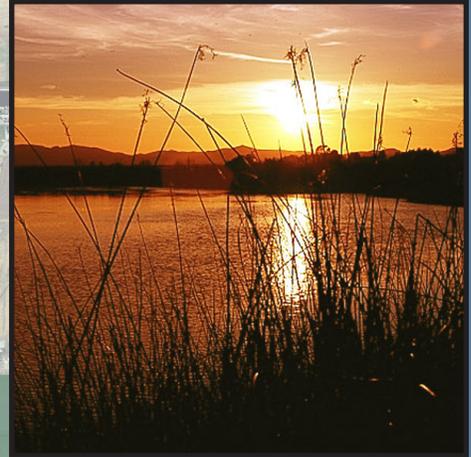


**Contra Costa Water District
Proposition 1E Grant Proposal
Round 2
Attachment 3
Work Plan**



**East Contra Costa County Region
 Contra Costa Water District
 Round 2 Stormwater Flood Management Grant Proposal**

**ATTACHMENT 3 –
 WORK PLAN**

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INTRODUCTION

The single project included in this proposal, the ***Contra Costa Canal Levee Elimination and Flood Protection Project***, was identified in the East County IRWMP as a high priority for short-term regional implementation. This Project incorporates multiple water management elements, and addresses many of the regional objectives set forth in the Functionally Equivalent IRWMP. This Attachment describes the proposed Project, and presents a detailed, contract-ready scope of work to implement the Project.

Background: East Contra Costa Integrated Regional Water Management Group

The following members of the East County Water Management Association (ECWMA), including water agencies, wastewater agencies, flood control districts, and watershed management groups within the eastern portion of Contra Costa County (East County), have a long history of cooperative planning for the region.

- City of Antioch
- City of Brentwood
- Byron-Bethany Irrigation District
- Town of Discovery Bay



- Contra Costa County
- Contra Costa County Flood Control and Water Conservation District
- Contra Costa Water District
- Delta Diablo Sanitation District
- Diablo Water District
- East Contra Costa Irrigation District
- Ironhouse Sanitary District
- City of Pittsburg

Through their coordinated regional planning efforts, these East County agencies developed a Functionally Equivalent Integrated Regional Water Management Plan (IRWMP) based on planning completed through the following efforts:

- *East County Water Supply Management Study (1996)*
- *Future Water Supply Study (1996, Updated 2002)*
- *Stormwater Management Plan (1999)*
- *Delta Region Drinking Water Management Plan (2005)*
- *East Contra Costa County Habitat Conservation Plan (2006)*

These documents form the basis of the Functionally Equivalent IRWMP umbrella document, which serves to integrate the regional plans listed above into a single overarching regional water management plan for East County. Through development and adoption of the Functionally Equivalent IRWMP, the East County agencies identified a suite of water management projects and programs that, together, will improve water supply reliability and water quality for the region, reduce dependence on imported water, assist in achieving the regional objectives, provide multiple benefits, and eliminate or reduce pollution in sensitive habitat areas and areas of special biological significance.

Through the IRWMP effort, the agencies developed a process for prioritizing short-term and long-term priority projects for implementation which considers the ability of projects to achieve regional objectives, among other factors. Over time, the specific projects being considered for regional implementation have evolved to include additional projects targeted at reducing demands on Delta supplies as well as projects aimed at addressing critical water supply and water quality needs of DACs. The process has proven successful in its ability to respond to changing needs and conditions in the Region, and has continued to be utilized to identify priority projects for regional implementation.

The Region is currently in the process of updating the Functionally Equivalent IRWM Plan to be consistent with the Proposition 84 IRWM Standards finalized in November 2012. The IRWM Plan is on track to be adopted in mid- 2013.

Project Abstract

The full, five-phased Contra Costa Canal Levee Elimination and Flood Protection Project (Project) will replace 21,000 feet of the unlined Contra Costa Canal (the Canal) with a pipeline and install a Canal flood isolation structure that will allow CCWD to remotely isolate the Canal following a major flood or earthquake. Completion of the Project will reduce regional flood risk and to improve water supply reliability and delivered water quality for CCWD's 500,000 customers. Secondary benefits include increasing water supply and water supply reliability for the State Water Project and Central Valley

Project and improving public safety by limiting access to the open Canal. Segment 1 of the Project, encasement of the Canal from Pump Plant #1 to Marsh Creek, was completed in 2009. Construction of the flood isolation structure and Segment 2 pipeline is scheduled to begin in the fall of 2013.

The portion of the Project included in this proposal involves installing approximately 5,000 feet of pipe and replacing the Canal embankments along the portion of the unlined Canal immediately adjacent to the Dutch Slough Properties (Figure 3-1). The proposed Project is intricately linked with the Dutch Slough Tidal Marsh Restoration Project which will construct 3.4 miles of new flood protection levees surrounding the Emerson, Gilbert and Burroughs Parcels adjacent to the Canal. Together, these projects will improve regional flood protection four-fold. Based on historical water levels, flood frequency curves in the area, and previous damage to the Canal, there is a 2% chance of major failure in the Canal embankments any given year. By eliminating the Canal embankments and upgrading the Dutch Slough levees, the risk of major flood damage in the region decreases from 2% in a given year to 0.5% or less.

Project Status

Planning and environmental documentation are largely complete. A CEQA Addendum will be prepared for the next segment of work. The CEQA Addendum will capture current field conditions and support permit modifications that will streamline construction. A very important field condition is the availability of nearby ranch land for the application of shallow ground water that must be extracted during pipeline construction.

Design is nearly complete. Because this project is a continuation of the Segment 2 work, design will be completed in time to allow construction bidding, contracting and construction to follow completion of the Segment 2 construction in December 2015. Design of Segments 2, 3, and 4 will be completed in January 2015 to allow bidding in Spring 2015 and initial site clearing in Fall 2015. This will enable construction of the pipeline to commence in Spring 2016 once Segment 2 is complete.

Regional Map

The maps on the following pages present the location of proposed Project with respect to regional and local drainage systems, flood control level of protection, major water bodies and streams, flood management infrastructure, relation to the State Plan of Flood Control (SPFC), and relevant active faults.

Figure 3-1: Project Location

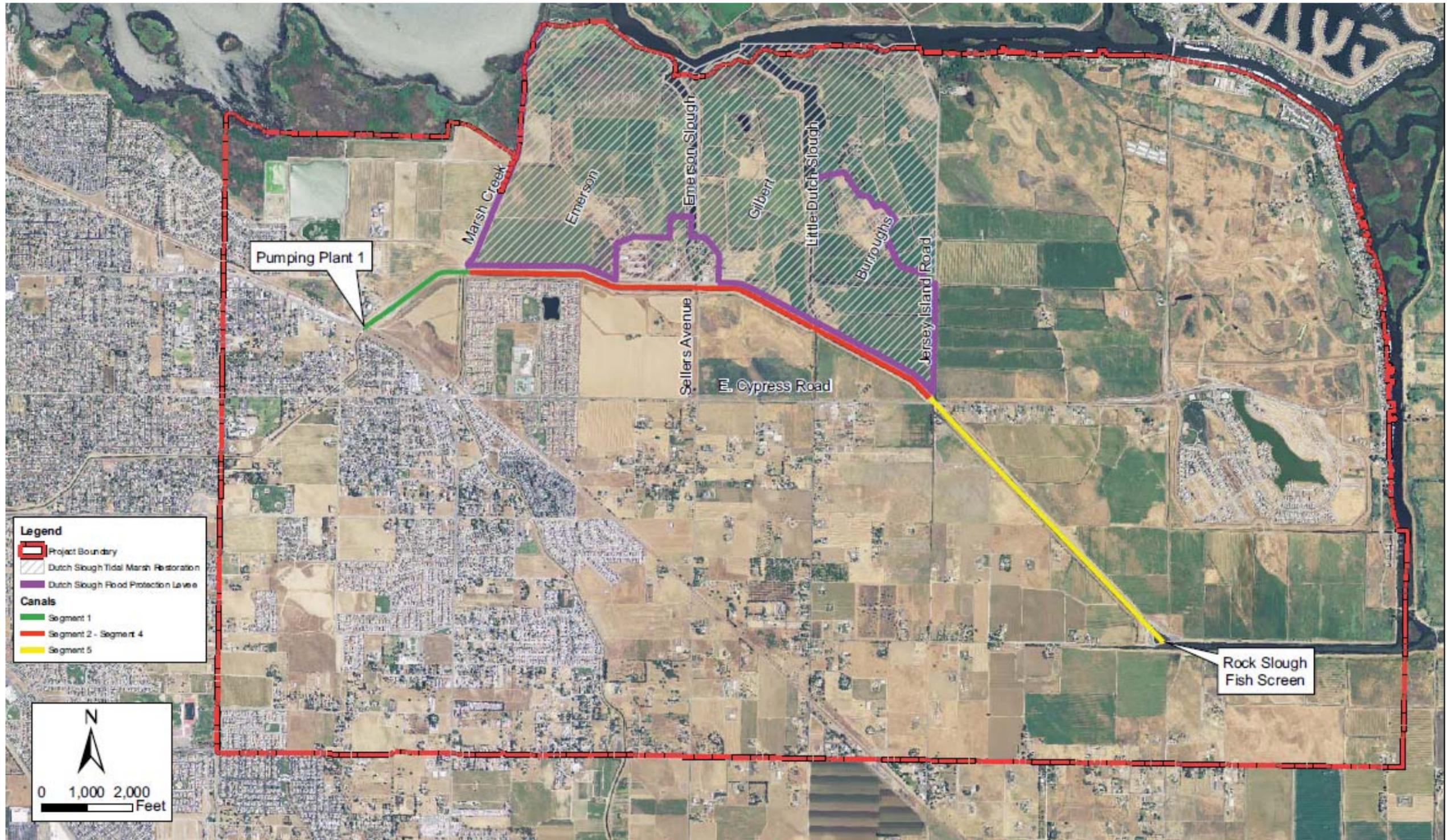


Figure 3-2: Project Location Outside the State Plan of Flood Control



Goals and Objectives of Proposal and Relation to IRWMP

Through implementation of the Project, this Proposal will achieve the following key goals and objectives:

- ✓ To advance the objectives of the IRWMP and further those projects collectively identified as regional priorities by the ECWMA.
- ✓ To improve flood protection, water supply reliability, and water quality for the community.
- ✓ To provide for protection of the natural resources in East Contra Costa County.

Advance the IRWMP Objectives and Further Regional Priorities

The Project was identified as a high regional priority through the prioritization process outlined in the East County IRWMP and through collective determination by the participating agencies, in part due to its ability to assist the Region in making significant progress toward achieving the IRWMP objectives. The East County regional objectives are shown in the following table.

Water Management Category	East County Regional Objectives Met
Water Supply	Maximize Dry Year Supplies
	Maximize Water Supply Reliability
Water Quality	Maximize Public Health Protection
	Protect and Enhance Source Water Quality
Ecosystem Restoration/ Preservation	Minimize Environmental Impacts
	Maximize Environmental Benefits
Flood Control	Protect Against Flooding
Implementability	Maximize Implementability (e.g., maximize regional coordination, conduct stakeholder outreach, maximize cost-effectiveness, etc)

Improve Flood Protection, Water Quality, and Water Supply

The proposed Project will provide enhanced flood protection, as well as significant water quality, water supply, and natural resources benefits. Environmental documentation, permits, and mitigation requirements for the entire Project have already been completed.

Flood Protection Benefits

Based on historical water levels, flood frequency curves in the area, and previous damage to the Canal, there is a 2% chance of major failure in the Canal embankments any given year. By eliminating the Canal embankments and upgrading the Dutch Slough levees, the risk of major flood damage in the region decreases from 2% in a given year to 0.5% or less. Implementation of the Project will result in a present value of approximately \$232,000 in avoided flood damages (expressed in present value terms).

The Canal was developed as part of the Central Valley Project in the 1930s and is an integral part of the water delivery system for CCWD. The unlined portion begins at Rock Slough and continues for four miles until it connects to the 44.6-mile concrete-lined Canal. The Canal levees in the unlined portion are in poor condition and are composed of unconsolidated dredging spoils from the original construction. The existing berms and embankments along the Canal are not certified to flood control standards established by the Federal Emergency Management Agency (FEMA). Engineering and geotechnical studies completed in 2000 and 2007 confirm the embankments are susceptible to failure during a major storm or significant seismic event.

The Canal has experienced overtopping events in the past. In 1996 and 1997, the Canal experienced multiple major levee slumping and overtopping events at the western end of the Canal near Pump Plant #1. At the time, Los Vaqueros Reservoir was not completed, and water continued to be conveyed through the Canal. Due to the complete dependence on the Canal at that time, full repairs were not possible until the summer of 1998 (see attached photos). The repairs took approximately two weeks. Adjacent properties experienced limited flood damage due to emergency response to stabilize the levee. Emergency response and levee repairs cost just over \$1M. The engineering report prepared at the time noted that investment was needed to prevent a complete failure of the reach. The greatest risk associated with the 1996-1997 levee damage was sewage from the Ironhouse Sanitation District flowing into the Canal from an adjacent property where sewage was land-applied. This section of the Canal (from Pump Plant #1 to Marsh Creek) was encased in 2009; encasing that portion of the Canal cost \$13M (construction cost, not including permits and mitigation).

In February of 1998, the Canal failed at the intersection of Cypress Rd. The road was partially flooded and emergency repairs were made. Emergency repairs (sandbags) cost more than \$13,000; rip-rap repairs to this section occurred the same month for an additional cost of \$25,000. These cost estimates do not include time spent by Contra Costa County to provide emergency assistance or any repairs to adjacent properties.

Using flood frequency curves developed by the U.S. Army Corps of Engineers for Old River at Rock Slough and San Joaquin River at Antioch, the smallest possible return interval associated with the historical damage described above is approximately once every 50 years, corresponding to a 2% chance in any given year of the Canal failing during a major storm. Implementing the Project would replace the unlined Canal with an underground pipeline and eliminate the regional flooding risk associated Canal embankment failure.

At least seven square miles are currently at risk of flooding if the Canal embankments were to fail. The region surrounding the unlined Canal has been historically agricultural, but land use has changed dramatically since 2003. The region at greatest risk of flooding is bounded by Dutch Slough to the north, Sandmound Slough to the east, and the open unlined Canal to the south. Approximately 555 residential units are at risk of flooding in the region. In addition, 628 housing units in the Summer Lakes development would be isolated if the Canal failed. At least 32 miles of road are at risk of flooding, including the sole arterial access road for the majority of the regions' residents. At least eight active gas wells are at risk of flooding in the region. There are also overhead power transmission lines for Pacific Gas and Electric and Western Alliance Power Association that transect the region. An additional 3,000 acres are planned for urban development and 1,200 acres will be restored to tidal wetlands as part of the Dutch Slough Tidal Marsh Restoration Project. There is currently a population of 10,000 in the immediate area that could sustain flood damage in the event of Canal embankment failure. By 2020,

ongoing rapid residential development will result in 30,000 residents at risk, including three primary/secondary schools. Failure of the Canal would also compromise the water supply for nearly 500,000 people. The proposed Project will remove the potential for flooding. By encasing the Canal in a buried pipeline, virtually all concerns with regard to system security and public safety are alleviated as well.

Water Quality Benefits

Implementation of the Project would yield significant water quality benefits. Water quality is an ongoing challenge facing East County water suppliers. There are three primary local sources of degradation along the unlined Canal that would be eliminated by implementing the Project: 1) surface runoff from adjacent land, 2) cattle grazing, and 3) groundwater intrusion. Reducing these sources of degradation would improve water quality delivered to customers, decrease the risk of exposure to contaminants, improve operational flexibility, and reduce treatment costs, as described below.

1. Surface Runoff

Runoff from lands adjacent to the unlined Canal can be a source of degradation and contamination. Ironhouse Sanitation District (ISD) land-applies sewage to the north and south of the Canal surrounding Pumping Plant 1. During the late 1990s, the Canal embankments suffered the largest failure in this area, and one of the greatest concerns was raw sewage spilling into the Canal and contaminating the drinking water. This segment of Canal was encased in 2009 and was a top priority due to potential water quality degradation associated with ISD practices. There are several irrigated pastures adjacent to the Canal which, at times in the past, have drained back into the Canal. This agricultural return flow can be high in salts, turbidity, nutrients and fecal matter if the land is actively being used for cattle grazing.

Although the Delta as a whole is listed as an impaired water body for many constituents, the local water quality degradation leads to problematic growth of aquatic weeds and blue-green algae, which can cause taste and odor problems and produces potentially harmful neurotoxins. The unlined Canal can become so constricted by aquatic weeds during the summer that the pumps at Pumping Plant 1 must shut down to avoid cavitation. Treating the aquatic weeds requires use of herbicides and it is increasingly difficult to obtain a permit to apply the herbicides due to broader environmental concerns. By implementing the Project, aquatic weeds in the Canal and the associated herbicide treatment would be eradicated. Project implementation would improve the operational capabilities at Pumping Plant 1 and decrease the treatment cost.

Taste and odor causing blue-green algae, including the potentially toxic microcystis, thrive in the Canal system. Treating taste and odor-causing algae requires the use of ozone, which increases the formation of cancer-causing disinfection byproducts (DBPs) such as bromate. Although implementing the Project would not eradicate the presence of taste and odor-causing algae, reducing local nutrient loading would help to limit algal growth. This would, in turn, reduce the amount of ozone required in the treatment process and reduce the amount of carcinogenic DBPs formed.

2. Cattle Grazing

Approximately 600 acres adjacent to the Canal are currently used for cattle grazing. Cattle grazing adjacent to the Canal can increase the fecal contamination and turbidity of the Canal. Pathogens

associated with fecal contamination can be transported into the Canal via surface water runoff and groundwater seepage. Implementing the Project will reduce nutrients, turbidity, and fecal contamination (E. coli, Cryptosporidium, and total coliform) in the Canal. The reduction in cattle based contamination may help reduce treatment costs by reducing the amount of coagulant added, decreasing the frequency that the filtration bed materials need to be replaced, and decreasing the amount of solid waste generated.

3. Groundwater Intrusion

An overwhelming amount of historical observations and reports indicate that the soils along the Canal are highly conductive, and groundwater intrusion from adjacent properties has been identified as a significant source of salinity and other compounds that degrade water quality in the Canal. Historical land use practices adjacent to the Canal, including land disposal of wastewater from the IDS, have elevated groundwater levels on the lands adjacent to the Canal and created a net flow of groundwater into the Canal. As noted above, the segment of Canal adjacent to ISD lands was encased in 2009. However, the Department of Water Resources' (DWR's) Dutch Slough Tidal Marsh Restoration Project (DSTMRP) plans to create tidal wetlands to the north of the unlined Canal as soon as 2013. The DSTMRP project would raise groundwater levels relative to the Canal and increase saline groundwater intrusion from the tidal marsh into the Canal. Groundwater on the Dutch Slough properties has been shown to be extremely high in total dissolved solids, chloride and bromide. Implementing the Project would eradicate groundwater fluxes into and out of the Canal and improve water quality delivered to customers as well as generating water supply benefits, as salinity in the Canal affects water supply operations at a local and statewide level. A more detailed description of the water supply benefits that can be achieved by implementing the Project is described below. In addition, decreasing the bromide flux into the Canal will also help reduce bromate formation during the disinfection process.

Water Supply Benefits

Implementation of the proposed Project would yield significant water supply benefits at the local, regional and Statewide levels. There are three main water supply benefits that will be achieved by the completion of the Project: 1) CCWD will retain more water in Los Vaqueros Reservoir and thereby improve availability and reliability of emergency water supplies for CCWD customers and partner agencies; 2) water quality at Pumping Plant 1 will improve, allowing the Central Valley Project / State Water Project (CVP/SWP) to release less water from upstream reservoirs to meet water quality standards at Rock Slough (compliance measured at Pumping Plant 1) promulgated by the State Water Resources Control Board Decision 1641; 3) because water quality at Pumping Plant 1 will improve, CCWD can shift pumping away from the Old and Middle River Intakes and CVP/SWP will gain operational flexibility and possibly increase maximum exports during times when export operations are normally constrained by Old and Middle River flow regulations.

1. Emergency Supply Benefits for CCWD Customers

CCWD owns and operates four intakes in the Delta, as well as the Los Vaqueros Reservoir and two raw water treatment plants. CCWD operations are designed to limit delivered chloride concentrations to 65 mg/L or less. Completion of the Project will improve water quality at the Rock Slough Intake and Pumping Plant 1 located at the downstream end of the unlined Canal. The improvement in water

quality will enable CCWD to use the Pumping Plant 1 more often to meet a greater portion of customer demand that was previously met by using other intakes and releases from the Los Vaqueros Reservoir. This will effectively decrease CCWD's need to use the reservoir to meet 'normal' demand, thereby increasing the minimum amount of water in the reservoir at any given time, resulting in increased emergency supply reserves.

CCWD is a wholesale water supplier to three of water suppliers in the East County Region (City of Pittsburg, City of Antioch, Diablo Water District). The city of Brentwood has a Delta surface supply purchased from ECCID that is diverted by CCWD at its Delta intakes, which is supplemented with local groundwater. CCWD serves a portion of Brentwood that lies within its service area boundaries. CCWD also has emergency agreements with East Bay Municipal Utility District. Improving current and future water supply reliability under all hydrologic conditions is a critical regional need, due to CCWD's current heavy reliance on Delta supplies.

2. Statewide Water Savings to Meet Water Quality Regulations

Water quality in the Contra Costa Canal affects both CCWD operations and statewide CVP/SWP operations. The federal and state water projects are required to meet state water quality objectives defined by the State Water Resource Control Board Decision 1641, and compliance with two state water quality objectives are measured at Pumping Plant 1. One of the D-1641 objectives specifies that salinity in the Contra Costa Canal as measured at Pumping Plant 1 (PP1) must be below 150 mg/L in chloride for a minimum of 155 days per year and up to 240 days per year, depending on water year type. The second objective specifies that water quality at Pumping Plant 1 must be below 250 mg/L in chloride to comply with the secondary maximum contaminant level (MCL). Although compliance with these standards does not often dictate statewide water operations, there are times when CVP/SWP reservoirs must make releases specifically to meet these water quality objectives.

There are three sources of salinity and contamination in the Canal: 1) seawater intrusion from the ocean into the Delta, 2) groundwater intrusion from an elevated water table adjacent to the Canal, and 3) agricultural return flow from adjacent farms and ranches. Salinity in the Canal from seawater is naturally variable due to the variation in hydrologic conditions and tidal forcing. When freshwater outflow from the Delta dominates, water in the Canal is relatively fresh because the river flow is sufficient to keep seawater downstream of the Delta. Conversely, when there is low freshwater outflow from the Delta, water in the Canal is relatively salty because seawater mixes upstream into the Delta. Salinity from the other two sources, groundwater and agricultural return flow, largely result from human activities and will be eliminated by implementing the Project. Eliminating the two "human derived" sources of salt will improve water quality in the Canal and will, in turn, provide SWP/CVP water supply benefits by allowing increased operational flexibility.

Because compliance with the regulatory standards is measured at PP1, which is located at the downstream end of the unlined Canal, degradation incurred along the unlined portion of the Canal from groundwater intrusion and agricultural runoff can result in increased releases from CVP/SWP reservoirs. Historical land use practices adjacent to the unlined Canal, such as land disposal of sewage, agricultural drainage, and cattle grazing, have resulted in significant water quality degradation in the unlined Canal. Implementing the Project will eliminate salinity intrusion from groundwater and direct agricultural runoff thereby decreasing the salinity at Pumping Plant 1 and decreasing the amount of water CVP/SWP need to release from upstream reservoirs to meet the water quality standards.

3. Statewide Water Supply Benefits during ‘OMR’ Regulations

Conflicts between the need to divert water from the Delta and the legal requirement to protect endangered species can result in pumping restrictions that severely limit the quantity of Delta water allowed to be withdrawn in a given year. The CVP and SWP are subject to flow restrictions from January through June each year to protect endangered species such as Delta smelt. One of these restrictions limits the amount of exporting by regulating flow in Old and Middle Rivers (“OMR”). CCWD maintains four intakes in the Delta: Mallard Slough Intake, Rock Slough Intake (Pumping Plant 1), Old River Intake, and Middle River Intake. Completion of the Project would enable CCWD to shift diversions from the Old and Middle River Intakes to Pumping Plant 1, thereby providing CVP/SWP with enhanced operational flexibility during critical regulatory windows, and increasing the amount of water available for export while complying with OMR regulations.

Natural Resources Benefits

Ecosystem restoration and habitat protection are linked to protecting the water quality and water supply reliability in East County. Protecting Delta water quality protects source water for the region and improves ecosystem habitat for the Delta’s aquatic species while also protecting them from the harmful impacts of degraded water quality. Promoting the recovery of the Delta’s endangered fish species improves water supply reliability by reducing regulatory conflicts between the legal requirements to protect endangered species and project operations to divert water from the Delta and. Tidal wetland and riparian restoration projects can sometimes create habitat for endangered species while at the same time reducing the amount of polluted runoff flowing into the Delta – a win for water quality, endangered species, and water supply reliability.

The Project will protect natural resources of the Delta and promote habitat restoration for sensitive species. Although construction of the full Project is not complete, the mitigation for the full Project is complete. CCWD purchased 47 acres of wetland and 98 acres of upland habitat as mitigation for the full Project. These lands provide habitat for species of concern such as Delta smelt, longfin smelt and the giant garter snake. Completion of the full Project will also promote the completion of the Department of Water Resources’ (DWR’s) Dutch Slough Tidal Marsh Restoration Project. DWR’s Dutch Slough Tidal Marsh Restoration Project will restore a tidal wetland just to the north of the Project. The Project is a critical early action to improve the ecosystem health of the Sacramento-San Joaquin Delta. Completion of DWR’s Dutch Slough Tidal Marsh Restoration Project is legislatively mandated (SBX7-1 Section 85085) and dependent on the construction of 11,000 ft of the pipeline adjacent to the Dutch Slough project site.

Purpose and Need

The full, five-phased Contra Costa Canal Levee Elimination and Flood Protection Project will replace 21,000 feet of the unlined Canal with a pipeline to reduce regional flood risk by eliminating up to eight miles of aging Canal embankments (unconsolidated dredging spoils from the original construction) that were not designed to provide flood protection and installing a Canal flood isolation structure that will allow CCWD to remotely isolate the Canal following a major flood or earthquake. Secondary benefits include improving water supply at the state and local levels, improving delivered water quality delivered to CCWD customers, improving operational flexibility, improving water supply reliability, and improving public safety by preventing access to the open water Canal.

As described previously, the Canal levees in the unlined portion are in poor condition; they are composed of unconsolidated dredging spoils from the original construction, are not designed to provide flood protection, and are not seismically sound. Based on historical water levels, flood frequency curves for the area, and previous damage to the Canal, there is at least a 2% chance of Canal embankment failure in any given year, resulting from hydrologic events. At least seven square miles are currently at risk of flooding if the Canal embankments fail, including housing developments, roads, small businesses, active gas wells, and working farms. There is currently a population of 10,000 in the immediate area that could sustain flood damage in the event of a Canal embankment failure. By 2020, ongoing residential development will result in 30,000 residents at risk including three primary/secondary schools. Failure of the Canal would also compromise the water supply for nearly 500,000 people in the CCWD service area.

The proposed Project will eliminate the flood risk posed by a Canal failure and reduce flood risk to the region. By eliminating the Canal embankments and upgrading the Dutch Slough levees, the risk of major flood damage in the region decreases from 2% in a given year to 0.5% or less. The flood isolation structure, which will begin construction in 2014, will enable CCWD to isolate the Canal and prevent water from flowing through the breach and flooding adjacent land. The structure will be constructed from the existing Rock Trash Rack to the upstream inlet of the pipeline, near the new Rock Slough Fish Screen, and includes remote monitoring of water level and a remote controlled, automatically actuated slide gate at the pipeline inlet. While the isolation structure will limit the extent of flood damage once CCWD has been alerted to a flood or canal failure, it will not decrease the risk of embankment failure currently posed by the unlined Canal. Until all segments of the Canal are encased in a pipe, there is risk of flooding due to overtopping and / or failure of existing berms as a result of hydrologic conditions. Encasing the Canal in a pipe will eliminate the flooding risk for the region currently posed by the Canal. The flood isolation structure will help ensure flood damage is minimized until the entire Canal can be encased.

By encasing the Canal in a buried pipeline, virtually all concerns with regard to system security and public safety are alleviated as well. Fences will be maintained along the 300-foot right of way boundary, maintenance roads will be maintained, and security personnel will patrol the area.

The Canal was developed as part of the Central Valley Project in the 1930s. The Canal is an integral part of the water delivery system for CCWD. Prior to the completion of Los Vaqueros Reservoir in 1997, the Canal supplied nearly 100 percent of the water to CCWD's service area. Since the completion of the Los Vaqueros Reservoir, the Canal transports approximately 30 percent of the annual water diverted by CCWD, provides critical operational flexibility for untreated water service between Pumping Plant 1 and Pumping Plant 4, and is needed to supply CCWD's service area when the reservoir is being filled.

Without the use of the Canal, more water will need to be released from Los Vaqueros Reservoir to meet demands and the time to refill the reservoir increases substantially, leading to an overall decrease in water supply reliability, reduction in overall ability to meet water quality objectives, and significant increase in cost of water. The benefits of CCWD's investment in the Los Vaqueros Project and the Middle River Intake Project would also be significantly diminished without use of the Canal. In addition, several customers (between Pumping Plant 1 and Pumping Plant 4) are entirely reliant upon the Canal for surface water deliveries, including agricultural users and the City of Brentwood. Due to regulatory restrictions on diversions from the Delta, CCWD may be required to release water from Los Vaqueros during times when storage is diminished, reducing CCWD's ability to respond to an emergency.

According to the 1997 Seismic and Reliability Improvement Project report on seismic risk and reliability of CCWD's complete distribution system, the unlined portion of the Canal was one of the least reliable portions of the system due to potential soil liquefaction and power outages at Pump Plant #1. The Los Vaqueros Reservoir and new intake facilities are more reliable than the Canal; consequently, encasing the Canal has been part of CCWD's long term capital improvements program.

Additional negative impacts associated with Proposal non-implementation may include:

- Local Flood Damages: If the Project is not completed, the risk of flood-related damages under catastrophic failure of the earthen embankments, Delta levee failure, or a significant seismic event will persist, inundating adjacent areas, damaging property, and endangering the public.
- Water Supply Impacts: Without the Project, degraded water quality at Rock Slough Intake will increase the amount of water upstream reservoirs must release to meet the Rock Slough water quality standard. Similarly, CCWD will also need to release more water to its delivered water quality goals.
- Local Water Supply Reliability Impacts: The proposed Project is also needed to improve supply reliability. Without this Project CCWD will rely more heavily on other infrastructure and will be more vulnerable to supply interruptions in the event of drought. Large quantities of Los Vaqueros Reservoir supplies will continue to be needed to blend with Delta supplies to meet treated water quality targets.
- Delta Water Quality Impacts: The proposed Project is needed to prevent water quality degradation for CCWD's raw and treated water customers. Without this Project, 500,000 people will continue to be impacted by water quality degradation caused by intrusion of saline groundwater.
- Public Endangerment, Injury and Death: At least 24 fatalities have occurred due to drowning in the open Canal since 1972 alone. If the Project is not completed, drownings in the Canal will continue to occur. In addition, failure of the Canal embankments could result in inundating adjacent homes, damaging property, and endangering the public.
- Failure to Comply with Legislative Mandate: DWR's legislatively mandated (SBX7-1 Section 85085) Dutch Slough Tidal Marsh Restoration Project cannot be completed without prior completion of the Project. DWR's Project is dependent on the construction of 11,000 ft of the pipeline adjacent to the Dutch Slough Project site. Without Prop 1E Round 2 funding to replace the Canal, full implementation of the DWR Dutch Slough Tidal restoration project is expected to be delayed for up to 10 years.

Consistency with Basin Plan

The Canal is located within Region 5, while portions of CCWD's service area that ultimately receive water that has been conveyed by the Canal are located in Region 2. This proposal is consistent with the Basin Plans for both the Central Valley (Region 5), and the San Francisco Bay Area (Region 2). Each Basin Plan identifies water quality objectives for water bodies within its respective region. Notably, the Region 5 Basin plan identifies water quality objectives for the Sacramento-San Joaquin Delta, based on determined beneficial uses. The Basin plan lists the following existing beneficial uses for the Sacramento-San Joaquin Delta:

- Municipal and Domestic Supply (Existing)
- Agricultural Supply – Irrigation and Stock Watering (Existing)
- Industrial Supply – Process and Service Supply
- Recreation - Contact and Other Non-Contact
- Freshwater Habitat – Warm and Cold
- Migration – Warm and Cold
- Spawning – Warm
- Wildlife Habitat
- Navigation

Similar beneficial uses have been determined for potentially affected water bodies in Region 2. Further, all groundwaters in Regions 2 and 5 are considered suitable, or potentially suitable, for municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply, unless otherwise designated by the appropriate Basin Plan.

As described previously, in addition to providing enhanced flood protection, this Proposal seeks to improve both drinking water and receiving water quality. This Project will benefit water quality in Regions 5 and 2, and is therefore consistent with the appropriate Basin Plan(s). Specific water quality objectives for surface waters in the Region 5 and 2 Basin Plans include the following.

- | | | | |
|--------------------------------|---|-----------------------|-----------------------------------|
| • Bacteria | • Dissolved Oxygen | • Pesticides | • Sulfide ¹ |
| • Bioaccumulation ¹ | • Floating Material | • Radioactivity | • Tastes and Odors |
| • Biostimulatory Substances | • Mercury | • Salinity | • Temperature |
| • Chemical Constituents | • Methylmercury | • Sediment | • Toxicity |
| • Color | • Oil and Grease | • Settleable Material | • Turbidity |
| | • pH | • Suspended Material | • Un-ionized ammonia ¹ |
| | • Population and community ecology ¹ | | |

The proposed Project will prevent intrusion of saline groundwater into the Canal, directly contributing to achievement of Basin Plan chloride objectives for Canal. This Project would also be expected to improve taste and odor in delivered water. The Project is consistent with the Region 5 Basin Plan, which includes water quality objectives for the Canal.

¹ Included in Region 2 Basin Plan only

While the Project-level reductions in pollutant loading and improvements in parameter concentrations noted above are generally expected to be too small to measure, the overall effect is an improvement in water quality, consistent with both Region 2 and Region 5 Basin Plan objectives.

Project Integration

The Contra Costa Canal Levee Elimination and Flood Protection Project and the Dutch Slough Tidal Marsh Restoration Project to the north of the Canal are intrinsically related, and the completion of both projects would substantially increase regional flood protection and reduce flood risk. By eliminating the Canal embankments and upgrading the Dutch Slough levees, the risk of major flood damage in the region decreases from 2% in a given year to 0.5% or less. The Dutch Slough Project Environmental Impact Report (EIR) commits to avoiding impacts from flooding the restoration area adjacent to the unlined Canal. The most effective way to avoid impact from the Dutch Slough project to the unlined Canal is for the unlined Canal to be in a pipeline prior to the Dutch Slough Project being constructed. The Project benefits from being constructed prior to the Dutch Slough project since the Project requires staging and dewatering areas that can easily be made available before the Dutch Slough Project is constructed.

Dutch Slough Tidal Marsh Restoration Project Description

The Dutch Slough Tidal Marsh Restoration Project would restore and enhance tidal marsh habitat within a 1,178-acre restoration area, which is bounded on the south by the Contra Costa Canal, on the west by Marsh Creek, on the north by Dutch Slough, and on the east by Jersey Island Road. The restoration area encompasses three separate parcels, each of which is protected from flooding by separate levee systems. Major components of the restoration project include restoration of tidal and non-tidal marsh habitats, tidal channels, riparian forest, subtidal open water habitat, and native grassland; protection of neighboring properties and existing infrastructure through construction and rehabilitation of flood protection levees; and development of public access infrastructure.

To avoid increasing regional flood risk associated with the Dutch Slough Tidal Marsh Restoration Project, DWR is proposing three major levee enhancement tasks:

1) DWR proposes to construct a new flood protection levee along the southern boundary of the restoration area to maintain or improve the existing level of flood protection for properties to the south. The southern flood protection levee, which would generally follow the southern boundary of the Project site, would require crossing Little Dutch Slough and would include installation of a new drainage culvert and flap gate in Little Dutch Slough at the levee crossing. This levee segment would maintain or improve the existing level of flood protection for these areas. Levee crest elevation would be approximately 10 feet NGVD, which would provide 3 feet freeboard above the 100 year water level (Federal Emergency Management Agency [FEMA] base flood elevation). The levee will have a base wide enough to support the construction of additional height to accommodate future sea level rise.

2) DWR proposes to shift the alignment of the eastern flood protection levee from the eastern Project boundary to an alignment on higher ground, and in a location that reduces cost and fill volumes. The new levee alignment would follow Jersey Island Road on the southern portion of the Burroughs parcel, bisect the parcel between the enhanced irrigated pasture and the restored marsh area, and connect with the existing flood protection levee on the east side of Little Dutch Slough. This Eastern Levee Segment would be built on the Burroughs parcel to protect existing on-site infrastructure (i.e., natural

gas wells, transmission lines, etc.) and lands to the east from flooding. The new levee would be bisect the parcel between the enhanced irrigated pasture and restored marsh, and would connect with the existing flood protection levee on the east side of Little Dutch Slough.

3) DWR proposes to remove and replace portions of the existing outboard levee armoring along Dutch Slough, Emerson Slough, and Little Dutch Slough for public safety, stability, and flood protection purposes.

Linkage Between Dutch Slough Tidal Restoration Project & CCWD Project

A significant amount of historical observations and reports indicate that the soils along the Canal are highly conductive and groundwater intrusion from adjacent properties has been identified as a significant source of salinity and other compounds that degrade water quality in the Canal. Historical land use practices adjacent to the Canal, including land disposal of wastewater from ISD, have elevated groundwater levels on the adjacent lands relative to water level in the Canal and created a net flow of groundwater into the Canal. The DSTMRP will create tidal wetlands to the north of the unlined Canal, which would raise groundwater levels relative to the Canal and increase saline groundwater intrusion from the tidal marsh into the Canal. Groundwater on the Dutch Slough properties has been shown to be extremely high in total dissolved solids, chloride and bromide. To avoid significant water quality impacts to CCWD associated with increased groundwater levels resulting from wetland creation, the restoration project cannot be completed until the Contra Costa Canal is encased. As specified in Mitigation term 3.1.1-5 of the Dutch Slough EIR Mitigation Monitoring and Reporting Program (MMRP), "To avoid potential negative impacts to water quality within the Contra Costa Canal from groundwater intrusion, breaching of the Dutch Slough project site will not commence until encasement of the Canal south of the site is complete." Therefore, it is imperative that the Contra Costa Canal Levee Elimination Project be completed prior to implementation of the DSTMRP so that the full benefits of both projects, including substantial flood risk reduction for the region, can be realized.

Regional Flood Benefits

Together, both projects will increase the flood protection for the region by eliminating Canal berms that were not designed to protect against flooding, and by installing new levees on adjacent lands. Based on historical water levels, flood frequency curves in the area, and previous damage to the Canal, there is a 2% chance of major failure in the Canal embankments any given year. The proposed Dutch Slough levees are designed for the 200-year storm event, with room to accommodate future sea level rise. By eliminating the Canal embankments and upgrading the Dutch Slough levees (which will happen as part of the DSTMRP, which cannot proceed until the Canal has been encased in a pipeline), the risk of major flood damage in the region decreases from 2% in a given year to 0.5% or less. In addition to the flood protection benefits posed by the Contra Costa Canal Levee Elimination Project itself, the flood protection benefits of the DSTMRP can only be realized through implementation of the proposed Project.

Summary of Completed Work and Existing Data and Studies

Significant work has been completed on the Project to-date.

- Environmental documentation has been largely completed in accordance with the California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA). A Negative Declaration was adopted by the CCWD Board in November 2006; it was determined that the Project will not have significant effects on the environment. A Finding of No Significant Impact (FONSI) was approved by Reclamation in July 2007.
- Design of pipeline segments 2-4 was completed in June 2011.
- Several permits and agreements were secured in 2007, including: Central Valley Regional Water Quality Control Board 401 Permit, CA Department of Fish and Game 1600 and 2081 Permits, State Historic Preservation Officer MOU, US Army Corps of Engineers 404 Permit, National Marine Fisheries Service Letters of Concurrence, US Fish and Wildlife Coordination Act Letter, and Bureau of Reclamation/Western Area Power Administration (WAPA) NEPA EA/FONSI. These permits will be updated based on the latest project information.
- In addition, Phase 1 of the Project, which included encasing 1,900 linear feet of pipeline from Pump Station #1 to Marsh Creek, has been completed.
- All phases of construction impact for fill of jurisdictional wetlands are fully mitigated. Completed environmental mitigation has included 98 acres of upland habitat and 47 acres of wetland habitat in the adjacent Holland Tract.
- The District will seek to a new Department of Fish and Game (DFG) Giant Garter Snake Incidental Take Permit (2081 permit) specific to the Segment (in this grant request, Segment 3) of the unlined Canal that is being replaced. The 2007 permit is specific to Segment 1.
- The District will be seeking a Limited Threat Discharge permit from the Central Valley Regional Water Quality Control Board in the event that shallow ground water cannot completely be discharged to surround available land.

Completed plans and specifications have been provided as separate files to this Attachment.

Integrated Elements of Proposed Project

The proposed Project is capable of providing the benefits claimed in the absence of other projects; as a result, implementation of the tasks described in this Attachment will yield full benefits, and the schedules of proposed Projects are not interdependent. However, this Project is an element of a larger program, and funding received through this grant opportunity will be leveraged to implement a component of a larger project.

The specific Project being proposed for funding is a component of a larger program to encase the Canal to reduce the risk of flooding, provide water quality benefits, and enhance public safety. Construction of the full Project is multi-phased. In total, there are five construction phases of the Project, which may be completed in series or in parallel. The first segment of the Project, completed in 2009, installed approximately 1,900 linear feet of pipeline from CCWD's Pumping Plant 1 to Marsh Creek.

The Project is also linked to DWR's Dutch Slough Tidal Marsh Restoration Project; both projects are listed as early actions in the Interim Delta Plan. The completion of DWR's Dutch Slough Tidal Marsh Restoration Project is legislatively mandated (SBX 7-1) and is dependent on the construction of 11,000 ft of the pipeline adjacent to the Dutch Slough project site. Mitigation term 3.1.1-5 of the Dutch Slough EIR Mitigation Monitoring and Reporting Program states "To avoid potential negative impacts to water quality within the Canal from groundwater intrusion, breaching of the Dutch Slough Tidal Marsh Restoration Project site will not commence until encasement of the Canal south of the site is complete."

Timing and Phasing

As described previously, construction of the Project is multi-phased. The first phase of the Project, completed in 2009, installed approximately 1,900 linear feet of pipeline from CCWD's Pumping Plant 1 (PP1) to Marsh Creek. Permitting and mitigation negotiations for the full Project were completed in 2007, and CCWD acquired wetland and upland habitat (burrowing owl & giant garter snake) mitigation land at Holland tract. CCWD has also acquired 47 acres of wetland and 98 acres of upland habitat through Wildlands, Inc.

The phases of the Project included in this proposal and subsequent phases of the Project will involve installing a pipeline starting at the terminus of the completed Project and extending the pipeline eastward toward the Rock Slough Fish Screen. The portion of the Project included in this proposal involves installing approximately 5,000 feet of pipe and replacing the Canal embankments along the portion of the unlined Canal immediately adjacent to the Dutch Slough Properties (Figure 3-1).

The Project Segments adjacent to the Dutch Slough Tidal Restoration Project assumed that construction easements of approximately 200 feet would be available. In addition, the application of shallow groundwater on the DWR properties proposed for restoration would be an effective method for avoiding dewatering of shallow groundwater within Rock Slough. Segment 1 construction used the Emerson property to dispose of much of the shallow ground water. Shallow groundwater was used on pasture lands to support livestock grazing.

Depending on the timing of Proposition 1E Round 1 Grant Agreement Amendment request it is possible that implementation of construction of both Round 1 and Round 2 1E Grants could occur starting in 2014. This would create a very efficient project in terms of Project construction contracting. Assuming Canal full construction begins in 2014 and is completed by 2017, then the Dutch Slough Project would commence in 2018 with expected fully success by 2023.

Tasks

This section includes a detailed discussion of the various tasks needed to implement the proposed Project. In accordance with the PSP, this section specifically addresses the following:

PSP Requirements

- ✓ Tasks are detailed and complete in order to demonstrate that projects can be implemented
- ✓ Work Item submittals are clearly indicated for each of the tasks
- ✓ A list of project permits and their current status, is provided
- ✓ The status of environmental compliance activities is discussed
- ✓ If applicable, plans and specifications have been submitted to demonstrate consistency with the design tasks noted in the Work Plan
- ✓ Scientific and technical information has been submitted to demonstrate feasibility
- ✓ There is a discussion of the data management and monitoring deliverables
- ✓ There is a site map showing the geographical location and site boundaries
- ✓ In addition, the project write-up below includes a discussion of the required items listed on page 31 of the PSP:
 - Description of work to be performed and current status of each task
 - Procedures by which the applicant will coordinate with its partner agencies
 - Discussion of standards used in implementation
 - Development of performance measures and monitoring plans
 - Discussion of acquisition of land or rights-of-way status
 - Discussion of merits of materials and computational methods

Project Summary:

CCWD's Project is needed to reduce the flood risk currently posed by the Canal. At least seven square miles are currently at risk of flooding if the Canal levees fail, including housing developments, roads, working farms and a tidal marsh restoration project. The full Project will replace four miles of the unlined portion of the Canal with a pipeline and eliminate eight miles of aging embankments. Other benefits of the Project include improving source water quality by preventing intrusion of saline groundwater, improving public safety by eliminating the drowning risk of the open water Canal, and improving CCWD's water supply reliability.

Construction of the Project is multi-phased. The first phase (Segment 1, see Figure 3-1) of the Project, completed in 2009, installed approximately 1,900 linear feet of pipeline from CCWD's Pumping Plant 1 (PP1) to Marsh Creek. Segments 2 through 4 will extend the pipeline from the end of Phase 1, through Marsh Creek, to just beyond Cypress Rd where Segment 5 begins. The phases of the Project included in this proposal and subsequent phases of the Project will involve installing a pipeline starting at the terminus of the completed Project and extending the pipeline eastward towards the Rock Slough Fish Screen. The portion of the Project included in this proposal involves installing approximately 5,000 feet of pipe and replacing the Canal embankments along the portion of the unlined Canal immediately adjacent to the Dutch Slough Properties. Permitting and mitigation negotiations for the full Project

were completed in 2007. CCWD acquired wetland and upland habitat (burrowing owl & giant garter snake) mitigation land at Holland tract. CCWD has created 47 acres of wetland and 98 acres of upland habitat through the Wildlands Company. CCWD will provide a CEQA Amendment for the next phase of construction and will advise the permitting agencies of any recommended permit modifications or amendments.

The Project has been identified as an Early Action by the Delta Stewardship Council in the Interim Delta Plan. If the Project does not move forward quickly, DWR's Dutch Slough Tidal Marsh Restoration Project (legislatively mandated, SBX7-1 Section 85085) will be delayed. In addition, if the Project does not move forward, flood risks will persist if not increase, and water quality will continue to degrade, necessitating more treatment and more water released from storage to meet water quality delivery goals.

Technical Documentation:

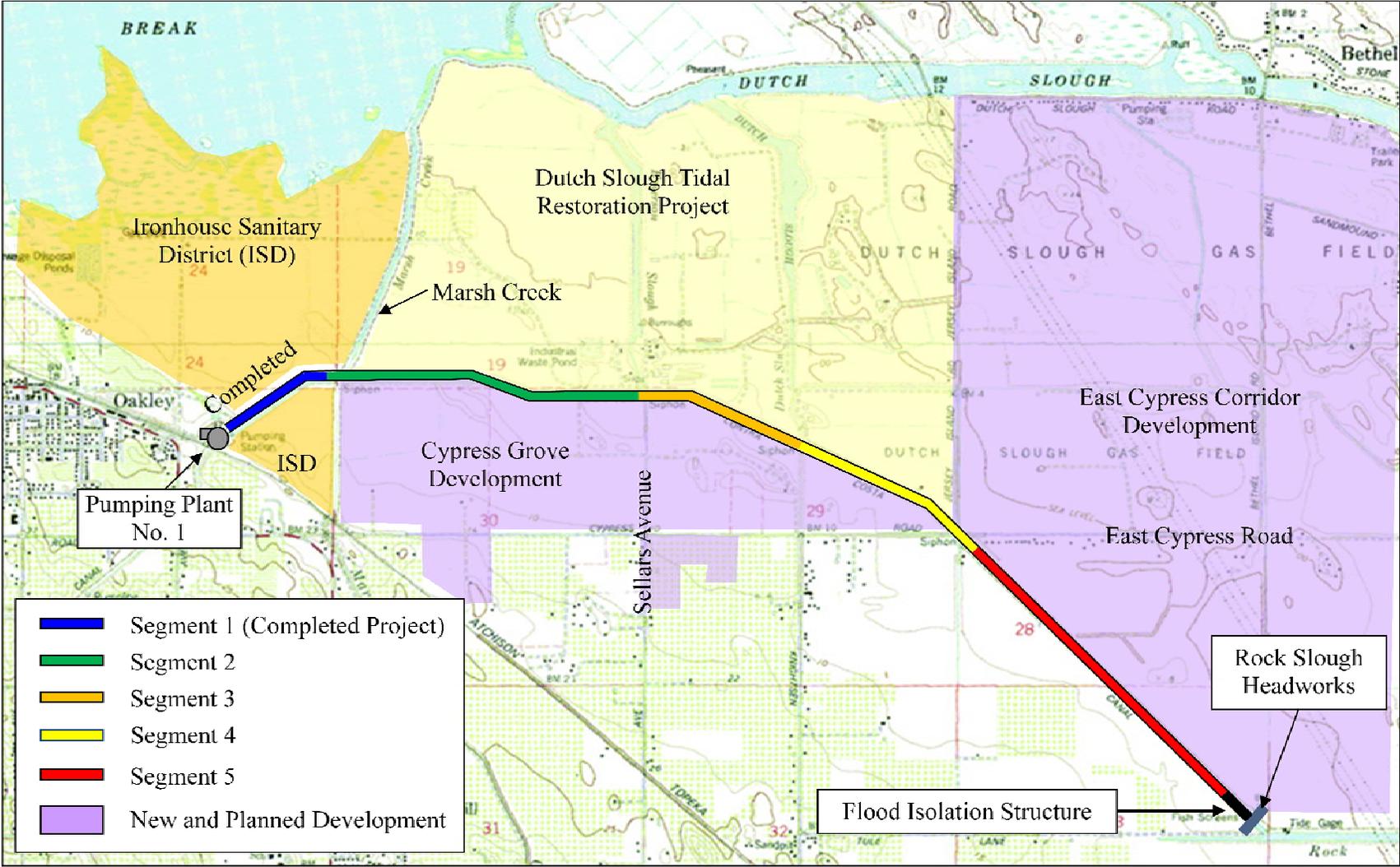
Technical documents that support the feasibility of this Project include:

- Preliminary and Final Design
- Environmental Documentation
- Seismic Reliability Improvements Project, 1997
- Geotechnical Engineering Report Intake Channel Levees Contra Costa Canal, 2000
- Geotechnical Engineering Investigation Contra Costa Water District Canal Replacement Project, 2007

Project Map:

The Project Map is provided on the following page.

Figure 3-3: Project Phases



Task 1 – Project Administration Tasks

Project administration tasks will include overall project administration and management, development of a Labor Compliance Program, and project reporting (including reporting on project monitoring and assessment).

Current Status:

No work has been completed on this task to-date.

Proposed Work Tasks & Deliverables:

Project administration tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
1. Administration	This task involves general project administration including coordination with project partners and preparation of project invoices. In addition, this task includes development of the quarterly, annual and final reports required by the Grant Agreement and development of the Labor Compliance Program.	Invoices Quarterly, Annual and Final Reports Labor Compliance Program

Task 2 – Land Purchase/Easement Tasks

An easement will be required to be obtained from adjacent landowners to allow construction contractor access, staging, and dewatering disposal through irrigation of existing farmlands. It is anticipated that temporary construction easements will be acquired from DWR, the owner of the northern parcels adjacent to the project, at no cost to the project (as has been the case in previous phases). The cost of dewatering disposal will be dependent upon available lands, but has been estimated based on the cost of similar dewatering agreements from the Phase 1 project, which totaled \$150,000.

Current Status:

CCWD is currently working with DWR staff involved with the Dutch Slough Tidal Restoration Project and coordinating project schedules to ensure that construction of this segment of the project will coordinate with plans for that project. The key coordination element is timing of construction of the DSTRP levees along the northern boundary of the Canal Right of Way. The DSTRP construction timing aligns well with the need for a 100-foot wide TCE’s along the northern Canal property line.

Proposed Work Tasks & Deliverables:

Land purchase / easement tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
2. Land Purchase / Easements	Obtain easements from DWR for contractor access, staging, and dewatering disposal through irrigation of existing farmlands. Obtain additional dewatering disposal agreements with other local farm landowners.	Easement descriptions and final easement and dewatering agreements

Task 3 – Planning/Design/Environmental Documentation Tasks

Project planning is complete, design is nearly complete, and environmental documentation has been filed.

Current Status:

Planning and Design Status. Project design is nearly complete, with 99% design plans, specifications and final construction cost estimate already prepared. The final design will be completed in January 2015, consistent with the timing to award and begin construction after completion of the Segment 2 work.

Environmental Documentation Status. Environmental documentation is largely complete. CEQA was satisfied through filing of a Notice of Determination on Nov 30, 2006. The Project was found to have no significant effects on the environment. NEPA was satisfied through filing of a Finding of No Significant Impact (FONSI) on July 11, 2007. CEQA and NEPA may be amended and updated based on the latest field conditions.

Permitting Status. All applicable federal, state, and local permit applications have been filed and issued. Some of the permits will be updated or modified based on project conditions. Permits are summarized in the following table.

Permit	Status
Central Valley Regional Water Quality Control Board 401 Permit	Approved in March 2007.
CA Department of Fish and Game 1600 Permit (25 year permit)	Approved in September 2007. Notification of the new project segment will be provided to DFG and as well as any recommended permit modifications.
CA Department of Fish and Game 2081 Permit	Approved in October 2007. To be updated for the specific phase of project construction.
State Historic Preservation Officer MOU	Approved in October 2007.
US Army Corps of Engineers 404 Permit (10 year permit)	Approved in August 2007.
National Marine Fisheries Service Letters of Concurrence	Approved in June 2007.
US Fish and Wildlife Coordination Act Letter	Approved in July 2007.
Bureau of Reclamation/Western Area Power Administration NEPA	Approved in July 2007 (subject to further review by Reclamation).

Permit	Status
EA/FONSI	

Proposed Work Tasks & Deliverables:

Project planning is complete, and environmental documentation has been filed. Final design will be completed as part of this Project.

Task	Description	Deliverables
3.1. Planning	Complete planning-level assessment of project feasibility (complete)	Not applicable
3.2 Design	Preparation of complete design documents including bid-ready plans and specifications (to be completed in January 2015) will coincide with advertising for bidding to begin construction at the completion of Segment 2 construction.	100% Design
3.3 Environmental Documentation	CEQA / NEPA Documentation is largely complete. A CEQA Addendum will be prepared for the next segment of project construction. The Addendum will recognize changing conditions since CEQA was adopted in 2006. Permits will be updated to capture project construction changes. Reclamation review of the CEQA Addendum may result in a NEPA EA/FONSI Update. The Project requires the use of substantial property for the application of shallow groundwater from wells adjacent to pipeline construction. If insufficient land is available to accept all of the shallow ground water the District will seek permit authority to apply shallow groundwater into Rock Slough via a Limited Threat Discharge Permit.	Not applicable

Task 4 – Construction/Implementation Tasks

Construction tasks for the proposed Project are described below.

Current Status:

The initial phase of this Project, which included 1,900 feet of pipeline from Pump Station #1 to Marsh Creek, has been completed. The second segment of this Project, which will construct approximately 5,000 feet of pipeline from the end of Segment 1 (west of Marsh Creek) through Marsh Creek along the Dutch Slough Tidal Restoration Project, is scheduled for construction beginning in Fall 2013 and completion in Winter 2015. That project will also install a Flood Isolation Structure at the headworks of the Canal at Rock Slough. This project will complete construction of Segment 2 and continue with construction of Segments 3 and 4. Timing of this project will coincide with the completion of the

ongoing Segment 2 construction, with site clearing to begin concurrently; however, pipeline construction for this project will not be concurrent with the ongoing Segment 2 work to avoid conflicts and restrictions on available construction groundwater disposal land.

Proposed Work Tasks & Deliverables:

Construction phase tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
4.1 Construction Contracting	This task includes all of the items necessary for entering into a construction contract, including bid advertisement, pre-bid conference, providing specific details and answering bidding questions, awarding the Project, holding a pre-job meeting , and meeting with the selected contractor and sub-contractors.	Construction Contract
4.2 Construction	Includes all construction-related tasks necessary to complete project implementation.	Completed facility
4.2.1 Mobilization & Closeout	Contractor insurance, submittals, material procurement and other initial project setup work	Construction Submittals
4.2.2 Site Clearing	Clear and grub the Project area, including removal of grass, weeds and other material, and complete environmental clearances.	Environmental clearance reports
4.2.3 Dewatering	Install groundwater dewatering wells and piping to remove and dispose of excess groundwater to allow pipeline construction	Installed groundwater dewatering wells
4.2.4 Bypass Pipeline and Pumping (if required)	District to supply approximately 20 cfs through a gravity bypass around PP4 to provide water supply to untreated water customers served from the Canal between PP1 and PP4 during construction. Depending upon water supply conditions at the time, the District may need to install and operate an approximately 20 cfs pumping system to ensure sufficient water supply to CCWD while the Canal is isolated.	Installed and operational bypass pumping
4.2.5 Procure and Fabricate Pipe	Order and fabricate the 10-foot diameter concrete pipeline	Pipeline Submittals
4.2.6 Pipeline Installation	Install pipeline from the existing Phase 1 terminus to Marsh Creek, and from the end of the Marsh Creek Crossing to the east to the transition structure	Marsh Creek pipeline

Task	Description	Deliverables
4.2.7 Transition Structure	Install an earthen transition structure from the end of the pipeline back to the Canal with rip-rap armored embankments.	Transition Structure
4.2.8 Import Fill Material and Grading	Import fill material to increase the final grading elevation to prevent drainage onto the right of way. Complete final grading and install access roads.	Final grading and access roads
4.2.10 WAPA Relocation	WAPA will lower the existing WAPA power poles on the southern levee, which will be completed through an agreement with WAPA.	WAPA agreement and lowered WAPA poles

Task 5 – Environmental Compliance/Mitigation/Enhancement Tasks

Environmental compliance and mitigation will include fish rescue, pre-construction surveys, biological monitoring, and weekly inspections.

Current Status:

Completed environmental mitigation for the entire project includes 98 of acres upland habitat and 47 acres of wetland habitat on Holland Tract. All of the wetlands and uplands were constructed in 2009 and 2012. CCWD will follow all DFG requirements regarding mitigation requirements within the 1600 and 2081 permits for the each phase of project construction. This may include financial assurances that created wetlands meet performance standards.

Proposed Work Tasks & Deliverables:

Environmental compliance and mitigation tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
5. Pre-construction surveys, biological monitoring and weekly inspections	Complete biological surveys pre-construction, biological monitoring, and inspections. Fish drive and fish rescue before filling in the Canal.	Biological surveys pre-construction, biological monitoring, and inspections. Agency reports.

Task 6 – Construction Administration Tasks

This task will includes all construction administration activities, including advertisement for bids, bidding, contract award, insurance confirmation and tracking, submittal review and tracking, invoice review and payment, schedule maintenance, and contract closeout.

Current Status:

No work has been completed on this task to-date.

Proposed Work Tasks & Deliverables:

Construction administration tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
6. Construction Administration	This task includes all construction administration activities, including advertisement for bids, bidding, contract award, insurance confirmation and tracking, submittal review and tracking, invoice review and payment, schedule maintenance, and contract closeout	Bid advertisement, responses to requests for information, construction contract award, insurance confirmation, payments, completed punchlist

Task 7 – Other Tasks

This task will include amending CCWD’s existing permit with the Department of Fish and Game.

Current Status:

No work has been completed on this task to-date.

Proposed Work Tasks & Deliverables:

Permitting tasks and deliverables are summarized in the following table.

Task	Description	Deliverables
7. Amend DFG Permits, seek updated Central Valley Regional Water Quality Control Board (CVRWQCB) Dewatering Permit.	This task includes amending CCWD’s existing DFG permits, and securing a CVRWQCB Limited Threat Discharge Permit or Individual Permit.	Amended DFG permits, new Dewatering Permit

Additional Project Information

Additional detail about the Project, as requested by the PSP, is provided below.

Coordination with Partner Agencies:

Because there are no official project partners, required coordination will be minimal. However, CCWD will continue to coordinate with the region through regular participation in the East County Water Management Association.

Standards that Will Be Used in Implementation:

The project design was completed using CCWD’s design standards. Project implementation will comply with industry construction standards as well as health and safety measures.

Performance Measures and Monitoring Plans:

Project monitoring will be conducted to assess and evaluate project performance. Additional information is provided in Attachment 6.

Merits of Materials and Computational Methods:

All applicable and appropriate water quality, building, and construction standards, materials, and methods have been and will be used in implementing the Project. These standards, materials and methods were initially identified in the preliminary design phase, and further documented during final design in the construction plans and specifications. The construction contract documents will contain a detailed description of all applicable standards, materials and methods. The specific construction standards, health and safety standards, laboratory analysis, and accepted classifications methods to be used in implementation can be found in the attached contract drawings and specifications.

Deliverables to DWR:

Quarterly reports will be prepared and submitted to DWR. These reports will include budget progress reports, milestone reports, results of assessments and program evaluations, invoices for billable activity, and goals for the next quarter. A final report will be prepared and submitted to DWR. The final report will consist of a final budget report (matching fund and grant funds accounting), deliverables report, results of programs assessments (copies of reports), and lessons learned.

Additional Supporting Information (Provided on Attached CD):

Appendix A: Environmental & Permitting Documentation (Att3 SWF WorkPlan 2of16)

- **Appendix A-1:** Environmental documentation has been completed in accordance with the California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA). A Negative Declaration was approved on November 2006; it was determined that the Project will not have significant effects on the environment. Reclamation approved a NEPA Finding of No Significant Impact (FONSI) in July, 2007. CEQA Addendum and NEPA modifications will be conducted as required for new phases of construction.
- **Appendix A-2:** Mitigation Monitoring and Reporting Program for the Contra Costa Canal Replacement Project. State Clearinghouse # 2006042082. November 2006.
- **Appendix A-3:** Final Mitigated Negative Declaration for the Contra Costa Canal Replacement Project. November 2006.
- **Appendix A-4:** Final Environmental Assessment Contra Costa Canal Replacement Project, Contra Costa County, California. June 2007.
- **Appendix A-5:** Several permits and agreements were secured in 2007, including: Central Valley Regional Water Quality Control Board 401 Permit, CA Department of Fish and Game 1600 and 2081 Permits, State Historic Preservation Officer MOU, US Army Corps of Engineers 404 Permit, National Marine Fisheries Service Letters of Concurrence, US Fish and Wildlife Coordination Act Letter, and Bureau of Reclamation/Western Area Power Administration (WAPA) NEPA EA/FONSI. These permits may require modification to reflect current field conditions consistent with CEQA Addendum and NEPA updates.
- **Appendix A-6:** Conservation Easement Deed Holland Tract Preserve. Completed environmental mitigation included a total of 145 acres of mitigation land; 98 acres of upland habitat and 47 acres of wetland habitat in Holland Tract.

Appendix B: Engineering & Design Documentation (Att3 SWF WorkPlan 3of16 through Att3 SWF WorkPlan 9of16)

- **Appendix B-1:** Geotechnical Engineering Investigation Contra Costa Water District Canal Replacement Project Oakley, CA. DCM Engineering/Carollo Engineers, November 2007.
- **Appendix B-2:** Recommended Pipeline Alignment. Technical Memorandum. Brown & Caldwell. June 2011.
- **Appendix B-3:** Canal Crossings. Technical Memorandum. Brown & Caldwell. June 2011.
- **Appendix B-4:** Canal Levee Elimination and Flood Mitigation Project Phase 2 – Pipeline. Access Structure Structural Calculations. Brown and Caldwell. June 2011.
- **Appendix B-5:** Cypress Grove Levee Protection. Technical Memorandum. Brown & Caldwell. June 2011.

- **Appendix B-6:** Pumping Plant 1 Test Report. Technical Memorandum. Brown & Caldwell, June 2011.
- **Appendix B-7:** Final Grade Elevations and Imported Backfill. Technical Memorandum. Brown & Caldwell, June 2011.
- **Appendix B-8:** 100% Design Drawings Segments 2 – 4, June 2011.
- **Appendix B-9:** Volume-1-DIV-00-17-FULL, June 2011.
- **Appendix B-10:** Volume-2-Appendices, June 2011.

Appendix C: Flood Benefits Documentation (Att3 SWF WorkPlan 10of16)

- **Appendix C-1:** Photos and narrative description of historical flood damage: RD 1237, Contra Costa Water District Operations and Maintenance Staff
- **Appendix C-2:** Flood frequency curves for Old River at Rock Slough and San Joaquin River at Antioch. Developed by Corps of Engineers, Sacramento California. February 1992.
- **Appendix C-3:** Flood frequency elevation calculations, Contra Costa Water District, 2013.
- **Appendix C-4:** Water surface elevations measured at Antioch.
- **Appendix C-5:** Historic Brentwood precipitation data.
- **Appendix C-6:** City of Oakley inundated area, exported from GIS, Contra Costa Water District, 2013.
- **Appendix C-7:** Application for Individual Permit Supplemental Attachment. Dutch Slough Tidal Marsh Restoration (SPK-2004000043). Prepared for U.S. Army Corps of Engineers Sacramento District, Regulatory Division. Prepared by California Department of Water Resources. March 2012.
- **Appendix C-8:** Dutch Slough Tidal Marsh Restoration Project Final Environmental Impact Report. SCH # 2006042009. State of California Department of Water Resources. March 2010.
- City of Oakley 2020 General Plan. Updated January 2010. **AVAILABLE ONLINE:**
http://www.ci.oakley.ca.us/UserFiles/file/GeneralPlan/General%20Plan%202020_Updated%20January%2026,%202010.pdf
- City of Oakley East Cypress Corridor Specific Plan Final Supplemental Environmental Impact Report. January 2009. **AVAILABLE ONLINE:**
<http://www.ci.oakley.ca.us/UserFiles/file/planning/East%20Cypress/ECC%20SP%20Draft%20EIR.pdf>

Appendix D: Water Supply Benefits Documentation (Att3 SWF WorkPlan 11of16)

- **Appendix D-1:** Spreadsheet of modeling output from CCWD daily operations model, January 2013.
- **Appendix D-2:** Contra Costa Water District Daily Operations Model (WRSEL based linear program). Los Vaqueros Expansion Model Documentation. Technical Memorandum. MBK Engineers. November 3, 2010.

- **Appendix D-3:** G-model used to estimate water savings to CVP/SWP associated with compliance with water quality standards. *Accounting for Antecedent Conditions in Seawater Intrusion Modeling – Applications for the San Francisco Bay-Delta*. Richard Denton, 1993. Hydraulic Engineering, Volume 1, ASCE, pp. 448-453.
- **Appendix D-4:** Calculation of water savings based on Rock Slough salinity requirements, Contra Costa Water District, 2013.

Appendix E: Water Quality Benefits Documentation (Att3 SWF WorkPlan 12of16 and Att3 SWF WorkPlan 13of16)

- **Appendix E-1:** Water Quality at Contra Costa Water District’s Contra Costa Canal Intake: A Review of Rock Slough Water Quality Analyses. Contra Costa Water District Interoffice Memorandum. August 14, 2001.
- **Appendix E-2:** Rock Slough Technical Memorandum Evaluating Veale Tract Discharge. FlowScience. December 19, 2003.
- **Appendix E-3:** Identification of Water Quality Degradation Sources in Rock Slough and Unlined Portion of Contra Costa Canal. Contra Costa Water District Interoffice Memorandum. October 23, 2003.
- **Appendix E-4:** Bay Area Water Quality & Supply Reliability Program. CALFED Bay Delta Program. May 2005.
- **Appendix E-5:** Amy, G.L., M. Siddiqui, K. Ozekin, H.W. Zhu, and C. Wang, (1998). Empirically Based Models for Predicting Chlorination and Ozonation By-Product: Haloacetic Acids, Chloral Hydrate, and Bromate. EPA Report CX 819579. USEPA Office of Groundwater and Drinking Water: Cincinnati, OH, 1998.
- **Appendix E-6:** Field data collected by Contra Costa Water District and the Department of Water Resources, 1999-2007.

Appendix F: Environmental Benefits Documentation (Att3 SWF WorkPlan 14of16)

- **Appendix F-1:** Dutch Slough Tidal Marsh Restoration Project Final Environmental Impact Report. SCH # 2006042009. State of California Department of Water Resources. March 2010.
- **Appendix F-2:** East Contra Costa County HCP/NCCP Mitigation Fee Audit. East Contra Costa County Habitat Conservancy, December 2012.
- **Appendix F-3:** East Contra Costa County Habitat Conservancy Governing Board Memorandum: Review and Adjustment of the HCP/NCCP Mitigation Fees, July 2011.

Appendix G: Energy Related Benefits Documentation (Att3 SWF WorkPlan 15of16)

- **Appendix G-1:** Contra Costa Water District Daily Operations Model (WRSEL based linear program). Los Vaqueros Expansion Model Documentation. Technical Memorandum. MBK Engineers. November 3, 2010. NOTE: Greenhouse gas (GHG) emissions for the Contra Costa Water District (CCWD) are based on the [Climate Registry’s](#) General Reporting Protocol v3.1 (Protocol) released in January 2009.

Appendix H: Letters of Support (Att3 SWF WorkPlan 16of16)

- **Appendix H-1:** Congressman McNerney to US Army Corps of Engineers, December 20, 2012
- **Appendix H-2:** City of Brentwood to Congressman Garamendi, January 14, 2011
- **Appendix H-3:** City of Oakley to Congressman Garamendi, January 6, 2011
- **Appendix H-4:** Congressmen Miller, Tauscher, McNerney to US Army Corps of Engineers, March 6, 2009

