Selected Plan (October 2013 Price Level).

| Item | Federal | Non-Federal | Total First Costs (\$1,000s) ¹ |
|--|-----------------|--------------------|--|
| Fish & Wildlife Facilities | \$20,547 | \$0 | \$20,547 |
| Lands and Damages | \$400 | \$3,060 | \$3,460 |
| Planning, Engineering, & Design | \$3,091 | \$0 | \$3,091 |
| Construction Management | \$1,714 | \$0 | \$1,714 |
| <i>Subtotal</i> | <i>\$25,752</i> | <i>\$3,060</i> | <i>\$28,812</i> |
| Additional Cash Contribution | -\$7,024 | \$7,024 | |
| <i>Subtotal</i> | <i>\$18,728</i> | <i>\$10,084</i> | <i>\$28,812</i> |
| <i>Percentage</i> | <i>65%</i> | <i>35%</i> | |
| Cultural Resource Data Recovery ² | \$205 | \$0 | \$205 |
| <i>Total</i> | <i>\$18,933</i> | <i>\$10,084</i> | <i>\$29,018</i> |

¹Based on October 2013 price levels.

² 100% Federal cost.

Major Conclusions

The preliminary recommendation is that the report be finalized based on results of public review, internal policy review, ATR, and IEPR of this draft FS/EIS, and if warranted, recommended for authorization for implementation as a Federal project. The estimated first cost of the Tentatively Selected Plan is \$29,018,000 and the estimated annual OMRR&R cost, anticipated to be minimal, are to be determined prior to the final report. The Federal portion of the estimated first cost, based on October 2013 price levels, is \$18,933,000. The estimated fully funded Federal first cost, based on projected inflation rates specified by USACE budget guidance, and including Cultural Resource Data Recovery (100% Federal cost) is \$19,324,000. The non-Federal sponsor portion of the estimated first cost is \$10,084,000. The non-Federal sponsor's share of the fully funded first cost is \$10,292,000.