RECLAMATION

Managing Water in the West

Draft Supplemental Environmental Assessment

Contra Costa Canal Replacement Segment 2

SEA-13-019

U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
South-Central California Area Office
Fresno, California

July 2013

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Table of Contents

List of Tables

List of Figures

Appendices

Section 1 Introduction

1.1 Background

On July 11, 2007, the Bureau of Reclamation (Reclamation), in coordination with the Contra Costa Water District (CCWD) issued Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) 07-05-MP for the Contra Costa Canal Replacement Project (CCCRP) (Reclamation 2007). The CCCRP involved installing up to 3.97 miles of buried ten-foot diameter pipe in place of the existing unlined portion of the Contra Costa Canal (Canal) between the headworks near Rock Slough and Pumping Plant 1 (PP1). See Figures 1-1 and 1-2. CCWD also prepared a Mitigated Negative Declaration (SCH # 200604082) under the California Environmental Quality Act (CEQA) for the proposed improvements.

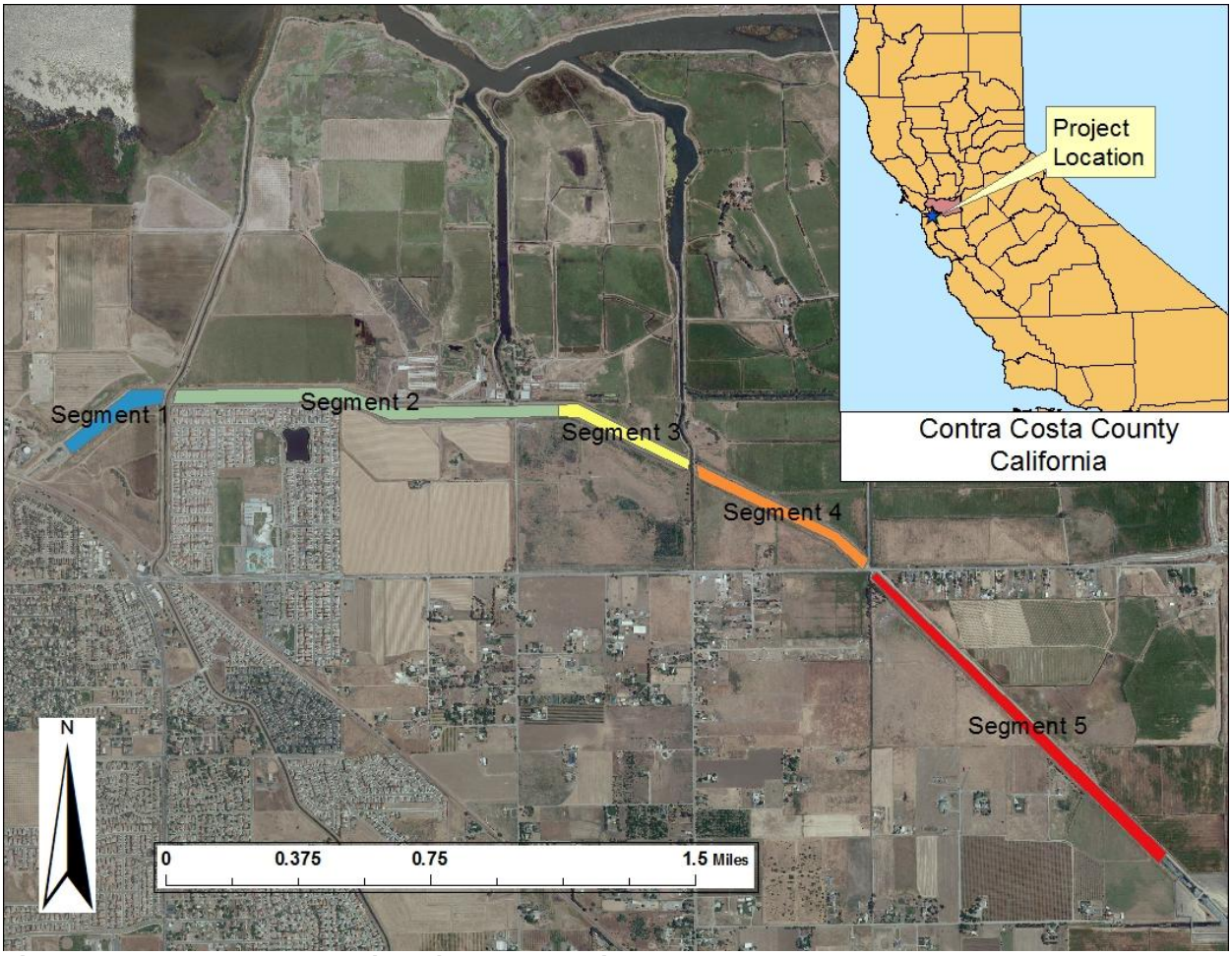


Figure 1-1 Contra Costa Canal Replacement Project

In 2009, CCWD completed Segment 1 of the CCCRP, enclosing a 1,900 foot length of the unlined Canal from west of Marsh Creek to the forebay in front of PP1. To facilitate that segment's construction CCWD completed two addenda to the original CEQA Mitigated Negative Declaration. The first addendum documented use of a pump-around system to deliver water to customers during construction during Segment 1. The second addendum described CCWD's plan for use of offsite fill for construction of Segment 1. Since neither project modification required Reclamation approval, no changes were made to the EA.

CCWD has now received a grant through the California Department of Water Resources (DWR) under the Disaster Preparedness and Flood Prevention Bond Act of 2006. This will allow CCWD to complete a second segment of the CCCRP, as well as make additional improvements not considered in the original evaluation. The proposed second segment of Canal replacement would be 5,500 feet in length, from the terminus of Segment 1 near Marsh Creek to the east, approximately 500 feet beyond Sellers Avenue. The Canal replacement would be consistent with the CCCRP as evaluated and approved previously. However, additional elements have been incorporated into the project, as follows:

- Installation of a flood isolation structure near the Rock Slough Fish Screen (RSFS)
- Implementation of a groundwater management (dewatering) program
- Installation of a new turnout system at Pumping Plant 4 (PP4)

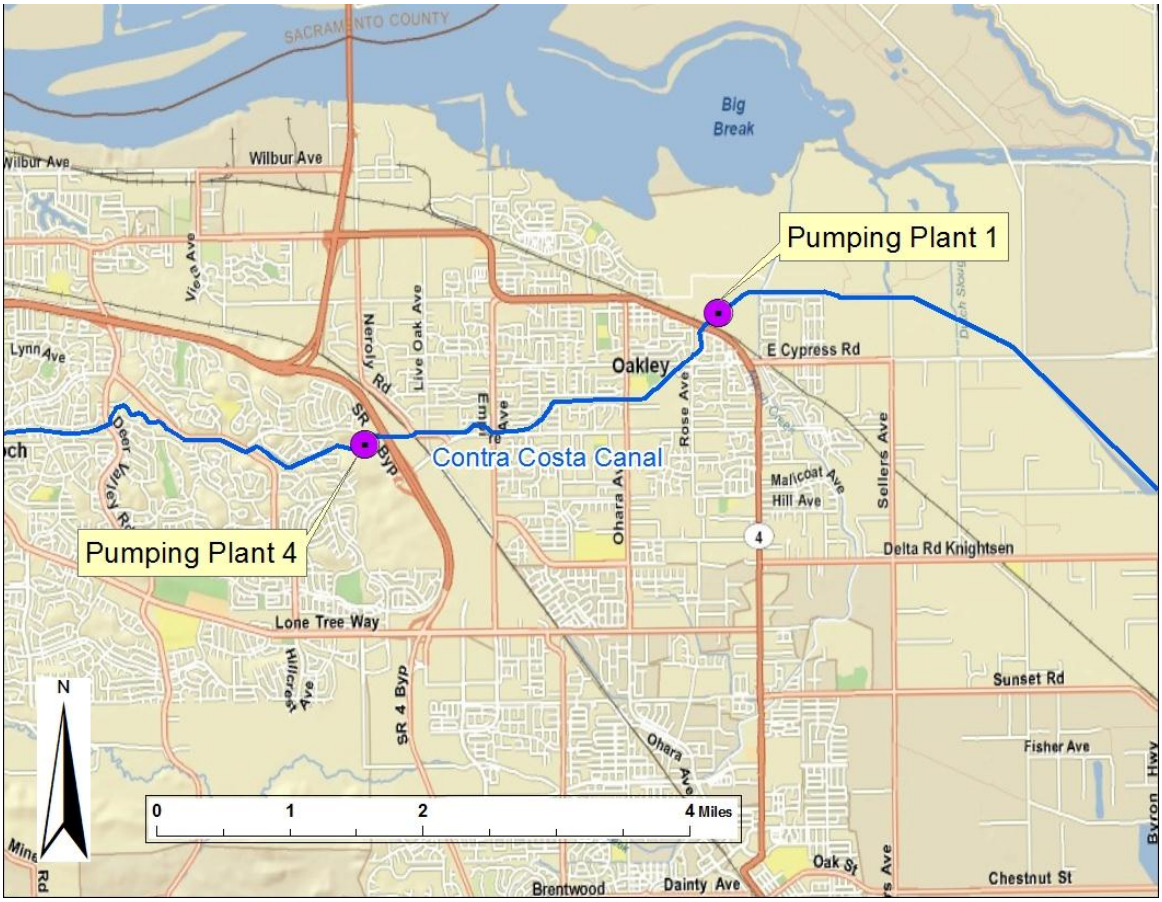


Figure 1-2 Contra Costa Canal and Pumping Plant Locations

These modifications to the project description require additional evaluation in the form of a Supplemental Environmental Assessment (SEA) to determine whether the original FONSI remains valid. CCWD has also prepared a third addendum to the Mitigated Negative Declaration.

1.2 Need for the Proposed Action

The purpose for the Canal replacement remains the same as evaluated in the original EA, which is "…to protect and improve drinking water quality, protect public safety, increase system security, reduce seepage into and out of the canal, and reduce flood risks along the unlined portion of the Contra Costa Canal" (Reclamation 2007).

The needs addressed by the new and modified project elements are as described below in Table 1-1.

Table 1-1 Purpose and Need by Project Element

Project Element	Purpose
Flood Isolation Structure	Isolate the Canal during high water events to reduce the potential for flooding damage to adjacent properties.
Turnout at PP4	Maintain water service to customers during construction and provide additional long-term operational flexibility.
Groundwater Management Program	Address expected groundwater infiltration and maintain a dry work area during construction.

1.3 Scope

The scope of a SEA is limited to those portions of the proposed action that are new or different relative to the original EA. Therefore the CCCRP itself is not covered here; for further information on that component of the proposed action, please refer to the original document.

The additional facility modifications described in this SEA would be located near the RSFS and at PP4, as shown in Figures 2-1 and 2-2. These improvements are considered to be permanent.

Groundwater management would only be necessary during the period of construction, which is estimated to last up to two years. The proposed dewatering would take place within the area designated as Segment 2, from the terminus of the previous Canal enclosure to approximately 500 feet east of Sellers Avenue, as well as other locations as necessary for in-channel work. The water would be provided in agronomic amounts to amenable nearby property owners or would be discharged by permit at the RSFS.

1.4 Resources of Potential Concern

This EA will analyze the affected environment of the Proposed Action and No Action Alternative in order to determine the potential direct and indirect impacts and cumulative effects to the following resources:

- Water Resources
- Land Use
- Biological Resources
- Cultural Resources
- Indian Sacred Sites
- Indian Trust Assets (ITA)
- Socioeconomic Resources
- Environmental Justice
- Air Quality
- Global Climate

Section 2 Alternatives Including the Proposed Action

This SEA considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

2.1 No Action Alternative

Under the No Action Alternative, CCWD would be limited to actions approved under the previous EA. The flood isolation structure would not be installed, leaving properties adjacent to the Canal at risk of flooding during high water events. Also no turnout would be installed at PP4, meaning that maintaining water service to customers during construction would require other pumping arrangements. Alternative pumping configurations would likely be expensive and energy-intensive.

2.2 Proposed Action

Reclamation proposes to authorize CCWD's modifications to the previously-approved CCCRP. These include addition of:

- A flood isolation structure,
- A new turnout system at PP4, and
- A groundwater management program.

The proposed additions are shown in Figures 2-1 and 2-2, and described below.

Flood Isolation Structure

CCWD would install a flood isolation structure near the Rock Slough headworks. The structure would allow the Canal to be closed off from the Delta during high water events, reducing the potential for property damage.

During installation of the flood control structure, the work area would be isolated from the Delta by inserting stop logs in the Rock Slough headworks structure and installing a primary coffer dam upstream of the headworks. A second coffer dam would also be installed downstream of the primary Canal isolation coffer dam, and water would be pumped out of the isolated section. Once water levels are low enough, fish would then be rescued from the isolated segment, and the work area would be dewatered by pumping to the unlined Canal or the area behind the RSFS.

Access to the flood isolation structure construction site would be from East Cypress Road and the existing access road along the north levee.

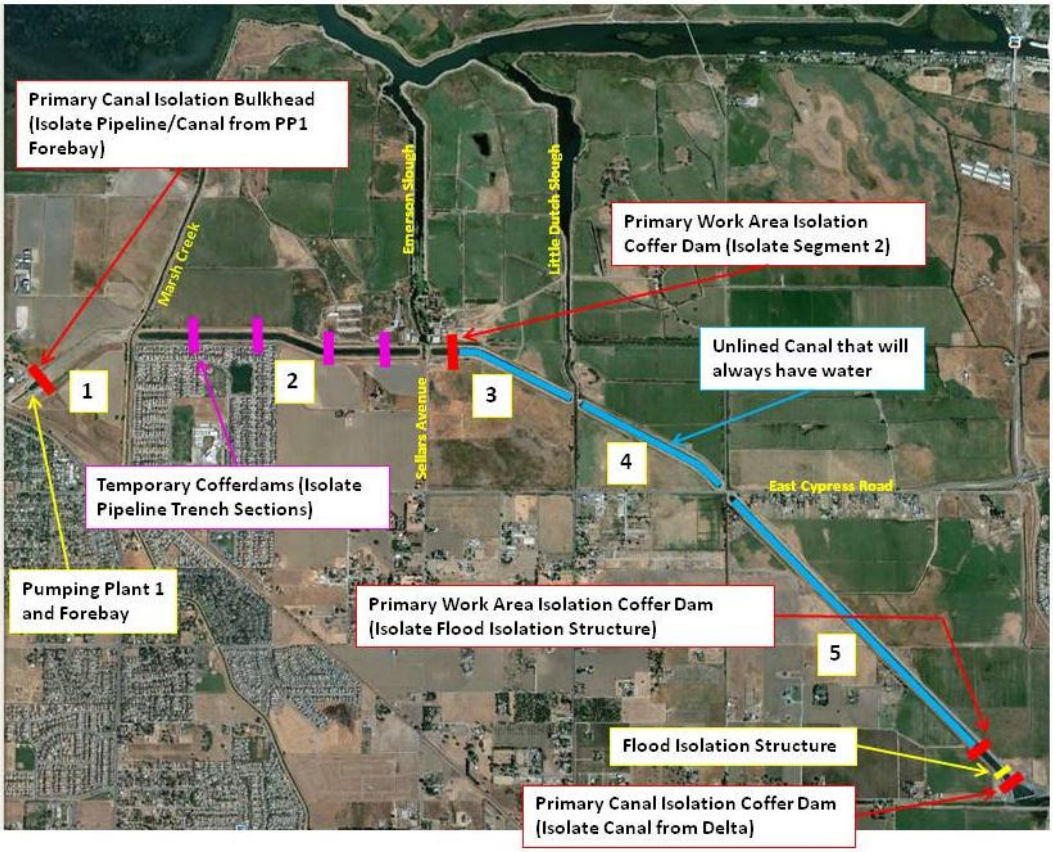


Figure 2-1 Contra Costa Canal Proposed Improvements
Source: CCWD 2013

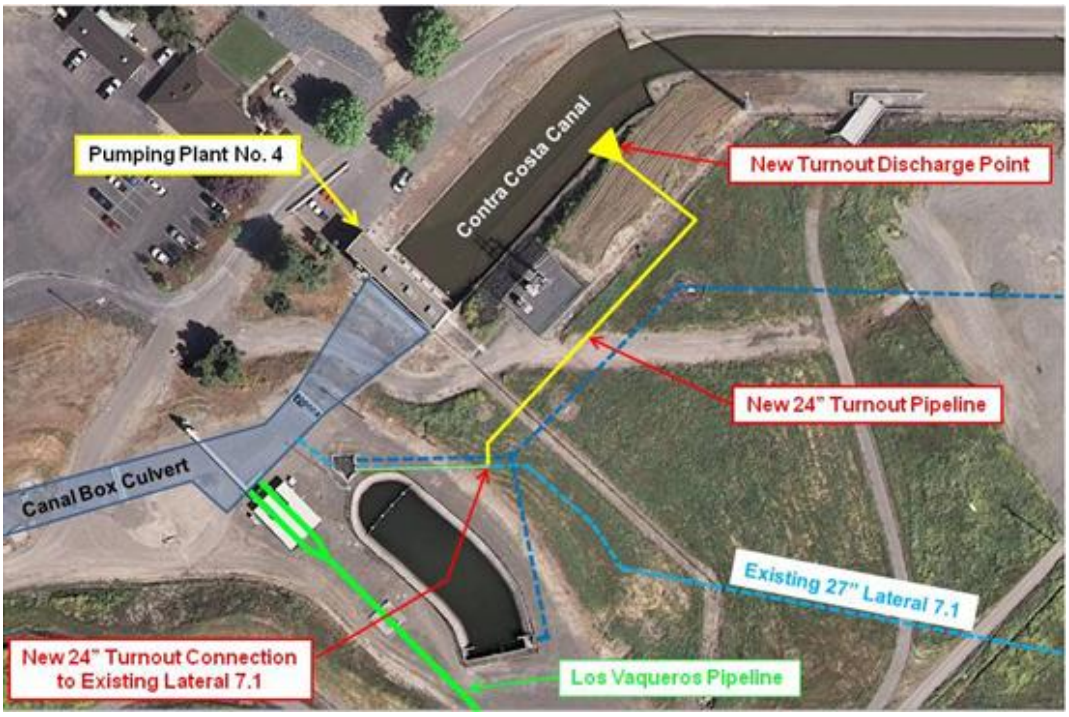


Figure 2-2 Pumping Plant 4 Proposed Turnout
Source: CCWD 2013

New Turnout System

A new turnout system would be constructed at PP4 to provide untreated water supply reliability to CCWD municipal and irrigation customers that divert water from the Canal between PP1 and PP4. The new turnout would allow water from the canal supplied by the Old River and Middle River intakes and the Los Vaqueros Reservoir to be delivered by a gravity flow bypass (backflow) system to the Canal upstream of PP4. A 24-inch buried pipeline would be constructed within the Reclamation right-of-way and CCWD-owned land, and would tie into existing Canal facilities.

A new isolation plate would also be constructed on the pipeline that terminates at the PP1 forebay. Water within the PP1 forebay could then be pumped back towards PP4, allowing water in the lined portion of the Canal to circulate. This would improve water quality and aesthetics within this section of the Canal by preventing stagnant water and solids build-up.

Groundwater Management

The original evaluation assumed removal of shallow groundwater to provide a dry work area for the CCCRP. As proposed, groundwater was to be pumped and directed to existing agricultural areas for irrigation. Dewatering during construction of Segment 1 was at a rate of approximately 2 million gallons per day (mgd).

For Segment 2, CCWD proposes to install shallow dewatering wells (spread 30 to 50 feet apart) within the Canal project work area, which would deliver groundwater to a series of collection pipes. The wells and pipes would be located within the Canal right of way, preferably within the Canal prism. Flows could approach up to 10 mgd (instantaneous flow rate), with a monthly average of approximately 5 mgd and an average electroconductivity (EC) as high as 4,000 µS/cm. To the extent practicable, the water would then be delivered to adjacent properties for irrigated agriculture. If land application is not feasible due to handling constraints of adjacent property owners or unsuitable (wet) weather, CCWD is proposing to divert excess water into the unlined Canal upstream of the project's isolation coffer dams. A discharge permit (Limited Threat General Order R5-2013-0073-029) has been obtained from the Central Valley Regional Water Quality Control Board (CVRWQCB) for this diversion (see Appendix D).

2.2.1 Permitting

During construction of Segment 1, CCWD obtained a permit for land application of the groundwater to adjacent lands, primarily the DWR Emerson property. On June 19th, 2013, the CVRWQCB authorized land application for Segments 2 through 5 of the CCCRP under General Order 2003-0003-DWQ-0043. The properties where CCWD is proposing land application are shown in Figure 3-1.

CCWD anticipates that not all of the groundwater removed from the Canal could be land applied, and some excess water may need to be discharged within the Canal and Rock slough at the RSFS. CCWD has obtained a Limited Threat Discharge permit from CVRWCB for this discharge.

2.2.2 Environmental Commitments

CCWD would implement the following environmental protection measures to reduce environmental consequences associated with the Proposed Action (Tables 2-1 and 2-2).

Environmental consequences for resource areas assume the measures specified would be fully implemented. Copies of all reports would be submitted to Reclamation.

Commitments adopted in the original EA remain as described therein, except as described below.

Table 2-1 Additional Environmental Protection Measures and Commitments

Resource	Protection Measure
	(Pending Consultation)

Table 2-2 Environmental Protection Measures and Commitments Modified From the EA

Resource	Protection Measure
	(Pending Consultation)

Section 3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

3.1 Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment and determined that neither the Proposed Action nor the No Action Alternative has the potential to cause direct, indirect, or cumulative effects to the following:

Table 3-1 Resources Eliminated from Further Analysis

Resource	Reason Eliminated
Environmental Justice	The proposed action is limited to existing facilities and rights of way. Modifications to the Canal system would benefit all of CCWD's customers indirectly through operational and water quality improvements. These improvements, as well as the benefits of reduced potential for flooding adjacent to the Canal, are expected to provide similar benefit to all demographic groups.

3.2 Water Resources

3.2.1 Affected Environment

The water resources and hydrology of the project area are described in detail in the original EA. Therefore, only a general project context is summarized below. Please refer to the previous document for more information.

Surface Water

The dominant water body in the area is the Sacramento/San Joaquin River Delta, which lies generally to the northeast of the project area and flows from east to west. Other nearby water resources include Rock Slough, Emerson Slough and Marsh Creek. The unlined portion of the Contra Costa Canal receives water from Rock Slough and conveys it to CCWD's PP1 (See Figure 1-1). From the pumping plant, the water is lifted into the lined portion of the Canal and then distributed throughout CCWD's service area.

Water quality in the Delta varies with time of year, precipitation trends and upstream land uses. Drainage from contributing waterways contains high levels of nutrients; suspended solids; organic carbon; minerals (salinity); and trace chemicals, such as organophosphate, carbamate, and organochlorine pesticides. The Delta as a whole is listed as impaired for pesticides, mercury, PCBs, selenium and invasive species on the Clean Water Act Section 303(d) list of water quality limited segments.

Specific challenges to use of the Canal as a domestic water source include salinity, dissolved carbon, and bromide, which are potentially responsible for formation of trihalomethane and

bromate during the disinfection process. Zones of stagnant water within the Canal can also create operational problems, such as objectionable odor/appearance and solids buildup.

Wetlands

Much of the land adjacent to the Canal is classified as Palustrine farmed (Pf) wetland on US Fish and Wildlife Service (USFWS) National Wetland Inventory maps (USFWS 1985). This designation means that agricultural cultivation has displaced historically present wetlands. If farming were to end, wetlands would likely re-establish themselves.

Groundwater

Local groundwater is high in salinity and interacts freely with the water in the unlined Canal due to the shallow water table. This is known to degrade the quality in the Canal, and reducing groundwater infiltration is seen as vital to improving the quality of CCWD's source water.

3.2.2 Environmental Consequences

No Action

If no action were taken, water conditions would follow current trends. As the phases of the work proposed in the original EA are completed, there would be a gradual improvement in the quality of water in the Canal as intrusion of brackish groundwater is reduced.

If the proposed groundwater pumping system were not implemented, another dewatering method would be required to keep the work area dry. This would likely be expensive and energy-intensive, as well as only relocating, rather than eliminating, any impacts.

If the turnout at PP4 were not implemented, another method would be required to continue providing service to customers during construction. This would likely involve an expensive and energy-intensive pump-around arrangement, as was used during construction of Segment 1.

Proposed Action

The CCCRP as described in the original EA provides a benefit to water quality, since it reduces the influence of saline groundwater on the Canal. It would also reduce the potential for formation of undesirable disinfection byproducts.

The proposed flood control structure is not expected to affect water quality meaningfully, but it would affect hydrology by limiting the potential for floodwater to overtop the Canal and cause property damage.

The proposed turnout at PP4 would allow CCWD to continue water service to customers between PP1 and PP4 during maintenance events. Reducing the potential for service disruption is a benefit to the water users. Water quality is also expected to improve, since the proposed improvements would allow CCWD to circulate water in the Canal system and reduce problems associated with stagnant water, such as odor and solids buildup.

The proposed groundwater pumping has the potential to affect water resources, as it would require the discharge of millions of gallons of water known to have high EC. During construction of Segment 1, CCWD obtained a permit for land application of the groundwater to adjacent lands, primarily the DWR Emerson property. On June 19th, 2013, the CVRWQCB authorized land application for Segments 2 through 5 of the CCCRP under General Order 2003-0003-DWQ-0043. The parcels under consideration are shown in Figure 3-1. Anticipated water volumes relative to land capacity to receive the water are shown in Table 3-2.

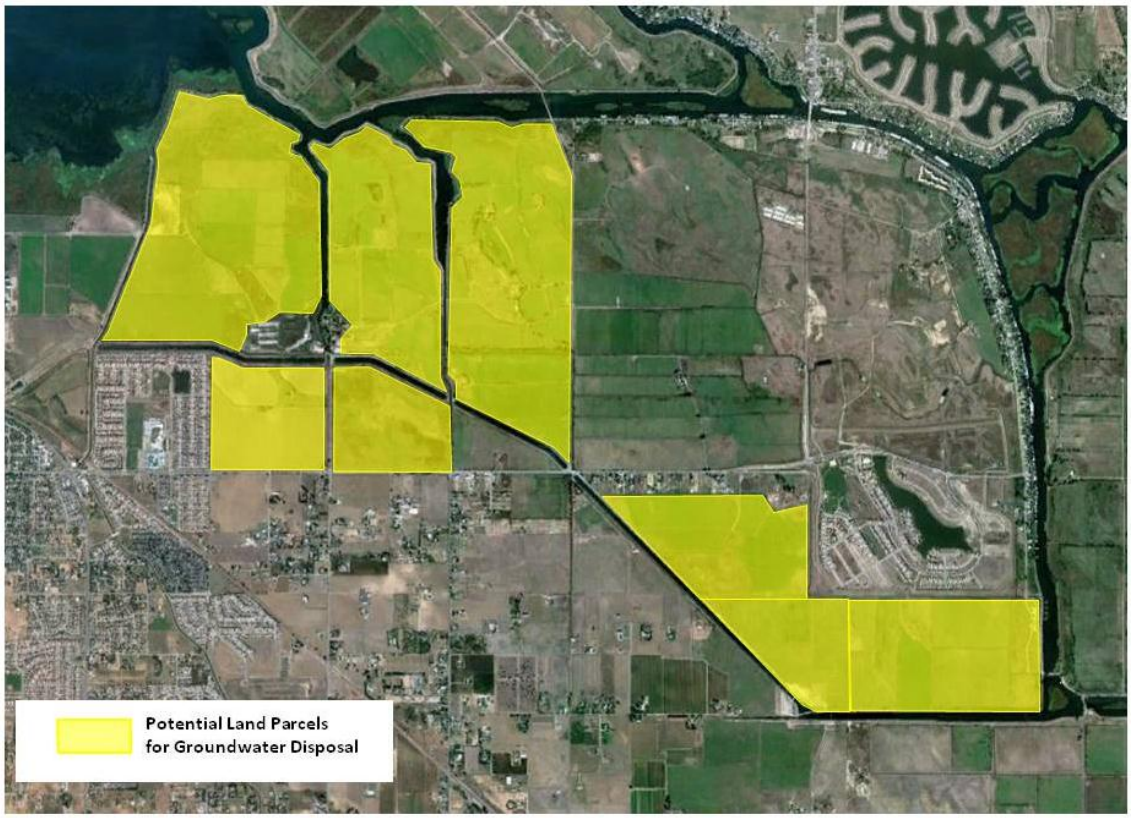


Figure 3-1 Proposed Land Application Sites

Source: CCWD 2013

Table 3-2 Groundwater Volume Estimates

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Peak Groundwater Dewatering Rate (MGD)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Land Application Disposal Capacity (MGD)	2.42	3.07	3.59	3.97	3.82	3.19	2.47	2.18
Excess for Discharge to Rock Slough (MGD)	2.58	1.93	1.41	1.03	1.18	1.81	2.53	2.82
Excess for Discharge to Rock Slough (MGD) ROUNDED	3.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0

Source: CCWD. Assumes a "wet" water year as a conservative case. Excess volumes are rounded up.

Segment 2 groundwater volumes are estimated to be approximately 5 mgd peak monthly flows, which could exceed land application capacity. If more water is produced by groundwater

pumping than can be land applied or stored, it would either be directed to the unlined Canal downstream of the RSFS, or pumped upstream of the Rock Slough headworks, where it would mix with Rock Slough. CCWD has been issued a permit by CVRWQCB for the discharge to Rock Slough (see Appendix D).

In accordance with CVRWQCB Order # R5-2008-0081, *Waste Discharge Requirements for Dewatering and Other Low Threat Discharges to Surface Waters*, the discharge of pollutants from dewatering and other low threat discharges may not exceed certain effluent limitations. Because the shallow groundwater is known to have elevated EC, CCWD conducted an analysis to determine whether the proposed discharges would have the potential to exceed CVRWQCB's standards (CCWD 2013).

CCWD considered two scenarios in estimating the effects of discharging the shallow groundwater into the Canal or Rock Slough. In the worst-case (highest-concentration) scenario, the excess groundwater would be directed through a diffuser system to the RSFS afterbay while the Canal was isolated at the headworks. In this case, the mixing area for the discharged water would be 200,000 square feet. In the second scenario, the groundwater would be discharged to the unlined Canal near the cofferdam at Sellers Avenue. The added length of 12,500 feet of Canal would result in a total mixing area of 1,125,000 square feet.

CCWD assumed a maximum EC of 4,000 µS/cm (the highest EC recently measured nearby) in the groundwater to be discharged, and modeled tides based on current forecasts through 2015. Based on these conditions, CCWD determined that in the worst-case scenario (200,000 square foot mixing zone), mixing would reduce groundwater EC from 4,000 µS/cm to monthly averages ranging from 860 µS/cm in August 2015 to 1,124 µS/cm in October 2014 at the Rock Slough ("RSL") monitoring station 1,340 feet (~1/4 mile) from the RSFS. In the case where a larger mixing zone is available, measured EC would be much lower. CCWD has obtained a Limited Threat Discharge permit from the CVRWQCB for this discharge.

All groundwater discharged to surface water would be monitored at the point of discharge, the RSFS, and the Delta Road Bridge/RSL location to ensure compliance with permitted effluent limitations.

Cumulative Impacts

Various maintenance and improvement projects are underway or proposed for the Contra Costa Canal. Most are physically far from this project area or are otherwise not expected to affect conditions in the waterway. Three actions under consideration by CCWD and Reclamation are nearby, however.

The first is operation of the Fish Screen at Rock Slough. The Fish Screen was approved under EA 09-061 and went into operation in August of 2011. Reclamation is currently preparing EA 11-061 to evaluate transfer of Operations and Maintenance responsibilities to CCWD. The purpose of the fish screen is to limit entry of fish into the Canal. This reduces the potential for harm to protected species caused by operation and modification of the Canal such as the proposed action. In this respect the projects are complementary.

The second action in this section of the Canal is a proposal to manage nuisance vegetation in the forebay of PP1 through application of the aquatic herbicide Komeen™. Reclamation is evaluating the proposal under a Categorical Exclusion Checklist, CEC 12-066. Although both actions have the potential to affect water quality on their own, cumulative impacts are unlikely. The forebay would be isolated from the canal during construction by cofferdams, so the herbicide-treated water would not have the potential to mix with any saline groundwater being discharged to the Delta.

Third, Brookfield Homes has requested CVP inclusion review for the 140 acre Emerson Parcel, which is located south of the Canal and east of Sellers Avenue in Oakley. The CEQA review for this inclusion was completed in August 2010 by the City of Oakley, and it is currently being reviewed by Reclamation as EA 13-032. The project includes 578 single family residences and a commercial area. Construction is anticipated to commence in late 2013 or 2014. CCWD will be coordinating its Canal construction with this proposed construction.

Beyond projects within the Canal, the Delta is affected by a wide variety of actions by public agencies and private entities which are complex, far-ranging, and sometimes in conflict. Flows are determined by historic water rights, long-term regulatory requirements, yearly allocations and numerous exchanges, transfers, and assignments that are negotiated on an as-needed basis. Water quality is affected by historic and current upstream land uses such as mining, farming and urban development.

DWR's Dutch Slough Tidal Marsh Restoration Project is planned for the area just to the north of the Canal. Through the Restoration Project, DWR plans to restore over 1,600 acres of tidal wetland and create a 55-acre park, trails and access to the Delta (DWR and CSCC 2008). Although the impacts and benefits of the Restoration Project are still being evaluated, it is likely that the hydrology of the area will change. One of the purposes for the CCCRP is to reduce the potential for these hydrologic changes to affect the Canal. The two actions together are not expected to have any cumulative effects on the Delta or other water resources.

3.3 Land Use

3.3.1 Affected Environment

The City of Oakley's development plan shows planned subdivisions to the south of the Canal as far east as Jersey Island Road, with open space to the north (City of Oakley 2008). To the east of Jersey Island Road, several subdivisions are planned on the north side of the Canal. The land south of the Canal east of Jersey Island Road is unincorporated, but is zoned for agriculture by the County (Contra Costa County 2007).

Most of the land surrounding the Canal is classified by the Federal Emergency Management Agency (FEMA) as Zones A, AE, indicating that they are prone to flooding (FEMA 2009). Some locations are behind levees and are classified as Zone X, indicating a reduced likelihood of flooding.

3.3.2 Environmental Consequences

No Action
If no action were taken, land use would be unaffected. Development patterns would continue as they have in past. Flooding hazards would also not be mitigated, meaning that high water events in the Delta could result in damage to properties adjacent to the Canal.

Proposed Action
The proposed flood isolation structure would protect properties adjacent to the Canal from flood damage in case of a high water event in the Delta. Reducing the potential for flood damage to residences, farms, and other land uses in the area is a benefit.

The proposed turnout structure would provide additional operational flexibility to CCWD and allow delivery of water to customers between PP1 and PP4 during maintenance. This would reduce inconvenience and operational disruptions to those customers.

If water produced from dewatering the Canal is made available to adjacent farm owners, it would likely be provided for less than what an equivalent volume of water would cost on the open market. This would help the profitability of those farms.

Cumulative Impacts
Reduced flood risk and reliable water service make property more attractive for development. Much of the area adjacent to the Canal is already zoned for residential subdivisions, so the proposed action is complementary with local land use plans. Any changes to zoning or land use would be a local decision which balances a variety of considerations.

3.4 Biological Resources

3.4.1 Affected Environment
Since FONSI-07-05-MP was signed for the original project, the Canal headworks have been screened, which keeps all Federally listed fish, except larval delta smelt, out of the canal. Segment 1 was replaced with a pipeline, eliminating any open water that could be used by aquatic species. All of the mitigation acreage for the entire four-mile project has been completed. Other than these changes, the affected environment is the same as that described in EA-07-05-MP.

3.4.2 Environmental Consequences

No Action
Under the No Action Alternative, CCWD would proceed with Segment 2 as described in EA-07-050-MP. The restrictions to protect listed fish species, such as seasonal restrictions on cofferdam installation, would have to be conducted, but would no longer provide any minimization of impacts to the fish, because the fish screen at the headworks now keeps the fish out of the Canal. The minor impacts of the possible discharge of groundwater into the Canal or Rock Slough would not occur, nor would the temporary, minor impacts to upland species resulting from the turnout and pipeline construction.

Proposed Action

Under the Proposed Action Alternative, unnecessary restrictions on work because of listed fish species would not have to be implemented. Turnout and pipeline construction could result in minor impacts to upland species, such as kit foxes or burrowing owls, but applicable measures from FONSI-07-05-MP would still be implemented to minimize those impacts. Minor impacts due to increased salinity could occur due to discharge of groundwater into the Canal or Rock Slough.

Longfin smelt adults and juveniles can be found at salinities ranging from freshwater to nearly seawater, although once past the early juvenile stages most prefer salinities ranging from 15–30 ppt (Moyle 2002). Delta smelt salinity tolerance varies with life stage. DFW et al. (2010) reports the salinity tolerance of eggs and larvae ranges from freshwater to 5 ppt. Delta smelt spawning areas are far removed from the project area, therefore, no effect from groundwater salinity is expected for delta smelt eggs. During the time that delta smelt larvae could be present (February through June), they could be affected if salinity exceeds 5 ppt[1] within any portion from the Rock Slough Fish Screen to the 1,340 foot mixing boundary. However, based on the calculations, CCWD expects that the salinity will not be above 1.5 ppt in the mixing zone at any time. The upper salinity tolerance of juvenile and sub-adult delta smelt is 19.1 ppt ±2.1 (Swanson et al. 2000). Therefore, juvenile and adult delta smelt would not be affected by an increase in salinity from routing groundwater into the Rock Slough Fish Screen afterbay. Longfin smelt larvae and juveniles have been collected in samples with salinities up to 15 ppt, and therefore it is unlikely that they would be affected by groundwater routing.

Routing the higher-salinity groundwater to the Rock Slough Fish Screen afterbay is not expected to adversely affect the anadromous species; mean maximum monthly salinity would be well under 2 ppt.

Cumulative Impacts

Cumulative impacts to biological resources would occur as described in EA-07-05-MP, with the exception that impacts to species from the construction of Segment 1 have now occurred and ongoing operational impacts to listed fishes are reduced compared to what they had previously been, due to the construction of the Rock Slough Fish Screen.

3.5 Cultural Resources

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places; such resources are referred to as historic properties.

On October 12, 2006, Reclamation entered into a Memorandum of Agreement (MOA) with the California State Historic Preservation Officer (SHPO) to resolve the adverse effects to the Contra

[1] The salinity tolerance range was reported in DFW et al. 2010 and was based on life history information and DFW catch data.

Costa Canal from the CCCRP. The stipulations of the MOA were completed on January 12, 2009, with the submission of a final report to the SHPO. The additional elements incorporated into the CCCRP were not specifically identified in the MOA and the area of potential effects (APE) for the MOA did not include all of the locations of the additional elements.

3.5.1 Affected Environment

Historic properties identification efforts in support of the original CCCRP EA resulted in one historic property-the Contra Costa Canal-in the APE. The Contra Costa Canal was determined eligible for listing on the National Register of Historic Places (National Register), through consensus with SHPO dated March 9, 2005, because of its association with the Central Valley Project and the development of agriculture and irrigation in California. Additional identification efforts were conducted for the areas where the additional elements fall outside the previously defined APE. No other historic properties, besides the Contra Costa Canal, were identified. Due to the highly disturbed nature of the revised APE, the potential for intact buried cultural resources is very low.

3.5.2 Environmental Consequences

No Action

Under the No Action Alternative, the adverse effects of the actions approved under the previous EA were mitigated under the MOA. There would be no additional adverse effects to cultural resources from the CCCRP.

Proposed Action

Under the Proposed Action, the flood isolation structure, the new turnout system, and groundwater management will have no adverse effects to historic properties. None of the activities associated with the additional elements will affect the characteristics that make the Contra Costa Canal eligible for listing on the National Register. No other historic properties are present within the revised APE that includes the additional elements.

Cumulative Impacts

Since none of the additional elements will have an adverse effect on the only historic property present, the Contra Costa Canal, there will be no cumulative impacts to cultural resources from implementing the additional elements.

3.6 Indian Trust Assets

Indian Trust Assets (ITA) are legal interests in assets that are held in trust by the United States Government for federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the United States on behalf of federally recognized Indian tribes. "Assets" are anything owned that holds monetary value. "Legal interests" means there is a property interest

for which there is a legal remedy, such a compensation or injunction, if there is improper interference. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something. ITA cannot be sold, leased or otherwise alienated without United States' approval. ITA may include lands, minerals, and natural resources, as well as hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, ITA may be located off trust land.

Reclamation shares the Indian trust responsibility with all other agencies of the Executive Branch to protect and maintain ITA reserved by or granted to Indian tribes, or Indian individuals by treaty, statute, or Executive Order.

3.6.1 Affected Environment

The nearest ITA is the Buena Vista Rancheria approximately 47 miles northwest of the project location.

3.6.2 Environmental Consequences

No Action
If no action were taken, current conditions would persist and there would be no effect on ITA.

Proposed Action
On April 5, 2013, Reclamation determined that the proposed action had no potential to affect ITA.

Cumulative Impacts
As the proposed action has no potential to affect ITA and the nearest Trust Asset is nearly 50 miles away, there are no anticipated cumulative adverse impacts to ITA.

3.7 Socioeconomic Resources

3.7.1 Affected Environment
The project is located in Contra Costa County near the City of Oakley. According to the U.S. Census Bureau, the population of the County was approximately 1,050,000 in 2010, and the median annual household income was $78,385 (Census 2012).

3.7.2 Environmental Consequences

No Action
If no action were taken, current socioeconomic trends would continue unaffected.

Proposed Action
The proposed flood isolation structure would protect properties adjacent to the Canal from flood damage in case of high water in the Delta. Reducing the potential for flood damage to residences and farms is an economic benefit.

The proposed turnout structure would provide additional operational flexibility to CCWD and allow delivery of water to customers between PP1 and PP4 during construction and maintenance. This would reduce inconvenience and operational disruptions to those customers.

If water produced from dewatering the Canal is made available to adjacent farm owners, it would likely be provided for less than what an equivalent volume of water would cost on the open market. This would help the profitability of those farms.

Cumulative Impacts

The proposed action is expected to provide benefits to the area which are consistent with and complementary to existing socioeconomic trends. Cumulative adverse effects are not anticipated.

3.8 Air Quality

Section 176 (C) of the Clean Air Act [CAA] (42 U.S.C. 7506 (C)) requires any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the Federal CAA (42 U.S.C. 7401 [a]) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with the SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements would, in fact conform to the applicable SIP before the action is taken.

On November 30, 1993, the Environmental Protection Agency (EPA) promulgated final general conformity regulations at 40 CFR 93 Subpart B for all federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by the Proposed Action equal or exceed certain *de minimis* amounts thus requiring the federal agency to make a determination of general conformity.

3.8.1 Affected Environment

The San Francisco Bay Area is in non-attainment for the Federal 8-hour ozone standard and the Federal 24-hour $PM_{2.5}$ standard. California's more stringent 1-hour and 8-hour ozone standards, annual PM_{10} and $PM_{2.5}$ standards, and 24-hour PM_{10} standard also have not been attained (CARB 2011). Emissions in the San Francisco Bay Area not only contribute to nonattainment in the immediate area, but also contribute to air quality standard exceedences in air basins downwind.

The Bay Area Air Quality Management District (BAAQMD) most recently adopted ozone plan is *Bay Area 2005 Ozone Strategy* (BAAQMD, March 2010a). On March 11, 2010, the Air District released the draft *Bay Area 2010 Clean Air Plan* (CAP) and a draft program Environment Impact Report on the CAP. The CAP is intended to: 1) reduce emissions and decrease ambient concentrations of harmful pollutants; 2) safeguard public health by reducing

exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities already affected by air pollution; and 3) reduce greenhouse gas emissions to protect the climate (BAAQMD, March 2010b).

In June 2010, the BAAQMD adopted thresholds for exhaust emissions of ROG (Reactive Organic Gases), NOx (Nitrogen Oxide), PM_{10}, and $PM_{2.5}$. Proposed emission thresholds are 54 pounds/day for ROG, 54 pounds/day for NOx, 82 pounds/day for PM_{10} exhaust, and 54 pounds/day for $PM_{2.5}$ exhaust. However, as a result of a court case in Alameda County, thresholds for construction-phase emissions have been suspended and only operational emission thresholds have regulatory effect.

3.8.2 Environmental Consequences

No Action

If the proposed project modifications were not approved, the project scope would be limited to what was approved in the original EA. Air emissions would be limited to those previously evaluated.

Proposed Action

CCWD's CEQA Addendum 3 included an estimate of air emissions that would be produced by construction of Segment 2 (CCWD 2013). These anticipated emissions, in pounds per day, are shown below in Table 3-3. Emission estimates account for material delivery, trenching/pipe laying, earth moving/compaction, and service road construction.

Table 3-3 Construction Phase Emissions, Average Pounds per Day

	Reactive Organic Gases	Carbon Monoxide	Nitrous Oxides	PM10	PM2.5	Carbon Dioxide
Segment 2	4.3	19.4	48.2	3.9	2.2	4,877
Threshold	54	0	54	82	54	0

Source: M. Papineau, 10.23.12/RCEMv7.1.2 modeling by CCWD. Thresholds from proposed 2010 BAAQMD guidelines.

While emissions from the additional project elements covered by this SEA are not separately identified in the Addendum, they can be approximated using earthwork quantities as a surrogate. CCWD has estimated that total imported fill for the modified project is 83,000 cubic yards (cy). Of the total, 75,000 cy of fill would be necessary for the pipeline replacement and 8,000 cy would be needed for the flood control structure. Therefore construction of the flood control structure can be expected to account for slightly less than 10% of total emissions. While the emissions from construction of the PP4 turnout are not as straightforward to quantify, the scope of that portion of the project is very minor compared to the larger CCCRP, and its emissions should also be minor. It is not expected that construction of the CCCRP, either as originally proposed or as modified by this SEA, would exceed the proposed 2010 BAAQMD guidelines.

Pumps for groundwater removal would use electricity from the power grid. Since the power grid is interconnected, the electricity used could be generated in any of a variety of locations from a variety of sources. Therefore it is not possible to estimate emission quantity or location with certainty. However, emissions from power plants are highly regulated, and it is expected that

emissions would conform to local air regulations at the point of production. In the event of power loss, it may be necessary to operate diesel backup generators to continue pumping. Efforts would be made to minimize the duration of diesel-powered pumping.

Cumulative Impacts

Air quality in the region is impaired but gradually improving as a result of regulatory changes, improvements in technology, and adoption of operational practices to reduce criteria pollutant emissions and fugitive dust. It is expected that this overall trend of gradual improvement would continue in the future due to additional innovation and controls on emission sources. The proposed action would not interfere with achievement of the region's air quality goals.

3.9 Global Climate

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change [changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.] (EPA 2011a).

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG, such as carbon dioxide (CO_2), occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHGs (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHGs that enter the atmosphere because of human activities are: CO_2, methane (CH_4), nitrous oxide, and fluorinated gasses (EPA 2011a).

During the past century humans have substantially added to the amount of GHG in the atmosphere by burning fossil fuels such as coal, natural gas, oil and gasoline to power our cars, factories, utilities and appliances. The added gases, primarily CO_2 and CH_4, are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes. At present, there are uncertainties associated with the science of climate change (EPA 2011b).

Climate change has only recently been widely recognized as an imminent threat to the global climate, economy, and population. As a result, the national, state, and local climate change regulatory setting is complex and evolving.

In 2006, the State of California issued the California Global Warming Solutions Act of 2006, widely known as Assembly Bill 32, which requires California Air Resources Board (CARB) to develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is further directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020.

In addition, the EPA has issued regulatory actions under the CAA as well as other statutory authorities to address climate change issues (EPA 2011c). In 2009, the EPA issued a rule (40 CFR Part 98) for mandatory reporting of GHG by large source emitters and suppliers that emit 25,000 metric tons or more of GHG [as CO_2 equivalents (CO_{2e}) per year] (EPA 2009). The rule

is intended to collect accurate and timely emissions data to guide future policy decisions on climate change and has undergone and is still undergoing revisions (EPA 2011c).

3.9.1 Affected Environment

Global mean surface temperatures have increased nearly 1.8°F from 1890 to 2006 (Intergovernmental Panel on Climate Change 2007). Models indicate that average temperature changes are likely to be greater in the northern hemisphere. Northern latitudes (above 24°North) have exhibited temperature increases of nearly 2.1°F since 1900, with nearly a 1.8°F increase since 1970 alone (Intergovernmental Panel on Climate Change 2007). Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHG are likely to accelerate the rate of climate change.

More than 20 million Californians rely on the State Water Project (SWP) and Central Valley Project (CVP). Increases in air temperature may lead to changes in precipitation patterns, runoff timing and volume, sea level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to impacts to California's water resources and project operations.

While there is general consensus in their trend, the magnitudes and onset-timing of impacts are uncertain and are scenario-dependent (Anderson et al. 2008).

3.9.2 Environmental Consequences

No Action

If the proposed project modifications were not adopted, the only improvement would be the enclosure of the Canal in the proposed 10-foot diameter pipe, as described in the original EA. GHG emissions were not analyzed in the EA, but CCWD has since calculated an estimate of 900-1,000 metric tons of carbon dioxide emissions would be produced as a result of the replacement of this segment of the Canal (CCWD 2013).

Implementation of the CCRP is expected to reduce the energy necessary to pump water along the Canal, as well as energy used for dredging and daily Canal patrols. CCWD anticipates that these energy savings would result in a net offset of GHG emissions in less than 10 years.

Proposed Action

As described above in the Air Quality Section, construction of the flood isolation structure should account for roughly 10% of total construction emissions. With pipeline installation estimated to produce between 900 and 1,000 metric tons of carbon dioxide, construction of the flood isolation structure would contribute an additional 100 to 110 metric tons of carbon dioxide. This is far below the threshold for significant emissions of GHG.

CCWD estimates that 100-horsepower groundwater pumps would need to operate 10 full days per month for 10 months of construction per year, for total power usage of approximately 250,000 kilowatt-hours over the course of the year. Based on an average blended emission rate for the Pacific Gas and Electric service area, this corresponds to 62.5 tons of carbon dioxide per year. Backup diesel generators would also be available to allow pumping to continue during

power outages. CCWD has determined that if the generators are needed as much as 5% of the time (120 hours per year), they would produce 10.2 tons of carbon dioxide. These amounts are also far below what is considered a meaningful source of GHG emissions.

Cumulative Impacts

While the emissions from one project would not adversely affect the global climate, cumulative GHG emissions from multiple projects and sources throughout the world could result in an adverse impact with respect to climate change. The total CO_2 emissions that are estimated to be produced as a result of the proposed action are far below the 25,000 metric tons per year threshold for reporting GHG emissions. In the overall context of contributions to global climate change, this action would not be a significant source or contributor.

CVP water allocations are made dependent on hydrologic conditions and environmental requirements. Since Reclamation operations and allocations are flexible, any changes in hydrologic conditions due to global climate change would be addressed within Reclamation's operation flexibility and therefore water resource changes due to climate change would be the same with or without the Proposed Action.

Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation intends to provide the public with an opportunity to comment on the draft FONSI and draft SEA between July 16, 2013 and August 15, 2013.

4.2 Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.)

The Fish and Wildlife Coordination Act requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. The amendments enacted in 1946 require consultation with the Service and State fish and wildlife agencies "whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license". Consultation is to be undertaken for the purpose of "preventing the loss of and damage to wildlife resources".

On June 22, 2007, Reclamation received a final Coordination Act Report from the Service for the project as described in EA-07-05-MP. Reclamation is in the process of requesting an amendment from the Service. Per discussion with the Service, no additional mitigation would be requested.

4.3 Endangered Species Act (16 U.S.C. § 1531 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior and/or Commerce, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

On June 21, 2007, Reclamation received a non-jeopardy biological opinion from the Service (File Number: 1-1-07-F-0149) that addressed the adverse effects of the Contra Costa Canal Replacement Project on the delta smelt and its critical habitat, the California red-legged frog and the giant garter snake. The Service determined that the Proposed Action was not likely to adversely affect the San Joaquin kit fox.

In a letter dated January 23 ,2006 (151422SWR2004SA9129:BFO), the National Marine Fisheries Service (NMFS) concurred with the Bureau of Reclamation's determination that the proposed Contra Costa Canal Encasement (now Replacement) Project was not likely to adversely affect the Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, the southern distinct population segment of the North American green sturgeon, salmonid critical habitat.

Subsequently, there were changes to the project description, and Reclamation requested reinitiation of informal consultation. On June 11, 2007 (ARN 151422SWR2004SA9129), NMFS concurred with Reclamation's determination that the effects to the species and their critical habitat had not changed.

Reclamation is in the process of reinitiating consultation with both agencies. Per a discussion between Reclamation and the Service, it is expected that the reconsultation for the giant garter snake will be informal this time due to the extremely low chance of the species occurring in the action area. The exclusionary fencing would therefore no longer be used for the giant garter snake.

4.4 Migratory Bird Treaty Act (16 U.S.C. § 703 et seq.)

The MBTA implements various treaties and conventions between the United States and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the Act, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

Impacts to migratory birds were already addressed in EA-07-05-MP and the measures required would continue to apply and to protect the birds from take.

4.5 Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.)

The Magnuson-Stevens Fishery Conservation and Management is the primary law governing marine fisheries management in United States federal waters. The Act was first enacted in 1976 and amended in 1996.

In a letter dated January 23 ,2006 (151422SWR2004SA9129:BFO), the National Marine Fisheries Service (NMFS) concurred with the Bureau of Reclamation's determination that the proposed Contra Costa Canal Encasement (now Replacement) Project was not likely to adversely affect essential fish habitat (EFH) for Pacific salmon. Subsequently, there were changes to the project description, and Reclamation requested reinitiation of informal consultation. On June 11, 2007 (ARN 151422SWR2004SA9129), NMFS concurred with Reclamation's determination that the effects to EFH had not changed.

Reclamation is in the process of reinitiating consultation on EFH.

4.6 National Historic Preservation Act (16 U.S.C. § 470 et seq.)

The NHPA of 1966, as amended (16 U.S.C. 470 et seq.), requires that federal agencies give the Advisory Council on Historic Preservation an opportunity to comment on the effects of an undertaking on historic properties, properties that are eligible for inclusion in the National Register. The 36 CFR Part 800 regulations implement Section 106 of the NHPA.

Section 106 of the NHPA requires federal agencies to consider the effects of federal undertakings on historic properties, properties determined eligible for inclusion in the National Register. Compliance with Section 106 follows a series of steps that are designed to identify interested parties, determine the APE, conduct cultural resource inventories, determine if historic properties are present within the APE, and assess effects on any identified historic properties.

Section 5 Preparers and Reviewers

Ben Lawrence, Natural Resources Specialist, SCCAO- 412
Shauna McDonald, Wildlife Biologist, SCCAO- 424
Chuck Siek, Supervisory Natural Resources Specialist- SCCAO-411
Amy Barnes, Archaeologist or Architectural Historian, MP-153
Patricia Rivera, ITA, MP-400

Section 6 Acronyms and Abbreviations

APE	Area of Potential Effects
BAAQMD	Bay Area Air Quality Management District
CAA	Clean Air Act
CAP	Clean Air Plan
CARB	California Air Resources Board
CCCRP	Contra Costa Canal Replacement Project
CCWD	Contra Costa Water District
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CSCC	California State Coastal Conservancy
CVP	Central Valley Project
CVRWQCB	Central Valley Regional Water Quality Control Board
DWR	Department of Water Resources
EA	Environmental Assessment
EC	Electroconductivity
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act
GHG	Greenhouse gases
ITA	Indian Trust Asset
MBTA	Migratory Bird Treaty Act
National Register	National Register of Historic Places
NHPA	National Historic Preservation Act
PP	Pumping Plant
Reclamation	United States Bureau of Reclamation
ROG	Reactive Organic Gas
RSFS	Rock Slough Fish Screen
SEA	Supplemental Environmental Assessment
SIP	State Implementation Plan
SWP	State Water Project
USFWS	US Fish and Wildlife Service

Section 7 References

Anderson, J, F Chung, M Anderson, L Brekke, D Easton, M Ejetal, R Peterson, and R Snyder. 2008. Progress on Incorporating Climate Change into Management of California's Water Resources. *Climatic Change* 87 (Suppl 1):S91–S108 DOI 10.1007/s10584-007-9353-1.

Bay Area Air Quality Management District (BAAQMD). March 2010. Bay Area 2005 Ozone Strategy.

Bay Area Air Quality Management District (BAAQMD). March 2010. Bay Area 2010 Clean Air Plan (CAP).

Bureau of Reclamation (Reclamation). 2007. Contra Costa Canal Replacement Project Environmental Assessment. July 11, 2007.

California Air Resources Board (CARB). 2011. California Air Basins. Website: http://www.arb.ca.gov/knowzone/basin/basin.htm.

California Department of Fish and Game, U.S. Fish and Wildlife Service, and U.S. Bureau of Reclamation. 2010. Suisun Marsh Habitat Management, Preservation, and Restoration Plan. Draft EIS/EIR. October 2010.

City of Oakley. 2008. Development Projects (map). July 2008.

Contra Costa County. 2007. Contra Costa County Zoning Map. April 2007.

Contra Costa Water District (CCWD). 2013. CEQA Addendum No. 3, Segment 2 and Flood Isolation Structure Mitigated Negative Declaration. March 2013.

Department of Water Resources and California State Coastal Conservancy (DWR and CSCC). 2008. Draft Environmental Impact Report, Dutch Slough Tidal Marsh Restoration Project (SCH# 2006042009). November 2008.

Environmental Protection Agency (EPA). 2009. Mandatory Reporting of Greenhouse Gases, Final Rule (40 CFR Parts 86, 87, 89 et al.) *Federal Register*. 74(209): 56260-56519.

Environmental Protection Agency (EPA). 2011a. Climate Change – Basic Information. Website: http://www.epa.gov/climatechange/basicinfo.html.

Environmental Protection Agency (EPA). 2011b. U.S. Greenhouse Gas Inventory. Website: http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html.

Environmental Protection Agency (EPA). 2011c. Climate Change – Science. Website: http://www.epa.gov/climatechange/science/index.html.

Environmental Protection Agency (EPA). 2011d. Climate Change – Regulatory Initiatives. Website: http://www.epa.gov/climatechange/initiatives/index.html.

Federal Emergency Management Agency (FEMA). 2009. Flood Insurance Rate Map, Contra Costa County California and Incorporated Areas. Panels 06013C0355F and 06013C0360F. June 2009.

Intergovernmental Panel on Climate Change. 2007. Climate Change 2007: Synthesis Report. Website: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf. Accessed April 2011.

Moyle, P.B. 2002. Inland Fishes of California. University of California Press. Berkeley, CA.

Swanson, C., T. Reid, P.S. Young, and J.J. Cech. 2000. Comparative environmental tolerances of threatened delta smelt (*Hypomesus transpacificus*) and introduced Wakasagi (*H. nipponensis*) in an altered California estuary. Oecologia 123:384-390.

U.S. Census Bureau (Census). 2012. Contra Costa County Quickfacts. Website: http://quickfacts.census.gov/qfd/states/06/06013.html. Accessed May 2012.

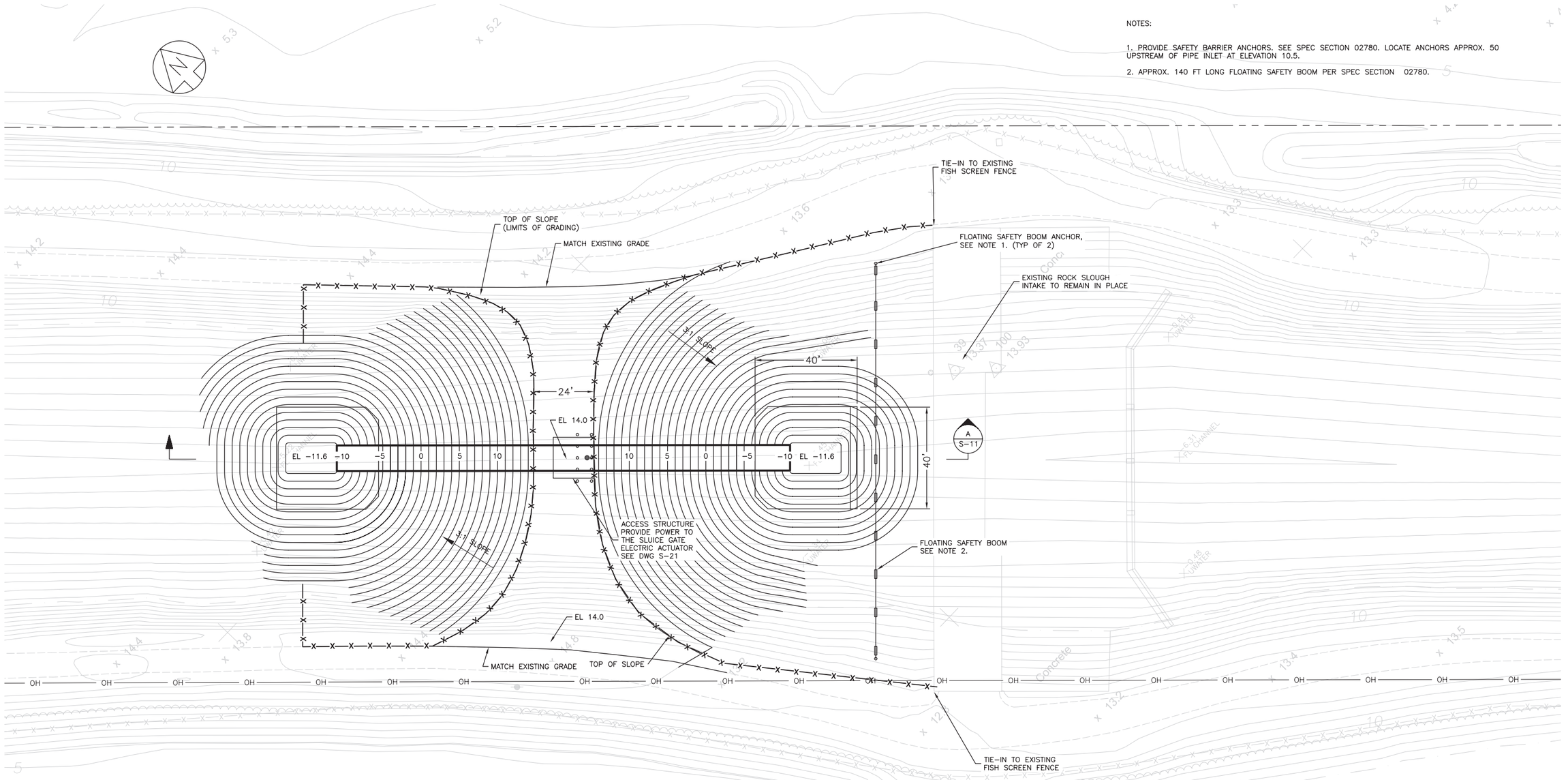
U.S. Fish and Wildlife Service (USFWS). 1985. Wetlands Mapper. Website: http://www.fws.gov/wetlands/Wetlands-Mapper.html. Map dated April 1985, accessed April 2013.

Appendix A Flood Isolation Structure Plans

NOTES:

1. PROVIDE SAFETY BARRIER ANCHORS. SEE SPEC SECTION 02780. LOCATE ANCHORS APPROX. 50 UPSTREAM OF PIPE INLET AT ELEVATION 10.5.

2. APPROX. 140 FT LONG FLOATING SAFETY BOOM PER SPEC SECTION 02780.



ROCK SLOUGH INTAKE
GRADING PLAN
SCALE: 1" = 20'

BROWN AND CALDWELL

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2"-SCALE ACCORDINGLY)

REGISTERED PROFESSIONAL ENGINEER
PETER H. BELLOWS
No. C34337
Exp. 9-30-11
CIVIL
STATE OF CALIFORNIA
PRELIMINARY
DATE: 6/24/2011

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR BID			

DESIGN BY:	K KAI
CHECKED BY:	M. MAHER
DRAWN BY:	L FINNERTY
CHECKED BY:	P. BELLOWS
PROJECT NO.: 404000	SCALE: AS SHOWN
CAL GRID:	ASSESSOR'S BOOK:
CAD FILE: D-139767-C-61	PLOT DATE: 6/29/2011 5:00 PM

CONTRA COSTA WATER DISTRICT
CONCORD, CALIFORNIA

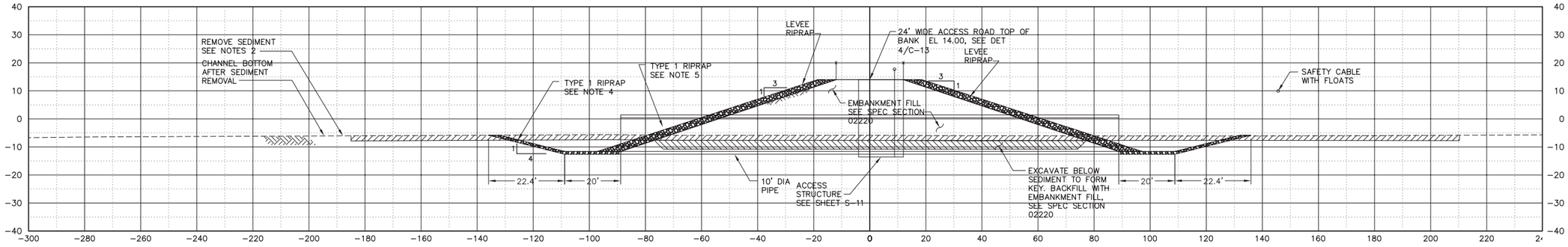
CANAL LEVEE ELIMINATION AND FLOOD PROTECTION
PROJECT PHASE 2, 3, AND 4 – PIPELINE
ROCK SLOUGH INTAKE GRADING PLAN

SHEET NO: 69 OF 66	DRAWING NO. D–XXXX	CONSULTANT NO. C–61	REV. 0

Path: P:\Departments\CAD Admin\Burke\D-139767-C-63-k2_recover – Stand Filename: D-139767-C-61 Plot date: Jun 29, 2011-05:00:07pm CAD User: lfinnerty.
Xref Filename: | X-TTBLOCK-22X34 | X-Pipe-Align | X-Topo | X-utility | X-Canal Grading | X-Canal Grading-Access Roads |

NOTES:

1. SEE SHT C-1 FOR PIPE ALIGNMENT AND REQUIREMENTS.
2. REMOVE SEDIMENT FROM CANAL AND USE AS CANAL FILL. SEE SPEC SECTION 02220.
4. PLACE RIPRAP ON TOP OF GEOTEXTILE FABRIC. RIPRAP SHALL HAVE A MIN THICKNESS OF 9".
5. RIPRAP ON BOTH SIDES OF PIPE SHALL BE PLACED ON GEOTEXTILE. RIPRAP PLACEMENT SHALL BE PER DET 1/C-25.
6. HYDROSEED GRADED SURFACES PER SPEC SECTION 02920.



A / C-9 SECTION

SCALE 1" = 20' H
1" = 20' V

THIS DRAWING IS NOT VALID FOR CONSTRUCTION PURPOSES UNLESS IT BEARS THE SEAL AND SIGNATURE OF A DULY REGISTERED PROFESSIONAL

BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2"-SCALE ACCORDINGLY)

REGISTERED PROFESSIONAL ENGINEER PETER H. BELLOWS No. C34337 Exp. 9-30-09 CIVIL STATE OF CALIFORNIA

DATE: 6/25/2008

REV.	DESCRIPTION	BY	APP.	DATE
0	ISSUED FOR BID			

DESIGN BY: KK
CHECKED BY: P. BELLOWS
DRAWN BY: L. FINNERTY
CHECKED BY: P. BELLOWS
PROJECT NO.: 404000
SCALE: AS SHOWN
CAD GRID:
ASSESSOR'S BOOK:
CAD FILE: D139767-C-09
PLOT DATE: 6/29/2011 5:03 PM

CONTRA COSTA WATER DISTRICT
CONCORD, CALIFORNIA

CANAL LEVEE ELIMINATION AND FLOOD PROTECTION PROJECT PHASE 2, 3, AND 4 - PIPELINE

ROCK SLOUGH INTAKE SECTION

SHEET	DRAWING NO.	CONSULTANT NO.	REV.
13 OF 43	D-11162	C-9	0

Path: P:\Departments\CAD Admin\Burke\d-11162-ph1b-c09\2-sheets-Phase Filename: D139767-C-09 Plot date: Jun 29, 2011-05:03:18pm CAD User: lfinnerty.
Xref Filename: | X-TTBLOCK-22X34 | X-sections | X-Pipe-Sections |

Appendix B Cultural Resources (Pending)

Appendix C Indian Trust Assets

Lawrence, Benjamin <blawrence@usbr.gov>

IS THIS BETTER-SO SORRY

RIVERA, PATRICIA <privera@usbr.gov> Fri, Apr 5, 2013 at 10:05 AM
To: Benjamin Lawrence <blawrence@usbr.gov>

Ben,

I reviewed the proposed action to approve Contra Costa Water District's request to extend from the terminus of the previous work (See below) to approximately 500 feet beyond Sellers Avenue, a total distance of roughly 5,500 feet. In addition, the following features have been added which were not included in the original evaluation:

A flood isolation structure would be installed near the Rock Slough Fish Screen, allowing the canal to be isolated from the Delta during flood conditions.

Contra Costa is requesting elimination of fish-related seasonal work restrictions, since the Rock Slough Fish Screen now prevents entry of special status fish into the canal. Due to the shallow water table, extensive dewatering would be necessary during construction. Contra Costa is evaluating options for managing the excess water, including land application or discharging the water at the fish screen headworks.

In order to continue providing water service to customers between Pumping Plant 1 and Pumping Plant 4 during construction, Contra Costa would like to construct a new pumparound and turnout at Pumping Plant 4. This would allow the District to pump water “backwards” up the canal from the Los Vaqueros system.

The proposed action does not have a potential to affect Indian Trust Assets. The nearest ITA is the Buena Vista Rancheria approximately 47 miles Northwest of the project location.

- A flood isolation structure would be installed near the Rock Slough Fish Screen, allowing the canal to be isolated from the Delta during flood conditions.

- Contra Costa is requesting elimination of fish-related seasonal work restrictions, since the Rock Slough Fish Screen now prevents entry of special status fish into the canal.

- Due to the shallow water table, extensive dewatering would be necessary during construction. Contra Costa is evaluating options for managing the excess water, including land application or discharging the water at the fish screen headworks.

In order to continue providing water service to customers between Pumping Plant 1 and Pumping Plant 4 during construction, Contra Costa would like to construct a new pumparound and turnout at Pumping Plant 4. This would allow the District to pump water “backwards” up the canal from the Los Vaqueros system. se the Contra Costa Canal in a ten-foot diameter pipe between Pumping Plant 1 and the Rock Slough Fish Screen, a total distance of 3.97 miles. Segment 1, from the forebay of Pumping Plant 1 to west of Marsh Creek (approximately 1,900 feet), was completed in 2009.

Contra Costa has now secured funding for Segment 2, which would extend from the terminus of the previous work to approximately 500 feet beyond Sellers Avenue, a total distance of roughly 5,500 feet. In addition, the following features have been added which were not included in the original evaluation:

- A flood isolation structure would be installed near the Rock Slough Fish Screen, allowing the canal to be isolated from the Delta during flood conditions.

- Contra Costa is requesting elimination of fish-related seasonal work restrictions, since the Rock Slough Fish Screen now prevents entry of special status fish into the canal.

- Due to the shallow water table, extensive dewatering would be necessary during construction. Contra Costa is evaluating options for managing the excess water, including land application or discharging the water at the fish screen headworks.

- In order to continue providing water service to customers between Pumping Plant 1 and Pumping Plant 4 during construction, Contra Costa would like to construct a new pumparound and turnout at Pumping Plant 4. This would allow the District to pump water “backwards” up the canal from the Los Vaqueros system.

The proposed action does not have a potential to affect Indian Trust Assets. The nearest ITA is the Buena Vista Rancheria approximately 47 miles Northwest of the project location.

Patricia Rivera
Native American Affairs Program Manager
US Bureau of Reclamation
Mid-Pacific Region
2800 Sacramento, California 95825
(916) 978-5194

Patricia Rivera
Native American Affairs Program Manager
US Bureau of Reclamation
Mid-Pacific Region
2800 Sacramento, California 95825
(916) 978-5194

Appendix D Limited Threat Discharge Letter

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

12 June 2013

CERTIFIED MAIL
7012 2210 0002 1420 1715

Mark Seedall
Principal Planner
Contra Costa Water District
1331 Concord Avenue
Concord, CA 94524

NOTICE OF APPLICABILITY (NOA); LIMITED THREAT GENERAL WASTE DISCHARGE REQUIREMENTS ORDER R5-2013-0073 (GENERAL ORDER); CONTRA COSTA CANAL REPLACEMENT PROJECT, CONTRA COSTA COUNTY

Our office received a Report of Waste Discharge application on 29 March 2013 from the Contra Costa Water District (hereinafter Discharger), Contra Costa Canal Replacement Project (hereinafter Project) for discharge of groundwater to surface water at Rock Slough. Based on the application submitted by the Discharger, staff has determined that the Project meets the required conditions for approval under the General Order for Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water (Limited Threat General Order). This project is hereby assigned Limited Threat General Order R5-2013-0073-029 and National Pollutant Discharge Elimination System (NPDES) Permit No. CAG995002. Please reference your Limited Threat General Order number, **R5-2013-0073-029,** in your correspondence and submitted documents.

The Limited Threat General Order is enclosed, and may also be viewed at the following web address: http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2008-0082.pdf. You are urged to familiarize yourself with the contents of the entire document. The Limited Threat General Order prescribes mandatory discharge monitoring and reporting requirements. The project activities shall be operated in accordance with the requirements contained in this NOA and the Limited Threat General Order.

PROJECT DESCRIPTION

The Contra Costa Canal Replacement Project is a drinking water supply protection and flood management project to replace four miles of unlined Contra Costa Canal with reinforced concrete pipeline from the Discharger's Pumping Plant 1 (PP1) to the Rock Slough Headworks. The first phase of the project was completed in 2009 and replaced approximately 1,900 feet of unlined Canal from PP1 to Marsh Creek. The Discharger will be constructing the second phase in 2014-2015, which will include approximately 5,500 feet of pipeline replacing the unlined canal from Marsh Creek to Sellers Avenue and will include a flood isolation structure at the Rock Slough headworks. During construction, shallow ground water will be extracted through wells to facilitate pipeline construction, and dewatered groundwater will be discharged to nearby land areas under the Discharger's existing NOA with State Water Resources Control Board's (State

Water Board) Water Quality Order No. 2003-0003-DWQ for the category of small/temporary dewatering projects. Discharge to land is the preferred disposal method; however due to landowner constraints or wet weather conditions, a portion of the dewatered groundwater will need to be discharged to surface water at Rock Slough.

During phase 2 construction, dewatering rates are expected to range from 5-10 million gallons per day (MGD) and will occur April 2014 through November 2015. Under a conservative scenario involving a wet year with 400 acres of land available for discharge, it is estimated that a daily maximum discharge rate of 3 MGD would be discharged to surface water. The actual flows may vary along the project alignment due to the differences in elevation between the base of the excavation and groundwater.

During the construction, shallow groundwater wells will be installed along the pipeline alignment. The purpose of the wells is to remove the groundwater below the anticipated trench bottom elevation so the soils can be sufficiently dried to enable compaction and backfill of the pipeline. Each groundwater well will discharge to a header pipeline that will convey the groundwater to the discharge areas. Groundwater will be land-applied to the extent possible, but may at times need to be discharged to surface water (Rock Slough).

The first dewatering configuration represents the period when the Canal work area is isolated from Rock Slough at the head works. This configuration provides the Rock Slough Fish Screen Afterbay (RSFS Afterbay) as a mixing area prior to discharge to Rock Slough. The extracted groundwater will not undergo any treatment; however, the Discharger will use a diffuser system to dissipate the groundwater in the RSFS Afterbay. The purpose of the diffuser system is to provide enhanced dilution of the groundwater before it is discharged to Rock Slough.

The second dewatering configuration involves isolation of the canal work area from Rock Slough at Sellers Avenue. This provides a larger mixing area prior to discharge of dewatered groundwater to Rock Slough, therefore, little to no impact to the receiving water is expected from discharge of dewatered groundwater to surface waters.

CALIFORNIA TOXIC RULE / STATE IMPLEMENTATION POLICY MONITORING

The Limited Threat General Order incorporates the requirements of the California Toxic Rule (CTR) and the State Water Board's *Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, 2005, also known as the State Implementation Policy (SIP).

Screening levels for CTR constituents are found in Attachment B of the Limited Threat General Order. Review of your effluent water quality data in comparison to the CTR screening values, showed no reasonable potential for the discharge to cause or contribute to an excedence of the CTR water quality objectives in Rock Slough. However, due to the discharge flow rate of up to 3 million gallons daily, this discharge has a limited threat to water quality.

EFFLUENT LIMITATIONS

The following effluent limitations are applicable to this discharge and are contained in Limitations and Discharge Requirements, Section V, of the Limited Threat General Order:

Effluent Limitations – Applicable to All Limited Threat Discharges

A.2 Acute Whole Effluent Toxicity. Survival of aquatic organisms in 96-hour bioassays of undiluted waste for all limited threat discharges shall be no less than:

a. 70%, minimum for any one bioassay; and
b. 90%, median for any three consecutive bioassays.

Effluent Limitations – Limited Threat Dischargers to Specific Waterbodies

B.4 The pH of all limited threat discharges within the Sacramento and San Joaquin River Basins (except Goose Creek) shall at all times be within the range of 6.5 and 8.5.

MONITORING AND REPORTING
Monitoring and reporting requirements are contained in Attachment E of the Limited Threat General Order. The Discharger is required to comply with the following monitoring and reporting requirements for the effluent and receiving water as specified in Attachment E of the Limited Threat General Order.

Effluent Monitoring – The Discharger shall monitor the effluent as required in Table E-2 for Total Flow, Electrical Conductivity @ 25°C, pH, and Whole Effluent Toxicity.

Effluent Monitoring – The Discharger shall monitor the limited threat discharge prior to discharging to Rock Slough Fish Screen Afterbay (EFF-001) as follows:

Table 1: Rock Slough Fish Screen Afterbay (EFF-001)

Parameter	Units	Sample Type	Monitoring Frequency	Required Analytical Test Method
Total Flow	gpd	Estimate	1/Day	[1]
Electrical Conductivity @ 25 C°	µmhos/cm	Grab	1/Month	[1]
pH	standard units	Grab	1/Day	[1]
Acute Toxicity	% survival	Grab	1/Year	[2]
Chronic Toxicity	--	Grab	1/Year	[3]

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136
[2] The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, ammonia, total residual chlorine, and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.
[3] The presence of chronic toxicity shall be estimated as specified in Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002.

The Discharger shall also monitor the limited threat discharge prior to discharging to Rock Slough at Sellars Avenue (EFF-002) as follows:

Table 2: Rock Slough at Sellars Avenue (EFF-002)

Parameter	Units	Sample Type	Monitoring Frequency	Required Analytical Test Method
Total Flow	gpd	Estimate	1/Day	[1]
Electrical Conductivity @ 25 C°	µmhos/cm	Grab	1/Month	[1]
pH	standard units	Grab	1/Day	[1]
Acute Toxicity	% survival	Grab	1/Year	[2]
Chronic Toxicity	--	Grab	1/Year	[3]

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136

[2] The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, ammonia, total residual chlorine, and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.

[3] The presence of chronic toxicity shall be estimated as specified in Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002.

Receiving Water Monitoring – None required.

The Discharger must notify the Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff 24 hours 1) before the initiation of the discharge, and 2) as soon as noncompliance is anticipated. The Discharger shall also notify Central Valley Water Board staff when the discharge ceases. Monitoring in accordance with the Limited Threat General Order shall begin upon initiation of discharge. Monitoring reports shall be submitted to the Central Valley Water Board on a quarterly basis, and shall begin with the second Quarter 2013 Report, which will include monitoring required as of the date of this NOA. Quarterly monitoring reports must be submitted until your coverage is formally terminated in accordance with the Limited Threat General Order, even if there is no discharge or receiving water flow during the reporting quarter.

Rock Slough is not listed under the Clean Water Act 303(d) List of impaired water bodies. Therefore, no additional effluent limitations or monitoring requirements will be added to this Limited Threat General Order.

GENERAL INFORMATION AND REQUIREMENTS

The Central Valley Water Board shall be notified immediately if any effluent limit violation is observed during implementation of the project.

Discharge of material other than what is described in the application is prohibited. The required annual fee (as specified in the annual billing you will receive from the State Water Board) shall

be submitted until this NOA is officially terminated. You must notify this office in writing when the discharge regulated by the Limited Threat General Order is no longer necessary. If a timely written request is not received, the Discharger will be required to pay additional annual fees as determined by the State Water Board.

ENFORCEMENT

Failure to comply with the Limited Threat General Order may result in enforcement actions, which could include civil liability. Effluent limitation violations are subject to a Mandatory Minimum Penalty (MMP) of $3,000 per violation. In addition, late monitoring reports may be subject to MMPs. When discharges do not occur during a quarterly report monitoring period, the Discharger must still submit a quarterly monitoring report indicating that no discharge occurred to avoid being subject to enforcement actions.

COMMUNICATION

All monitoring reports submittals, notification of the beginning and end of discharge, and questions regarding compliance and enforcement shall be directed to Lucio Orellana of the Central Valley Water Board's NPDES Compliance and Enforcement Unit. Mr. Orellana can be reached at (916) 464-4660 or lorellana@waterboards.ca.gov.

Questions regarding the permitting aspects of your Limited Threat General Order, and written notification for termination of coverage under the Order, shall be directed to Mr. Jim Marshall at (916) 464-4772 or at jdmarshall@waterboards.ca.gov.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with California Water Code Section 13320 and California Code of Regulations, Title 23, Sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this NOA, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day.

Copies of the law and regulations applicable to filing petitions may be found on the Internet at: http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request.

for Pamela C. Creedon
Executive Officer

Enclosure: General Order R5-2013-0073 (Discharger only)

cc: U.S. Environmental Protection Agency, Region IX, San Francisco
Phil Isorena, Division of Water Quality, State Water Board, Sacramento

file: 000-Limited Threat-21Augl12