

# **Butte Slough Outfall Gates Rehabilitation Project Draft Initial Study/Proposed Mitigated Negative Declaration**



**California Department of Water Resources**

**Prepared by:  
California Department of Water Resources  
Division of Flood Management  
Flood Maintenance Office**

**Contact:  
Stephanie Chun  
Sr. Environmental Scientist, Specialist  
3310 El Camino Ave., Room 140  
Sacramento, CA 95821  
916-574-0361**

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## **NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION FOR THE BUTTE SLOUGH OUTFALL GATES REHABILITATION PROJECT**

The California Department of Water Resources (DWR), Division of Flood Management (DFM) has prepared this initial study (IS) and intends to adopt the proposed mitigated negative declaration (MND) for the Butte Slough Outfall Gates Rehabilitation Project in compliance with the California Environmental Quality Act (CEQA).

**Project Title:** Butte Slough Outfall Gates Rehabilitation Project

**Lead Agency:** DWR, DFM

**Project Location:** The Butte Slough Outfall Gates (BSOG) are located at the confluence of Butte Slough and the Sacramento River, approximately 5 miles downstream from the town of Colusa on the left bank of the Sacramento River. The structure is located on both sides of the Sacramento River levee, within both Butte Slough and the Sacramento River, in Sutter and Colusa counties.

**Project Description:** DWR/DFM proposes to restore and modernize the BSOG. This structure was built in 1935 and is important to the flood control system as it enables flood and agricultural water runoff regulation and equilibrium. Project activities include rehabilitation of the structure and outfall gates, establishing an on-site control facility and backup power sources, and implementation of structural and operational measures that will reduce long-term environmental impacts. These modifications will extend the functional life of the structure and provide safer and more reliable outfall gate operations. The work is anticipated to occur May through November 2015 and May through November 2016, or during the same months of subsequent years.

**Public Review Period:** The IS/MND is being circulated for public review and comment for a period of 30 days starting on August 8, 2014. Written comments must be received no later than the close of business (4:00pm) on September 6, 2014. Comments should be emailed to [Stephanie.chun@water.ca.gov](mailto:Stephanie.chun@water.ca.gov) or mailed to:

Stephanie Chun  
California Department of Water Resources  
Division of Flood Management- Flood Maintenance Office  
3310 El Camino Ave., Room 140  
Sacramento, CA 95821

### **Copies of this Mitigated Negative Declaration and Initial Study are available at:**

Department of Water Resources- Flood Maintenance Office  
3310 El Camino Ave., Room 140, Sacramento, CA 95821

Sutter County Free Library  
750 Forbes Avenue, Yuba City, CA 95991

Colusa County Library  
738 Market Street, Colusa, CA 95932

Online at: <http://water.ca.gov/floodmgmt/fmo/msb/butte-slough.cfm>

## PROPOSED MITIGATED NEGATIVE DECLARATION

**Project:** Butte Slough Outfall Gates Rehabilitation Project

**Lead Agency:** California Department of Water Resources (DWR), Division of Flood Management

**Project Location:** The Butte Slough Outfall Gates (BSOG) are located at the confluence of Butte Slough and the Sacramento River, approximately 5 miles downstream from the town of Colusa on the left bank of the Sacramento River. The structure is located on both sides of the Sacramento River levee, within both Butte Slough and the Sacramento River, in Sutter and Colusa counties (Figures 1 and 2).

### Project Description:

DWR's Division of Flood Management (DFM) proposes to restore and modernize the Butte Slough Outfall Gates (BSOG). This structure was built in 1935 and is important to the flood control system as it enables flood and agricultural water runoff regulation and equilibrium. Project activities include rehabilitation of the structure and outfall gates, establishing an on-site control facility and backup power sources, and implementation of structural and operational measures that will reduce long-term environmental impacts. These modifications will extend the functional life of the structure and provide safer and more reliable outfall gate operations. The work is anticipated to occur May through November 2015 and May through November 2016, or in the same months of subsequent years.

### Findings:

Based on the Initial Study (IS), it has been determined that the proposed project would not have any significant effects on the environment because environmental commitments and mitigation measures would be implemented to reduce impacts to a less than significant level. This conclusion is supported by the following findings:

1. The proposed project would not impact the following CEQA Appendix G environmental factors:
  - a. Cultural and Historic Resources;
  - b. Land Use and Planning; and
  - c. Mineral Resources
2. The proposed project would have a less than significant impact to the following CEQA Appendix G environmental factors:
  - a. Agriculture and Forestry Resources;
  - b. Greenhouse Gas Emissions;
  - c. Groundwater Resources;
  - d. Population, Employment, and Housing;

- e. Public Services;
  - f. Utilities and Service Systems
3. Mitigation has been adopted by DWR to reduce potentially significant impacts related to the following CEQA Appendix G environmental factors to a level of less than significant:
- a. Aesthetics;
  - b. Air Quality;
  - c. Biological Resources- Aquatic;
  - d. Biological Resources-Terrestrial;
  - e. Geology, Soils, and Seismicity;
  - f. Hazards and Hazardous Materials;
  - g. Hydrology;
  - h. Noise;
  - i. Recreation;
  - j. Transportation and Traffic; and
  - k. Water Quality

## **MITIGATION MEASURES:**

The following mitigation measures will be implemented by DWR to avoid, minimize and mitigate environmental impacts by the proposed project. Implementation of these mitigation measures would reduce the environmental impacts of the proposed project to a less than significant level.

## **AESTHETICS**

**Mitigation Measure VIS-1 – Reduce Light and Glare During and Post-Construction** (similar to *CVFPP PEIR Mitigation Measure VIS-4 - Establish and Require Conformance to Lighting Standards, and Prepare and Implement a Lighting Plan*):

- If construction lighting is needed, contractors will be required to shield or screen lighting fixtures and direct lights downward onto the work site and prevent significant light spill onto adjacent properties
- Contractors will place and direct flood or area lighting needed for construction activities or for security so as not to significantly disturb adjacent residential areas, passing motorists, or other light-sensitive receptors
- The use of harsh mercury vapor, low-pressure sodium, or fluorescent bulbs or light fixtures that are of unusually high intensity or brightness will be prohibited unless there is no practicable alternative
- Design features that will reduce the effects of nighttime lighting, namely directional shielding for all substantial light sources, will be included in the project designs. In addition, automatic shutoffs or motion sensors for lighting features will be considered in the project designs to further reduce excess nighttime lighting. All nighttime lighting will be shielded to prevent the light from shining off the surface intended to be illuminated.
- Materials with natural colors and low-reflection materials will be used on all new or replacement structures to the extent feasible so that the facilities appear more consistent with the existing character of the area and do not generate excessive glare.

## **AIR QUALITY**

**Mitigation Measure AQ-1 – Eliminate Construction Disposal Burning** (similar to *CVFPP PEIR Mitigation Measure AQ-1-Implement Measures to Reduce Construction-Related Emissions and FRAQMD Best Available Mitigation Measures 12*): No open burning to dispose of any excess material generated during site preparation or other project activities.

**Mitigation Measure AQ-2 – Measures to Reduce Fugitive Dust Emissions** (similar to *CVFPP PEIR Mitigation Measure AQ-1-Implement Measures to Reduce*

*Construction-Related Emissions; FRAQMD Standard Mitigation Measure 1, 6; FRAQMD Best Available Mitigation Measures 1-11):*

- Submit an air quality control plan with fugitive dust control measures prior to construction and implement the plan during construction. The air quality control plan will include the following items.
- Phase long-duration construction activities to reduce the size of the disturbed area at any given time.
- An operational water truck should be available at all times. Water all exposed surfaces sufficiently to prevent visible dust emissions from exceeding 20 percent opacity beyond the construction boundaries. Construction sites shall also be watered as required by the Air Quality Management District.
- Apply water, nontoxic chemical stabilizers, dust suppressants, tarps or other suitable material (e.g., vegetative ground cover) in all disturbed areas once active work has been completed. Inactive construction areas will be stabilized using appropriate erosion control methods during and at the completion of construction activities for the season.
- Suspend excavation and grading activities as needed when winds exceed 20 mph.
- Restrict the speed of construction vehicles to 15 mph on any unpaved surface.
- Implement measures to reduce or eliminate carryout and trackout of fugitive dust or soil on construction vehicles. Methods to limit carryout and trackout include but are not limited to using wheel washers; sweeping and picking up any trackout on adjacent public streets as needed; and lining access points with gravel.
- Operators should minimize the free fall distance and fugitive dust emissions during transfer processes involving a free fall of soil or other particulate matter.
- Cover or wet the filled cargo compartment of material transport trucks to limit visible dust emissions during transport. Clean or cover the cargo compartment of empty material transport trucks before they leave the site.
- Reestablish ground cover on the construction site as soon as possible and prior to final occupancy through seeding and watering.

**Mitigation Measure AQ-3 – Measures to Reduce Exhaust Emissions** (similar to *CVFPP PEIR Mitigation Measure AQ-1-Implement Measures to Reduce Construction-Related Emissions, FRAQMD Standard Mitigation Measure 2-7, and CVFPP PEIR Mitigation Measure CLM-1a- Implement Greenhouse Gas-Reducing Construction BMPs 6-9):*

- The portable engines and portable engine-driven equipment units used at the project site should obtain proper state and local registration and permits.
- Plan to minimize traffic flow interference from construction activities. Minimize obstruction of through-traffic lanes and provide a flag person as needed to guide traffic properly.
- Construction equipment exhaust emissions cannot exceed 40% opacity or Ringelmann 2.0
- Use alternative-fueled (e.g. compressed natural gas (CNG), liquefied natural gas (LNG), propane, biodiesel) or electricity-powered construction equipment, where

feasible. Utilize existing power sources or clean fuel generators rather than temporary power generators as feasible.

- Minimize idling time by requiring that equipment be shut off after 5 minutes when not in use (as required by the State airborne toxics control measure (Title 13, Section 2485 of the California Code of Regulations)). Provide clear signage that posts this requirement for workers at the entrances to the site.
- Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an air quality control plan prior to commencement of construction.<sup>1,2,4</sup>
- Implement a tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every 2 weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an air quality control plan prior to commencement of construction.
- Develop a project-specific ride share program to encourage carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes.

## **BIOLOGICAL RESOURCES- AQUATIC**

### **Mitigation Measure BIOAQ-1 - Secure Applicable State and/or Federal Permits and Implement Permit Requirements** (similar to *CVFPP PEIR Mitigation Measure BIO-A-2a - Secure State and Federal Permits and Implement Permit Requirements*)

DWR will consult with State and federal environmental regulatory agencies and apply for and obtain all applicable environmental permits relevant project work in order to reduce and/or minimize potential project impacts. DWR will comply with all terms and conditions of the agreed upon permits including measures to protect species and habitat or to restore, replace, or rehabilitate any species or habitat.

### **Mitigation Measure BIOAQ-2 - Pre-Construction Environmental Training, Site Preparation, and Monitoring**

A qualified biologist will develop and administer a worker environmental awareness training program to all construction personnel before construction activities begin. All construction staff working on the project will be required to attend an on-site environmental awareness training given by the biologist. The training will include instruction regarding species identification, natural history, habitat, and protection needs of special status species (e.g. Central Valley spring-run Chinook salmon, Swainson's hawk, etc.) that may occur on-site.

Project boundaries will be established and staked, flagged and/or surrounded by

construction fencing to minimize impacts. No clearing or grubbing beyond these areas will be allowed. Silt fence will be placed at soil/water interfaces where there is a possibility for soils entering the waterways. Sensitive environmental and cultural resource areas within the project boundary will be flagged.

A qualified biologist will be on-site during the initial construction period to monitor work activities at the start of construction to ensure compliance with all requirements. The biologist will be available on an on-call basis on subsequent days and will periodically visit the site during work activities. If a sensitive species is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the species will not be harmed.

### **Mitigation Measure BIOAQ-3 - Avoid and Minimize Impacts to Special Status Fish Species**

To avoid and minimize impacts to special status fish species, in-water work will be conducted between June 15 and November 1. A qualified biologist will be on-site or on-call during in-water construction activities. If a sensitive species is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the species will not be harmed. Additional specific measures to minimize impacts are detailed below:

#### *Dewatering*

A dewatering plan will be prepared and submitted to DWR prior to the commencement of dewatering activities. Pump intakes will be fitted with appropriate sized NMFS and/or CDFW-approved fish screens to prevent fish from becoming entrained. Turbidity measurements will be taken up and downstream of the work during dewatering activities.

Drawdown rates will be established to reduce and/or avoid bank collapse. Water from dewatering efforts will be used for construction water (dust control, etc.) with the remaining balance being discharged into Butte Slough or Sacramento River. If water is pumped back into the waterways, settling tanks or other BMPs may be employed as needed to control turbidity. If dewatering wells are utilized on the project, they will be capped and abandoned in compliance with applicable regulations after construction is complete.

#### *Fish Relocation*

A fish rescue plan will be developed by DWR and approved by CDFW prior to the start of the project. The plan will reference and implement adapted fish relocation measures defined in the CDFW *California Salmonid Stream Habitat Restoration Manual (CDFG 2010)*. Fish entrapped within the cofferdam will be rescued before the cofferdam is completely drained as removing or excluding fish during installation is difficult and not feasible. DWR biologists will capture fish within the cofferdammed areas and relocate as specified in the fish rescue plan.

**Mitigation Measure BIOAQ-4 - Avoid and Minimize Underwater Sound Pressure due to Pile Driving** (similar to *CVFPP PEIR Mitigation Measure BIO-A-4 - Conform to NMFS Guidelines for Pile-Driving Activities*):

A qualified biologist shall be present during such work to monitor construction activities and compliance with terms and conditions of permits. If any injury or mortality to fish is observed, CDFW, NMFS and/or USFWS will be immediately notified and in-water pile driving will cease.

A vibratory hammer for installing piles is preferred but if an impact hammer is needed to drive piles, noise levels should not exceed the following threshold levels established by USFWS and NMFS (for fish greater than 2 grams):

- Peak pressure = 206 decibel
- Accumulated SEL = 187 decibel

To comply with the thresholds, DWR will employ the following mitigation measures:

- Use of an impact hammer cushion block.
- Hammers will be used only during daylight hours, and will initially be used at low energy levels and reduced impact frequency. Applied energy and frequency shall be gradually increased until necessary full force and frequency are achieved.
- Turbidity measurements will be taken up and downstream of the work during pile driving activities to ensure compliance with mandated water quality standards.
- If noise thresholds are not met using the above mitigation measures, DWR will consult with the regulatory agencies and one or both of the following mitigation measures may be implemented as feasible: A bubble curtain may be implemented, surrounding the pile to be driven.
- Shortening the daily duration of pile driving activities.

**Mitigation Measure BIOAQ-5 - Implement Spill and Storm Water Pollution Prevention Plans**

*Spill Prevention and Control Plan and Spill Control Materials*

A Spill Prevention Plan will be developed by the contractor prior to the start of construction. The plan will include spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous materials used for equipment operation, and emergency procedures for responding to spills. It will be updated as needed to reflect changes in on-site hazardous materials. In addition, spill control materials will be available on-site and available for deployment during all phases of work.

*Storm Water Pollution Prevention Plan (SWPPP)*

A SWPPP will be prepared by the contractor and submitted to DWR prior to mobilization to the site. The SWPPP will identify and specify (but is not limited to) the use of an effective combination of appropriate temporary and/or between season erosion and sediment control BMPs for use on the project site, spill prevention and contingency measures, waste disposal, and emergency contacts and responsibilities. A copy of the

approved SWPPP will be available at all times on the construction site.

**Mitigation Measure BIOAQ-6 - SAM Assessment** (similar to *CVFPP PEIR Mitigation Measure BIO-A-3 - Inventory and Replace Shaded Riverine Aquatic Habitat*)

DWR will conduct a Standard Assessment Methodology (SAM) analyses prior to the project permitting. SAM is a tool designed by USACE, DWR, other regulatory agencies, and private counterparts to model, track and monitor vegetation that is removed and/or planted on the project site.

**Mitigation Measure BIOAQ-7 - Revegetation to Compensate for Construction-Related Effects** (Similar to *BIO-T-1a - Conduct Biological Resources Surveys to Quantify Sensitive Natural Communities in Project Areas, and Avoid, Minimize, and, Where Appropriate, Compensate for Construction-Related Effects*)

Disturbed soil areas will be stabilized using appropriate erosion control BMPs during and at the completion of construction activities for Phase 1 and 2 work. If hydroseeding is used to cover disturbed areas, native grass/forb/herbaceous plant, sterile rye, or other non-invasive seed mixes will be used.

If any trees need to be removed or trimmed, a certified arborist will be present to supervise tree removal and trimming to preserve tree health and ensure that appropriate methods are used. Any riparian habitat that is removed along the Sacramento River and/or Butte Slough will be replaced, with replacement to occur on site. Native willows, oaks and/or other native plantings will be replanted on bank slopes in or near the project area. In areas where riprap will be replaced or installed, native willows and/or other native trees and shrubs plantings will be incorporated into the voids/gaps. Lifts of riprap/soil mixes will be placed above the OHWM and where feasible (dependent upon slope and other factors) on the Butte Slough and Sacramento River banks near the project area. Plantings can be incorporated into the riprap/soil mix after construction is complete or during the final stages of construction.

A mitigation and monitoring plan will be developed and implemented to ensure that the proposed on-site plantings fully compensate for losses of shaded riverine aquatic habitat as imposed by any permits issued after project approval. Proposed mitigation habitat will be created at or along the site. DWR will coordinate with the appropriate regulatory agencies regarding compensation numbers/amount, locations, and details. If DWR cannot create on-site mitigation, off-site mitigation may be utilized with agency approval.

## **BIOLOGICAL RESOURCES- TERRESTRIAL**

**Mitigation Measure BIOAQ-1 - Secure Applicable State and/or Federal Permits and Implement Permit Requirements** (similar to *CVFPP PEIR Mitigation Measure BIO-A-*

*2a and BIO-T-3c - Secure State and Federal Permits and Implement Permit Requirements)*

### **Mitigation Measure BIOAQ-2 - Pre-Construction Environmental Training, Site Preparation, and Monitoring**

#### **Mitigation Measure BIOT-1 - Pre-construction Wildlife, Bird, and Plant Surveys** (similar to CVFPP PEIR Mitigation Measure BIO-T-3a - Conduct Focused Surveys for Special-Status Plants and Wildlife, and Avoid Impacts)

Pre-construction surveys for wildlife, bird nests (including song bird nests), special status plants, and/or sensitive habitat will be conducted by a qualified biologist prior to the construction contractor mobilizing to the site. Additionally, pre-construction surveys shall be implemented as follows:

- Swainson's Hawk: If work is to be conducted during the nesting season (April 1 - August 31), pre-construction surveys will be completed prior to construction, within a radius of 0.5 miles of the project site to identify any active nests (eggs or juveniles). Surveys will be completed in accordance with the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (SWHA TAC 2000). If an active nest is identified, CDFW will be notified and consulted. If possible, work will be postponed until September 1 or after the young have fledged. If that area cannot be avoided or work postponed, additional CDFW-approved measures may be implemented to reduce disturbance (i.e. a qualified biologist will monitor the nesting pair during until Sept 1, after the young have fledged, or the nest is no longer active).
- Special Status Raptors: Areas with 0.25 miles of the project site and spoil/borrow site will be surveyed. If active nests are found within 0.25 miles of the project site, impacts will be avoided by establishment appropriate buffers to minimize impacts. The size of the buffers may be adjusted, depending on the project activity and stage of the nest, if a qualified biologist determines that activity within a reduced buffer would not be likely to adversely affect the adults or their young. No trees with an active nest will be removed until a qualified biologist confirms that the nest is no longer active.

## **CULTURAL RESOURCES AND HISTORICAL RESOURCES**

#### **Mitigation Measure CULT-1 - Immediately Halt Construction if Cultural Resources are Discovered** (similar to CVFPP Mitigation Measure CUL-2 - If Cultural Resources Are Discovered, Immediate Halt Construction and Implement an Accidental-Discovery Plan)

Should any cultural resources, such as structural features, unusual amounts of bone or shell, artifacts, human remains, or architectural remains, be encountered during any construction activities, work will be suspended immediately at the location of the find and within an appropriate radius. A qualified DWR archaeologist will conduct a field investigation of the specific site and recommend mitigation deemed necessary for the

protection or recovery of any cultural resource concluded by the archaeologist to represent historical resources or unique archaeological resources. If any archaeological resources are discovered during this project, the appropriate federal and State agencies will be notified.

**Mitigation Measure CULT-2 - Immediately Halt Construction if Human Remains are Discovered** (*similar to CVFPP Mitigation Measure CUL-5b - Immediately Halt Construction if Human Remains are Discovered and Implement a Burial Treatment Plan*)

If human remains are uncovered while engaging in construction activities, all work must stop immediately and the appropriate County coroner must be contacted pursuant to California Health and Human Safety Code 7050.5(b).

## **GEOLOGY, SOILS, AND SEISMICITY**

**Mitigation Measure GEO-1 - Prepare and Implement Dewatering, Erosion Control, and Monitoring Plans as part of a Storm Water Pollution Prevention Plan.**

The contractor will prepare a storm water pollution prevention plan (SWPPP) that identifies best management practices (BMPs) for preventing or minimizing the discharge of sediments and other potential contaminants that have the potential to affect beneficial uses or lead to a violation of water quality objectives. The SWPPP will include the following components:

- *Dewatering Plan.* A dewatering plan will be developed and designed so that any potential discharges to surface water will meet the water quality objectives provided in the *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region* (CVRWQCB, 2007). The Dewatering Plan will describe the procedures necessary to satisfy the requirements of the State of California's General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Storm Water Permit). Construction dewatering activities that discharge to surface waters require National Pollutant Discharge Elimination System (NPDES) authorization under the Waste Discharge Requirements for Dewatering and Other Low Threat Discharges to Surface Waters (Order No. R5-2008-0081 NPDES NO. CAG995001). The dewatering plan is required to include details on the approach to season the channel before reestablishing flows so that flushing flows do not cause surging of sediments downstream. The General NPDES permit contains terms and conditions for discharge prohibitions, specific limits related to effluent and receiving-water quality, solids disposal activities, and water quality monitoring protocols.
- *Erosion Control Plan.* An erosion control plan will be developed for the proposed project and designed to meet the water quality objectives provided in the Basin

Plan as necessary to satisfy the requirements of the General Storm Water Permit. The erosion control plan will identify specific measures for construction, long-term management, and stabilizing soils, if necessary before the onset of winter. BMPs for erosion control, as set forth in the erosion control plan and further defined by DWR, will be implemented. Such BMPs may include the careful use of grading management techniques, silt fences, silt curtains, berms, sandbags, and revegetation.

- *Monitoring Plan.* A monitoring plan will be developed that includes a proposed inspection, monitoring, and reporting program for the proposed project. The monitoring plan will demonstrate the means by which the water quality objectives provided in the Basin Plan will be met during construction and long-term management. BMPs are expected to be fully effective. Notwithstanding, DWR or its contractor will evaluate BMP effectiveness during construction. If the quantity or quality of the BMPs needs to be addressed, DWR or its contractor will implement improvements within 24-hours after the initial discovery of before the onset of an expected storm event.

## **GREENHOUSE GASES**

As an environmental commitment, the proposed project will incorporate the following Best Management Practices (BMPs) from DWR's Climate Action Plan- Phase I: Greenhouse Gas (GHG) Reduction Plan to avoid and minimize impacts related to greenhouse gas emissions:

- BMP 1. Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the project or specific elements of the project.
- BMP 2. Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.
- BMP 3. Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.
- BMP 4. Evaluate the feasibility and efficacy of producing concrete on-site and specify that batch plants be set up on-site or as close to the site as possible.
- BMP 5. Evaluate the performance requirements for concrete used on the project and specify concrete mix designs that minimize GHG emissions from cement production and curing while preserving all required performance characteristics.
- BMP 6. Limit deliveries of materials and equipment to the site to off peak traffic congestion hours.
- BMP 7. Minimize idling time by requiring that equipment be shut down after five

minutes when not in use (as required by the State airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.

- BMP 8. Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an Air Quality Control Plan prior to commencement of construction.
- BMP 9. Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an Air Quality Management Plan prior to commencement of construction
- BMP 10. Develop a project specific ride share program to encourage carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.
- BMP 11. Reduce electricity use in temporary construction offices by using high efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, light, air conditioners, heaters, and other equipment each day at close of business.
- BMP 12. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy duty class 7 or class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay certified truck will be used to the maximum extent feasible.
- BMP 13. Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength where appropriate.
- BMP 14. Develop a project specific construction debris recycling and diversion program to achieve a documented 50% diversion of construction waste.
- BMP 15. Evaluate the feasibility of restricting all material hauling on public roadways to off peak traffic congestion hours. During construction scheduling and execution minimize, to the extent possible, uses of public roadways that would increase traffic congestion

## **HAZARDS AND HAZARDOUS MATERIALS**

### **Mitigation Measure HHM-1 - Hazardous Materials Training**

Construction workers would be trained on the potential to encounter hazardous materials and proper notification procedures. The training will specify that if stained or odorous soils from an unknown source are encountered: 1) work in the vicinity must

cease; 2) a qualified hazardous materials specialist must be consulted; and 3) DWR will also notify the appropriate federal, State, and/or local agencies. A variety of steps may be taken at the discretion of DWR. Among those steps are the following:

- Avoid the area containing the stained/odorous soils or infrastructure.
- Perform Site Assessments to evaluate the nature, extent, and level of hazard to the public and construction workers if construction needs to occur in the exact location of the soils or infrastructure.
- Clean up the area or coordinate with the owner of the affected parcel to perform cleanup activities.

Should DWR elect to clean up activities on its own, all hazardous substances encountered will be removed and properly disposed of by a licensed contractor in accordance with federal and State regulations.

## HYDROLOGY

**Mitigation Measure BIOAQ-7 - Revegetation to Compensate for Construction-Related Effects** (Similar to *BIO-T-1a - Conduct Biological Resources Surveys to Quantify Sensitive Natural Communities in Project Areas, and Avoid, Minimize, and, Where Appropriate, Compensate for Construction-Related Effects*)

## NOISE

### **Mitigation Measure NOI-1 - Implement Noise-Reducing Construction Practices**

DWR will implement the following measures during construction activities when noise-sensitive receptors are located nearby and could be subject to substantial construction noise in excess of applicable standards or substantially greater than existing conditions.

- Implement a Traffic and Noise Abatement plan.
- Equipment will be operated, stored, and/or maintained as far away as practical from sensitive noise receptors.
- Construction equipment will be properly maintained per manufacturer specifications and fitted with the best available noise suppression devices (e.g., mufflers, silencers, wraps). All impact tools will be shrouded or shielded, and all intake and exhaust ports on power equipment will be muffled or shielded. Construction equipment will be inspected before first use and at least once during construction for compliance with these noise reduction measures.
- The use of cushion blocks shall be required between the hammerhead and concrete piles during impact pile driving.
- Equipment that is quieter than standard equipment will be used in the vicinity of sensitive noise receptors when practical. For example, electrically powered equipment will be used instead of internal combustion equipment where use of such equipment is a readily available substitute that accomplishes program

tasks in the same manner as internal combustion equipment.

- Construction equipment operating in the vicinity of sensitive noise receptors will not be left idling for extended periods between construction activities.
- All construction activities, including truck operations (e.g., haul trucks and concrete delivery trucks), will be limited to the daytime weekday hours (8:00 a.m. to 5:00 p.m. in Colusa County and 7:00 a.m. to 6:00 p.m. in Sutter County) to the extent feasible. Construction outside of normal construction hours will be minimized or avoided completely when located adjacent to sensitive receptors. The contractor will work with DWR and notify the counties and/or immediate residents when work is scheduled to extend outside of normal construction times.
- Where stationary construction equipment would result in exceedence of noise standards at nearby sensitive receptor, temporary noise barriers will be installed where feasible between the stationary construction operation and the sensitive receptor.
- Speed limits will be established and enforced for construction traffic.

## **RECREATION**

### **Mitigation Measure REC-1 – Recreational and Construction Activities Coordination**

DWR shall coordinate with the owner of Ward's Landing due to boat ramp closure during project construction. This is due to the physical activities of the project (traffic and boat ramp blocking or closures) that may impact normal business activities including loss of customer access to the temporary ramp closure. DWR will also provide notification to inform local anglers and boat enthusiasts about the boat ramp closure. Notifications will be distributed to local bait shops and posted at other appropriate locations. The notifications will include alternate public boat launches that are located near the project site.

## **TRANSPORTATION AND TRAFFIC**

### **Mitigation Measure TRN-1 – Develop a Traffic and Noise Abatement Plan**

The contractor will be required to develop a Traffic and Noise Abatement Plan prior to construction, and coordinate all use of public roads with the counties of Colusa and Sutter as well as the California Department of Transportation. This plan would include the following measures:

- Construction vehicles would not be permitted to block any roadways or driveways.
- Access will be provided for emergency vehicles at all times (except during the 2 day complete road closure).
- Signs and flagmen would be used, as needed, to alert motorists, bicyclists, and

pedestrians to the presence of haul trucks, construction vehicles and lane closures at all access points.

- A detour route will be identified, in coordination with DWR, and will be clearly marked using appropriate signage.
- Construction vehicles would be required to obey all speed limits, traffic laws, and transportation regulations during construction.
- Construction workers would be encouraged to carpool and required to park in designated staging areas.
- Closure of roads and construction sites would be clearly marked with appropriate closure signage.
- The contractor would be required to repair any private haul routes damaged by construction.

### **Mitigation Measure TRN-2 – Inform Public of Road Closure**

DWR will inform local residents, businesses, and Colusa and Sutter Counties regarding the 2 day closure of Butte Slough Road and Marty Road, and lane closures for the duration of the project. Appropriate signs will be placed in local businesses and on roads.

### **Mitigation Measure TRN-3: Install Traffic Signs**

DWR can install traffic signs at the south and north end of the project along Marty and Butte Slough Roads at locations before the curves in the road as deemed appropriate by Sutter and Colusa Counties as well as the California Department of Transportation.

## **WATER QUALITY**

**Mitigation Measure BIOAQ-1 - Secure Applicable State and/or Federal Permits and Implement Permit Requirements** (similar to *CVFPP PEIR Mitigation Measure BIO-A-2a - Secure State and Federal Permits and Implement Permit Requirements*)

**Mitigation Measure BIOAQ-2 - Pre-Construction Environmental Training, Site Preparation, and Monitoring**

**Mitigation Measure BIOAQ-5 - Implement Spill and Storm Water Pollution Prevention Plans**

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## **PROJECT INFORMATION**

- a) Project Title: Butte Slough Outfall Gates (BSOG) Rehabilitation Project
- b) Lead Agency Name and Address:  
California Department of Water Resources  
Division of Flood Management  
Flood Maintenance Office  
3310 El Camino Ave.  
Sacramento, CA 95821
- c) Contact Person and Phone Number:  
Stephanie Chun  
Senior Environmental Scientist, Specialist  
Phone: 916-574-0361
- d) Project Sponsor's Name and Address:  
Department of Water Resources  
Division of Flood Management  
Flood Maintenance Office  
3310 El Camino Ave.  
Sacramento, CA 95821
- e) Project Location: The BSOG are located at the confluence of Butte Slough and the Sacramento River, 3.73 miles downstream from the town of Colusa on the left bank of the Sacramento River. The structure is located on both sides of the Sacramento River levee, within both Butte Slough and the Sacramento River, in Sutter and Colusa counties within the Meridian U.S. Geological Survey (USGS) 7.5-minute quadrangle.
- f) General Plan Designation: Agricultural-40 and Agricultural-80 (Sutter County)/ Agricultural- General (Colusa County)
- g) Zoning: Agricultural for both Colusa and Sutter Counties
- h) Surrounding Land Uses and Setting: Surrounding land uses include agriculture and open space.
- i) Other Public Agencies Whose Approval is Required: U.S. Army Corps of Engineers, National Marine Fisheries Service, U.S. Fish and Wildlife Service, CA Department of Fish and Wildlife, Central Valley Regional Water Quality Control Board, Central Valley Flood Protection Board, CA State Lands Commission

## **1 INTRODUCTION OF AND CONSISTENCY WITH 2012 CVFPP**

### **1.1 Purpose of Initial Study**

Pursuant to Section 15063 of the California Environmental Quality Act (CEQA) Guidelines (Title 14, California Code of Regulations, Sections 15000 et seq.), an Initial Study is a preliminary environmental analysis that is used by the lead agency as a basis for determining whether an Environmental Impact Report (EIR), a Mitigated Negative Declaration, or a Negative Declaration is required for a project. The CEQA Guidelines require that an Initial Study contain a project description, description of environmental setting, identification of environmental effects by checklist or other similar form, explanation of environmental effects, discussion of mitigation for significant environmental effects, evaluation of the project's consistency with existing, applicable land use controls, and the name of persons who prepared the study.

### **1.2 Central Valley Flood Protection Plan**

The Central Valley Flood Protection Plan (CVFPP) is a comprehensive document intended to guide California's participation (and to influence federal and local participation) in managing flood risk along the Sacramento River and San Joaquin River systems. The CVFPP proposes a State Systemwide Investment Approach (SSIA) as its proposed program for sustainable, integrated flood management in areas currently protected by facilities of the State Plan of Flood Control (SPFC). The CVFPP is a program-level, rather than project-level, document. The CVFPP guides programs to further flood risk reduction in the Central Valley and suggests a range of potential future projects and actions that could help meet that goal. The CVFPP Program EIR (CVFPP PEIR) was written to accompany the plan so that DWR and the Board will be able to rely on this PEIR for future planning and feasibility studies pertinent to implementation. The CVFPP was adopted by the Central Valley Flood Protection Board on July 1, 2012.

### **1.3 Consistency with the CVFPP and CVFPP PEIR**

This Initial Study / Mitigated Negative Declaration (IS/MND) is consistent with the environmental scope, location, objectives and analyses contained in the 2012 CVFPP PEIR. The checklist used for this IS/MND is a revised version of CEQA Guidelines Appendix G and includes some sections and/or specific checklist questions from the 2012 CVFPP PEIR. Impacts on environmental factors of projects conducted under the CVFPP are identified and evaluated in Sections 3.2-3.21 of the CVFPP PEIR. Mitigation strategies described in the 2012 CVFPP PEIR have been incorporated and/or adapted for purposes of this IS/MND as appropriate (these are noted in the mitigation measure section as appropriate). Additional project-specific mitigation measures have been incorporated into this document where appropriate.

The full text of the 2012 CVFPP and CVFPP PEIR are available online at <http://www.water.ca.gov/cvfmpp/documents.cfm> and in hard copy at the Central Valley Flood Planning Office at 3310 El Camino Avenue, Sacramento, CA 95821.

## 1.4 Impact Analyses

Impact analysis sections were guided using environmental checklists to guide questions for analyses. Each section used one of the three main “checklists” that this document referred to and used. These environmental checklists include the 2014 CEQA Guidelines Appendix G, the 2012 CVFPP PEIR revised Appendix G Guidelines (which were based off of the 2012 CEQA Guidelines but tailored to address flood-related program/project analyses), and a hybrid which used the 2014 CEQA Guidelines Appendix G and added additional questions from the 2012 CVFPP PEIR revised Appendix G Guidelines.

- Impact analysis sections that used the 2014 CEQA Guidelines Appendix G:
  - Agriculture and Forestry Resources
  - Cultural and Historic Resources
  - Geology and Soils
  - Hazards and Hazardous Materials
  - Mineral Resources
  - Public Services
  - Transportation and Traffic
  - Utilities and Service Systems
  
- Impact analysis sections that used the 2012 CVFPP PEIR revised Appendix G Guidelines:
  - Aesthetics
  - Air Quality
  - Biological Resources- Aquatic
  - Biological Resources- Terrestrial
  - Climate Change and Greenhouse Gas Emissions
  - Groundwater Resources
  - Hydrology
  - Land Use and Planning
  - Noise
  - Population, Employment and Housing
  - Water Quality
  
- Impact analysis sections that used a “hybrid” Appendix G:
  - Recreation

## 1.5 Anticipated Permits, Approvals and Decisions

- *Federal Clean Water Act Section 404*
- *Federal Clean Water Act Section 401*
- *Federal Clean Water Act Section 402(p)*
- *Federal Endangered Species Act*
- *National Historic Preservation Act, Section 106*
- *California Environmental Quality Act (CEQA) (Public Resources Code 21000 et*

seq.)

- *California Fish and Wildlife (CDFW) Lake and Streambed Alteration Agreement (LSAA) 1602*
- *California Endangered Species Act (CESA)- CDFW (if applicable)*
- *Regional Water Quality Control Board- Waste Discharge Requirement (WDR)*
- *California State Lands Commission (CSLC) - General Lease*
- *Central Valley Flood Protection Board Encroachment Permit (Title 23)*

## **2 PROJECT DESCRIPTION**

This section describes the general project. Specific project details that impact environmental factors will be described under the environmental setting of the corresponding environmental factor section in the initial study.

### **2.1 Project Summary**

The California Department of Water Resources (DWR) Flood Maintenance Office (FMO) proposes to restore and modernize the Butte Slough Outfall Gates (BSOG). This structure is important to the flood control system as it enables flood and agricultural water runoff regulation and equilibrium. Project activities include rehabilitation of the structure and outfall gates; establishing an on-site control facility with backup power sources; and implementation of structural and operational measures that will reduce long-term environmental impacts. These modifications will extend the functional life of the structure and provide safer and more reliable outfall gate operations.

### **2.2 Project Location**

The BSOG are located at the confluence of Butte Slough and the Sacramento River, approximately 5 miles downstream from the town of Colusa on the left bank of the Sacramento River. The structure is located on both sides of the Sacramento River levee, within both Butte Slough and the Sacramento River, in Sutter and Colusa counties (Figures 1 and 2).

### **2.3 Background and History**

BSOG were constructed on behalf of the United States Army Corps of Engineers (USACE) by S. H. Palmer Co, Ltd. and A. J. Grier between 1934 and 1935 (contract #W-1105-eng-146). Construction was completed on October 29, 1935 and consisted of installing seven 66-inch diameter Corrugated Iron Pipes (CIP), each roughly 250 feet long, which extend through a dike constructed across the Butte Slough as part of the levee along the east bank of the Sacramento River. The Central Valley Flood Protection Board (formerly the Reclamation Board) officially accepted responsibility for operation and maintenance of BSOG on September 12, 1944. Maintenance of the BSOG was transferred to the State in 1953. In accordance with Water Code Section 8361, DWR operates and maintains the BSOG on behalf of the State.

The BSOG provide drainage (both for floodwater and agricultural runoff) and water supply control, both of which have significant impacts to the local agricultural economy. The structure conveys excess water from northern low-lying lands (Butte Sink), and regulates irrigation water to upstream diversions located along Butte Slough. In addition, BSOG regulates the dispersion of flood waters between the Butte Slough, which feeds into the Sutter Bypass, and the Sacramento River during flood season and is a crucial facility for maintaining floodwater flow equilibrium.

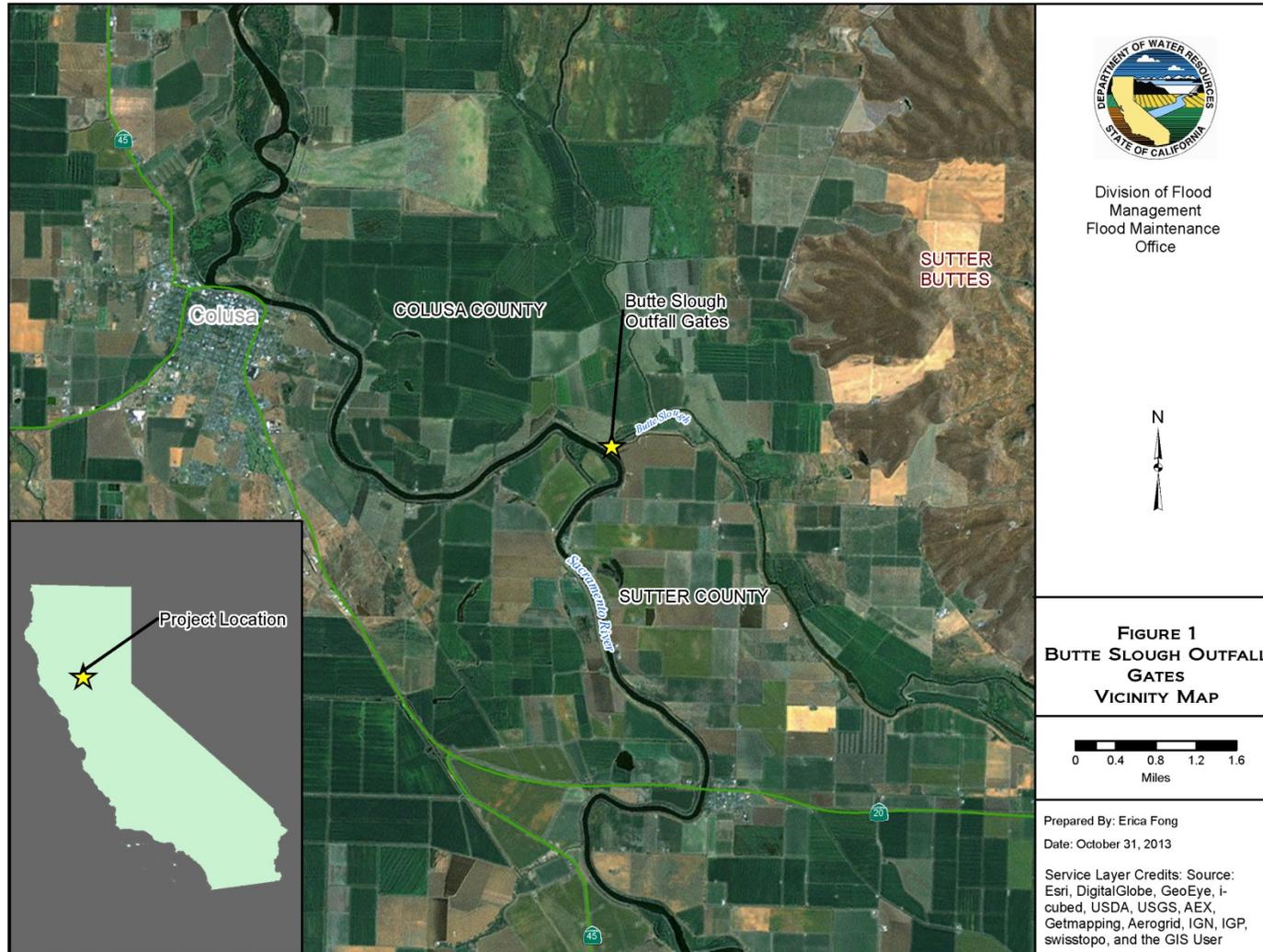


Figure 1. Vicinity Map for Butte Slough Outfall Gates

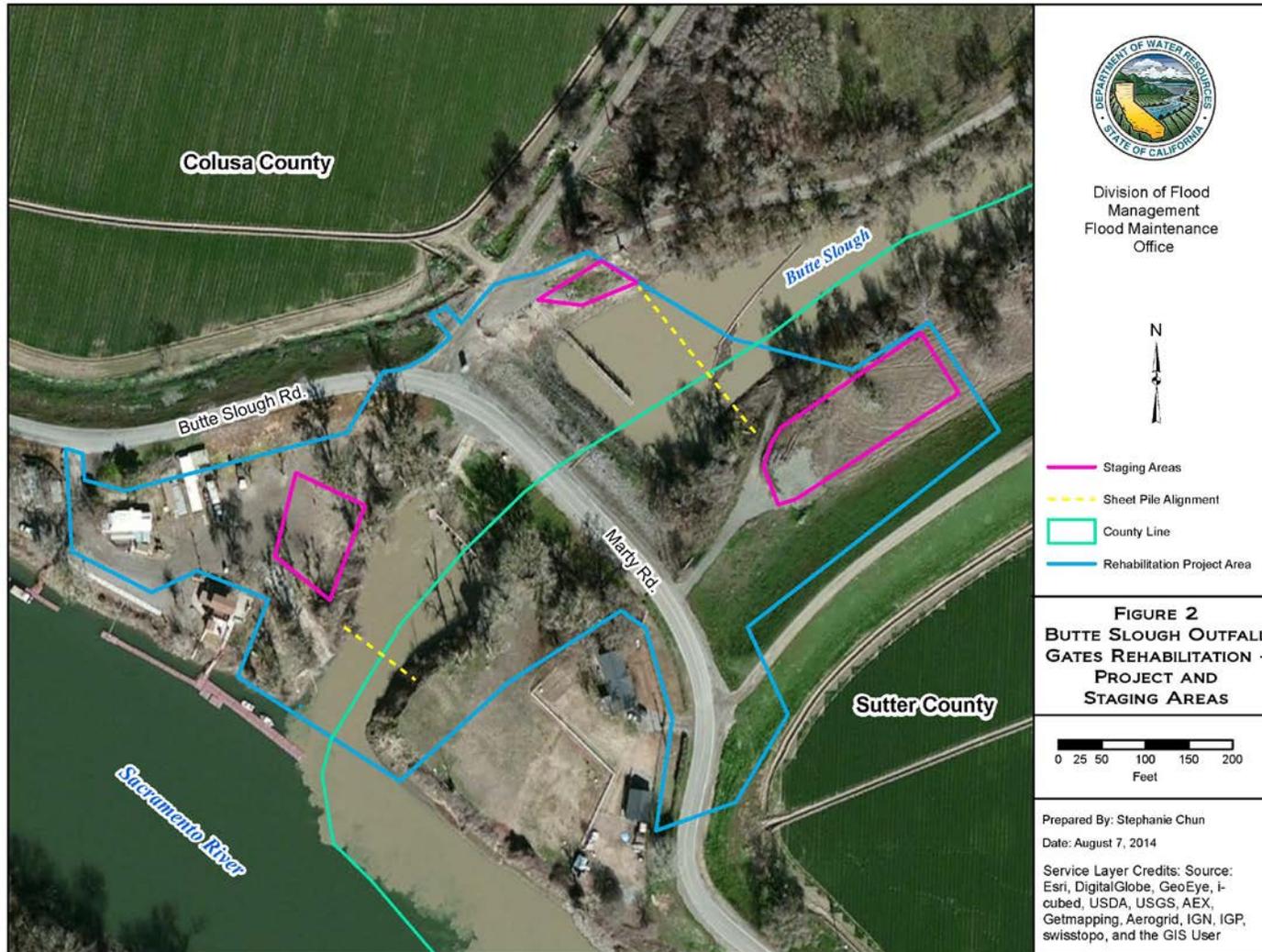


Figure 2. Project Location Map for Butte Slough Outfall Gates Rehabilitation.

Currently, the BSOG consist of a 78.5 foot wide concrete stop log structure with seven flap gates at the structure's outlet on the Sacramento River side, seven slide gates located at the structure's inlet on Butte Slough, and seven 250-foot long, 60-inch diameter steel pipes with coal-tar enamel lining (which were sleeved within the original 66-inch diameter CIP as part of the 1985 rehabilitation of the BSOG) that convey flows through the levee into the Sacramento River. The flap gates are configured so that water can only flow from Butte Slough to the Sacramento River and the slide gates are operated to maintain a water elevation between 41 to 43 feet in Butte Slough. A catwalk provides access to the inlet gates so that the gates can be manually operated by DWR and/or reclamation district staff using a  $\frac{3}{4}$  horsepower drill and generator that are transported to the site.

Significant amounts of debris accumulate on the Butte Slough (inlet) side of the structure as flows pass through to the Sacramento River, and collection and removal of this debris is done manually. An existing buoy line traversing the channel is currently the only control method to prevent debris deposition near the inlet sliding gates; however, it is ineffective because most of the debris flows underneath and past the buoy line. Debris is manually removed from the culvert entrances by DWR staff. Ropes or cables are secured around the debris and the debris is pulled to shore using small boats.

A dive inspection was conducted in October 2008 and found that one flap gate was no longer operational, that significant scouring and erosion had occurred beneath and around the stop log structure, and that the catwalk was deteriorating. DWR repaired the flap gate and began assessing BSOG for other needed maintenance and repairs. FMO staff determined that BSOG required significant rehabilitation and modernization To reduce environmental impacts (e.g. bank erosion, vegetation degradation along banks, etc.).

## **2.4 Project Goals and Objectives**

The purpose and goals of the BSOG rehabilitation project include:

- Rehabilitating the BSOG to provide reliability and functional life for 50 years,
- Modernizing the facility so daily and emergency flood operations work can be conducted in a safe and efficient manner, and
- Reducing environmental operation and maintenance impacts to the surrounding area.

## **2.5 Summary of Work**

The DWR FMO plans to rehabilitate and modernize the BSOG to extend its functional life by 50 years. The proposed project includes rehabilitation and/or construction of the following facilities:

### **a. Inlet Structure**

The concrete inlet structure (on the Butte Slough side of levee) will house slide gates and appurtenances for each of the seven pipes conveying water through the levee, provide stop log slots allowing maintenance of the facilities and improve access to the debris built up in Butte Slough. The structure's foundation will be established at the toe of the levee, with a walkway within the structure to access the slide gate actuators (instead of the catwalk, which will be removed). The structure will be built up against the levee and will include supporting maintenance areas, parking, a boat ramp, and bank stabilization measures. The top of the inlet structure will be approximately 7 feet lower than the levee crown. A boat ramp will be constructed on south side of Butte Slough to provide access for removing debris accumulated at the inlet structure. A concrete paved access road will run from south side of structure near Marty Road to the north side to an existing dirt road.

### **b. Outlet Structure**

The concrete outlet structure (on the Sacramento River side of the levee) will house flap gates and appurtenances for each of the seven pipes conveying water from Butte Slough to Sacramento River. A stable foundation will be reestablished along the existing configuration. A concrete paved access road will run from Marty Road near existing residence on south side of outlet to the top of structure.

### **c. Control Building**

A rectangular control building to maintain controls and electrical equipment necessary for operation of BSOG will be built on the Butte Slough side. The control building and surrounding area will include a power generator and an above-ground propane tank that will be protected by fencing and concrete walls. Power for the controls will be routed through a trench from an existing PG&E pole near the control building and a PG&G meter will be mounted on the outside of control building inside the fenced area.

### **d. Other Supporting Infrastructure**

Additional infrastructure and improvements around these three facilities include paved access roads; security fencing, cameras, and lights; and bank stabilization.

These proposed facilities are illustrated in Figure 3.



### 3 PROJECT AND CONSTRUCTION ELEMENTS

The Butte Slough Outfall Gates rehabilitation project area is approximately 8 acres. This project is anticipated to require two seasons of construction, which will take place between May 1 and November 1 of each construction year (anticipated for 2015 and 2016). In-water work will take place between June 15 to November 1 when sensitive fish and wildlife species are less likely to be present in or near the project area.

#### General Work Conditions

Most construction activities will occur Monday through Friday between 7 a.m. and 6 p.m. during the construction phases of the proposed project. These work times may be extended at key points in the construction phase that must proceed continuously (dewatering, large concrete placements) into Saturdays from 8 a.m. to 5 p.m., as needed. If construction needs to be carried out beyond these work times (e.g. up to 24 hours per day), it will be done for short durations and only during weekdays. Table 1 summarizes key construction materials including amounts to be excavated, imported, and exported.

Table 1  
 Summary Of Anticipated Construction Materials

<b>Construction Materials</b>	<b>Total<sup>1</sup></b>
Excavated soils (onsite)	13,560 cy
Exported spoils (onsite materials unsuitable for construction)	8,520 cy
Imported materials (from Tisdale Bypass)	15,505 cy
Backfill material (mixture of suitable onsite and imported)	20,545 cy
Imported concrete (for structure, building)	3,415 cy
Imported bank stabilization (riprap)	13,330 square feet

<sup>1</sup> Estimated volumes are based on conservative estimates. Cy=cubic yard,  
 SOURCE: DWR Division Of Engineering, 2014

Equipment anticipated to be used for construction include dump trucks, generators, backhoes, bulldozers, compactors, concrete trucks, cranes, earthmovers, vibratory

hammer, impact hammer, excavators, flatbed trucks, front end loaders, road graders, scrapers, tractors, and boats or barges. Construction activities will include the daily arrival and departure of the construction workers and trucks hauling equipment and materials. Construction trucks on local roadways will include dump trucks, concrete trucks, and other delivery trucks and trailers. Dump trucks will be used for earth-moving and clearing, removal of excavated material, and import of fill material and other structural and paving materials. Other trucks will deliver heavy construction equipment, job trailer items, concrete forming materials, piping materials, piles, new facility equipment, and other miscellaneous deliveries.

The local roads being affected by the construction of the inlet and outlet structures will be Marty Road and Butte Slough Road. Approximately 15,600 cubic yards of fill material will come from an existing borrow site located near the Tisdale Bypass (Figures 4 and 5), and will be used to support the new structure. Many of the trips related to construction will likely use the following major and localized roads: Interstate 5 (I-5); Colusa Highway (CA Hwy 20), Bridge Street, River Road, and Meridian Road. For certain portions of the work (e.g., constructing the cofferdam for the inlet structure) transport of equipment and materials by water, barge or boat, (Sacramento River or Butte Slough) could be required.

### **3.1 Phase 1**

In Phase 1, sheet pile cofferdams will be constructed on the inlet and outlet sides of the Sacramento River levee, followed by demolition of the existing structures. The outlet structure will be completed in phase 1 but the inlet structure will only be partially completed. The work anticipated to be completed in this phase includes pre-construction surveys; environmental training; equipment mobilization; excavation; installation of cofferdams and dewatering of the cofferdammed area; demolition; rehabilitation/construction of the structures and gates; implementation of access roads and bank stabilization; and equipment demobilization.

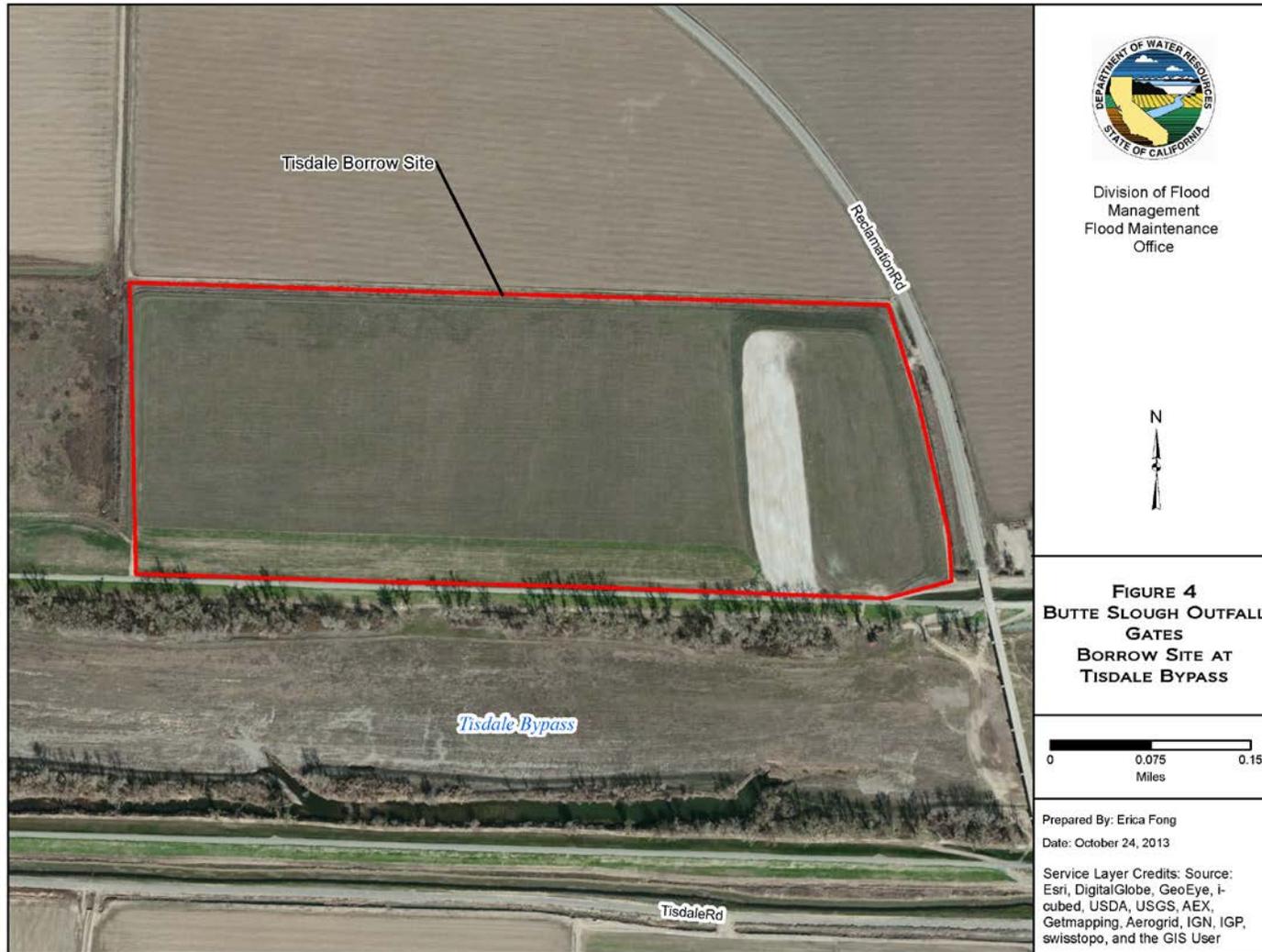


Figure 4. Tisdale Bypass borrow site; specific borrow use area(s) within this area are designated in Contract drawings.

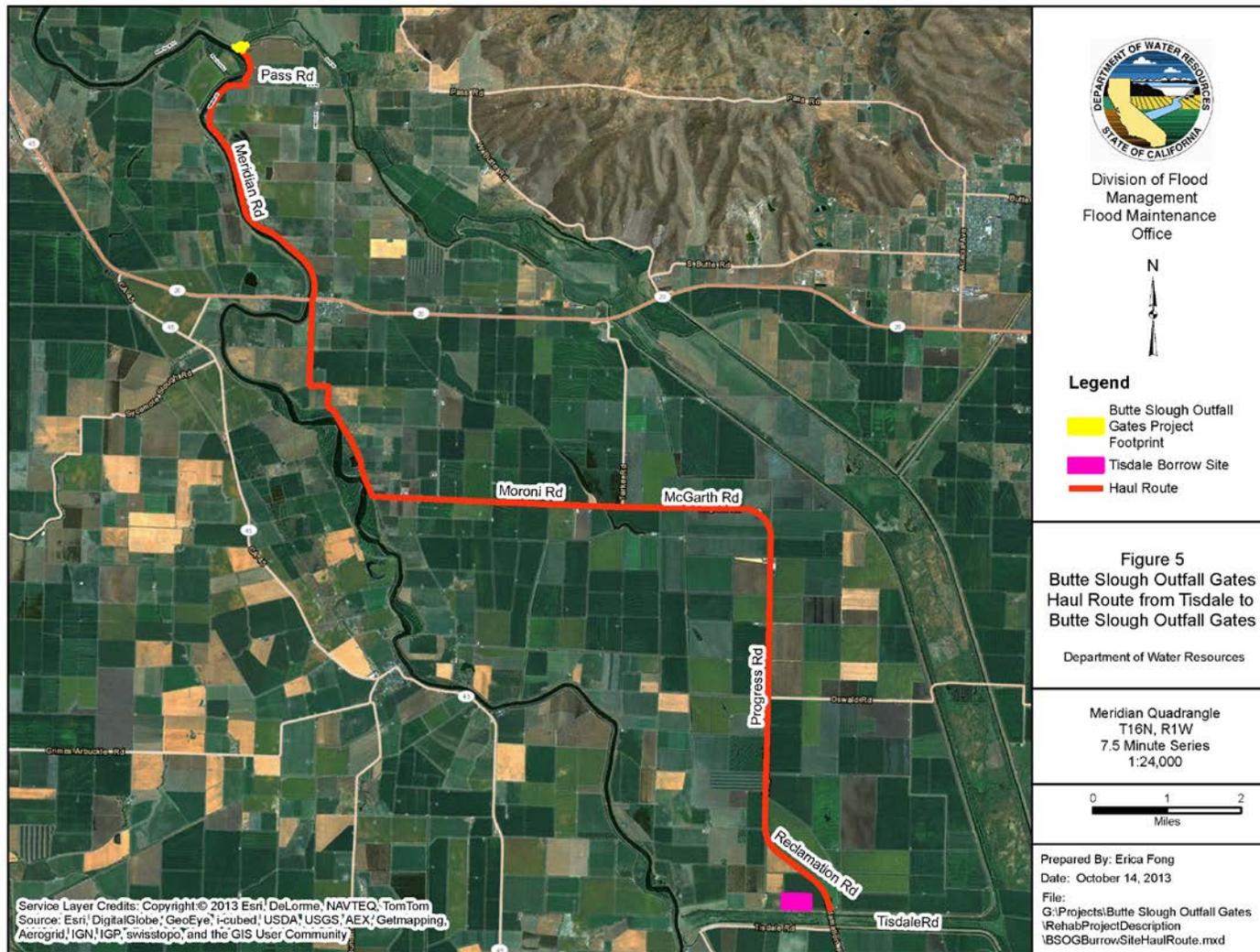


Figure 5. Haul route from Tisdale Bypass to Butte Slough Outfall Gates

### **3.1.1 Pre-construction Environmental Surveys and Environmental Training**

Pre-construction surveys for wildlife, birds, and/or sensitive habitat will be conducted by a qualified environmental scientist (ES) prior to the construction contractor mobilizing to the site. Sensitive environmental and cultural resource areas within the project boundary will be flagged. An ES will be on-site during the initial construction period to monitor work activities at the start of construction to ensure compliance with all requirements. The ES will be available on an on-call basis on subsequent days and will periodically visit the site during work activities. Construction staff on the project will be required to attend an on-site environmental awareness training given by the ES.

### **3.1.2 Mobilization**

The primary staging area (approximately 0.5 acres) for construction equipment, materials, storage, and parking will be set up at the base of the southeast levee of Butte Slough (Figure 3). Two additional staging areas will be established on the Sacramento River/outlet side at the marina (~0.2 acre) and at the northwest side of Butte Slough, opposite of the primary staging area (~0.1 acre). These additional staging areas will be used primarily for installing and staging equipment and materials associated with the sheet pile installation and removal. The staging areas were specifically selected to minimize hauling distances and long-term disruption, and to avoid sensitive environmental resources that may be present. Project boundaries will be established and staked, flagged and/or surrounded by construction fencing where needed. No clearing or grubbing beyond these areas will be allowed. Silt fence will be placed at soil/water interfaces during construction where there is a potential for soils entering the waterways. Additionally, spill control materials will be available on-site and spill prevention plans will be implemented for each phase of the rehabilitation work.

Disturbed soil areas will be stabilized using appropriate erosion control methods during and at the completion of construction activities for Phase 1 and 2 work. If hydroseeding is used to cover disturbed areas, native grass/forb/herbaceous plant, sterile rye, or other non-invasive seed mixes will be used.

### **3.1.3 Excavation**

Excavated materials at the inlet will be used as much as practicable as fill around the structures. Material excavated for construction will be stockpiled and used as compacted embankment, as practicable. Excavated fill that is unsuitable to be used as backfill and material from demolition of existing structures will be hauled off-site for beneficial reuse, to an approved landfill, or disposed of in an appropriate manner. The area between the sheet piles and structure on inlet and outlet side (the area inside the cofferdams) may be used for stockpiling and for drying material before hauling it off.

### **3.1.4 Cofferdam/Dewatering**

Construction of the inlet and outlet structures will require installation of sheet pile cofferdams on each side of the levee, followed by temporary dewatering of the

construction areas. Sheet piles will be driven using a vibratory pile driver hammer as the primary means of driving piles, but an impact pile driver may be used if necessary (e.g. if resistant soil layers are encountered, etc.). If an impact pile driver is needed, an air bubble curtain and impact hammer cushion block will be deployed to ameliorate sound impacts in the water column. Turbidity measurements will be taken up and downstream of the work during pile driving activities to ensure compliance with mandated water quality standards. The levee prism will be monitored for any disturbance/deformation during vibratory pile driving activities. Although it is anticipated that most sheet pile installation will occur using equipment staged on the banks or a barge, it is possible that up to two temporary construction pads will need to be constructed adjacent to the bank in Butte Slough and/or Sacramento River to facilitate the installment of the sheet pile beyond the crane's reach.

Cofferdam dewatering for construction will be accomplished with engine-driven dewatering pumps and either trench sumps, pit sumps, groundwater wells, or a combination of the above. Drawdown rates will be established to reduce and/or avoid bank collapse. Water from dewatering efforts will be used for construction water (dust control, etc.) with the balance being discharged into Butte Slough or Sacramento River. During initial dewatering the pump intakes will be fitted with appropriate sized fish screens to prevent fish from becoming entrained. Turbidity measurements will be taken up and downstream of the work during dewatering activities. Upon completion of construction the dewatering wells will be capped and abandoned in compliance with applicable regulations. If water is pumped back into the waterways, settling tanks or other best management practices (BMPs) may be employed as needed to control turbidity.

Fish entrapped within the cofferdam areas will be rescued before the areas are completely drained. DWR ES's will capture and relocate fish within the cofferdammed areas as specified in a California Department of Fish and Wildlife (CDFW)-approved fish rescue/relocation plan.

The flap gates on the outlet side of the structure will be replaced prior to the end of the first construction season. Inlet pipes will be open during the seasons between Phases 1 and 2. In order to maintain the structure's functional use between construction seasons, the top of the sheet piles within the Butte Slough will be fixed to an elevation of 43 feet along the center third of the sheet pile alignment resulting in a temporary weir which will allow water to flow and escape through the BSOG during high water and flood events. The majority (if not all) of the sheet piles on the Sacramento River side will be removed. This modification will allow Butte Slough to maintain water surface elevations to the connecting Sutter Bypass and channels for agricultural and environmental purposes during non-high water events. At least one of the outfall flap gates will be fastened and secured open at the end of the first construction season to maintain hydrologic connectivity between the cofferdammed area on the Butte Slough side and the Sacramento River. The sheet piles in the Butte Slough would be reestablished to their original installation elevation at the beginning of the second construction season.

### **3.1.5 Water Management**

Since the gates will be inoperable during the construction work, a diversion weir located downstream of BSOG to the Sutter Bypass will be operated to allow the diversion of up to 5000 cubic feet per second (cfs) down associated low flow channels (east and west low flow channels). Operations will be performed by Sutter Maintenance Yard staff or in conjunction with personnel from Reclamation District 70. These water diversions should accommodate the temporary change in water surface elevation at BSOG during the construction work seasons. In addition, DWR will coordinate with upstream farmers to stagger agricultural water drainage into Butte Creek. Additional excess water may still need to be diverted through pumps from the Butte Slough side into the Sacramento River.

Between construction seasons, the temporary sheet pile weir on the Butte Slough side will allow nearly normal functional performance of the BSOG structure. High waters will flow through the structure and open flap gate(s) on the Sacramento River side. The flap gate(s) will remain in an open position between Phases 1 and 2 to allow for hydrologic connectivity to the Sacramento River during this time. Low waters will be confined to the Butte Slough channel to maintain water surface elevations for fish migration and agriculture uses.

### **3.1.6 Demolition and Trenching**

Demolition will consist of the removal of the inlet gates catwalk; the existing concrete structure and associated infrastructure, including some pipe and all slide and flap gates; the wench housing; existing control building; and corresponding gage station and catwalk (Figure 3). Up to 15 trees greater than 4-inches at diameter breast height (DBH) will be removed on the Butte Slough and Sacramento River banks. Minor tree trimming and/or limbing of trees on the inlet and outlet sides will be performed as needed for vehicle access.

The electrical conduits running from the inlet structure to the outlet structure will be constructed by open trench excavating through the levee, or by jack and bore through the levee and slurry backfilled. A new electrical box may be installed or relocated. After installation of the conduits, the levee will be restored to its previous condition by backfilling and grouting around the electrical conduits. Additional material will then be used to create an embankment behind the inlet facility and on the west side of the existing levee to provide access to the facilities on both sides of the levee road, and to buttress the existing flood control structure. Where required for safety, trenches will be braced with a trench box or shoring.

### **3.1.7 Concrete Structure**

The concrete structure upgrade will include the removal of seven existing slide gates and a portion of existing inlet pipes; relining of existing pipe with elastomeric polyurethane or similar/equivalent material; installation of new slide gates located near

the toe of the existing levee slope and installation of new flap gates on the outlet side. The pipe through the levee will be shortened approximately to 37 feet on the inlet side and 12 feet on the outlet side. Construction of the inlet and outlet structures will require fill to elevate the site to approximately 7 feet below the levee crest on the inlet side and to approximately 19 feet below the levee crest on the outlet side. Suitable material excavated for the inlet will be redistributed on-site as fill.

The foundations for the concrete inlet and outlet structures will be supported by prestressed/precast or cast-in-place pile foundations. Precast piles will be installed using a vibratory pile driver as the primary pile driving method. An impact pile driver may be used if necessary (e.g. if resistant soil layers are encountered, etc.). Cast-in-place piles will be installed using an auger drill to extrude soil for rebar placement and concrete fill. The levee prism will be monitored for any disturbance and deformation during all vibratory and impact pile driving activities.

Reinforced concrete retaining walls will be constructed on both ends of the inlet structure, with metal handrails on top of the walls for worker safety. Maintenance equipment is expected to be operated on top of the retaining walls to access the floating debris that may drift to the edges. A concrete boat ramp will be constructed at the southeast corner of the inlet structure and will allow boat access into the slough for maintenance operations.

Flow meters will be installed within the existing pipes so that no additional vaults or disturbances to the existing levee are required. Power for the proposed project will be provided by Pacific Gas and Electric Company (PG&E) and will likely be connected to the existing transmission line located approximately 100 feet west of the control building. The facility has a propane-fueled backup generator located within the control building, which will provide power for lighting, security monitoring, and operation of the gates. A 500 gallon propane tank will be located adjacent to the control building within the inlet structure's perimeter fencing may need to be installed on the inlet side to meet the fire code requirements.

### **3.1.8 Other Supporting Infrastructure**

A new 12 foot wide concrete paved access road will extend from the boat ramp to the existing dirt road on the southeast side of Butte Slough to provide access to the top of the inlet structure and control building for maintenance and to install stoplogs. The 10 foot wide concrete paved access road on the outlet side will follow the existing dirt road alignment from the levee down to the outlet structure and will allow for maintenance and stoplog installation.

Bank stabilization will be achieved by placing riprap on banks near the outlet structure using quarter-ton 24-inch minus rock (and/or smaller rock, where able) at the Sacramento River bed in front of the footing to prevent scour and erosion (Figure 3). Additional riprap

will be placed onto the cove's western berm prism to a maximum elevation of (46 feet) to prevent continuing erosion on the Sacramento River side. Approximately 50 linear feet of riprap will be placed along the east side and 185 linear feet of riprap will be placed along the west side of the cove along the river. Riprap will be replaced for approximately 40 feet onto the Butte Slough's north side/bank to a maximum elevation of 46 feet to prevent continuing erosion along of river bank. Since the riprap will be placed a few feet above the original bank stabilization elevation, up to 15 trees and shrubs will have to be removed at the project site. Additional shrubs may need to be removed on the Butte Slough side to accommodate the bank stabilization. Soil will be incorporated between the riprap above the ordinary high water mark (OHWM) to provide a soil medium for grasses and/or plantings. Bank stabilization above the OHWM will consist of placing lifts of rock, followed by a fill of soil/soil slurry in the gaps (or using a similar method). Multiple lifts may be needed until the bank stabilization has reached the appropriate slope and dimensions. Below the OHWM, smaller rock (e.g. six to eight inch rock) will be placed over the 24-inch minus rock to reduce hiding spaces for predatory fish. Native willows and/or other native plantings will be incorporated into the riprap/soil mix above the OHWM and where feasible (dependent upon slope and other factors) on the Butte Slough and Sacramento River banks. Erosion control blankets or geotextile fabric will be placed on top of soil/riprap areas to stabilize soils and plantings. Bank stabilization will be placed in the channel (below OHWM) on the Sacramento River and Butte Slough sides before the end of Phase 1 to stabilize the inundated area and reduce erosion.

### **3.2 Phase 2**

In Phase 2, sheet pile cofferdams will be constructed once again, construction will be completed and the site will be stabilized and restored. Work anticipated to be completed includes pre-construction surveys; environmental training; mobilizing; excavation; installation of cofferdams and dewatering; demolition; rehabilitation/construction of the structures and control building; construction of access roads and bank stabilization and demobilizing. The inlet structure and any unfinished work on outlet structure will be completely finished under phase 2. Inlet boat ramp and access road will be paved. The control building will be constructed along with all the controls, propane tank, security cameras, lights, intrusion alarm etc. fully installed.

#### **3.2.1 Pre-construction Environmental Surveys and Environmental Training**

Pre-construction surveys, environmental training activities and best management practices for Phase 2 will be similar to work conducted and Best Management Practices (BMPs) employed in Phase 1.

#### **3.2.2 Mobilization**

Mobilization and disposal activities for Phase 2 will be similar to work conducted and BMPs employed in Phase 1. The 0.5 acre and 0.1 acre staging area on the Butte Slough side will be needed; the 0.2 acre staging area on the outlet side will only be used if needed.

Where cofferdam piles are removed or altered on the inlet side (Butte Slough), they will be reinstated. Sheet piles may need to be reinstalled on the outlet side depending on the progress of the structure or due to water infiltration into the inlet side dewatered zone from water leaks through the flap gates or under seepage through the soils beneath the levee originating from the outlet side of the structure.

Disturbed soil areas will be hydroseeded with a native seed mix and/or covered with native vegetation after construction activities have been completed for the project.

### **3.2.3 Cofferdam/Dewatering**

Cofferdam and dewatering activities and BMPs for Phase 2 will be similar to work conducted and BMPs employed in Phase 1. Cofferdam sheet piles from both the Sacramento and Butte Slough sides will be removed at the end of Phase 2.

### **3.2.4 Concrete Structure**

Construction will resume from where it was left off in Phase 1. The site will be fenced for security, and an intrusion alarm will be installed on exterior building/hatch doors. Monitoring and security equipment for operational equipment and onsite activities will be installed for remote observation and control. Maintenance equipment will be able to operate within the fenced area.

### **3.2.5 Control Building**

The control building will be constructed from split face concrete blocks and will be divided in two rooms. One room will house the backup generator and the other will have electrical cabinets with controls for the slide gates. A secondary source for power in case of a power outage will be installed and available. Exterior doors to the control building will be equipped with photocell/motion detector-controlled down lighting. Equipment will generally be low-voltage and will either be housed or will have noise suppressors as necessary to meet related building requirements. The security camera, slide gate controls and water measurements will be accessible remotely off site.

### **3.2.6 Other Supporting Infrastructure**

The boat ramp will be gated for security during Phase 2. The inlet, outlet and control building area will be secured with nine-foot tall iron wrought fencing with barbed wire.

Riprap bank stabilization near the inlet and/or outlet structures will be similar to the work conducted and the BMPs employed in Phase 1. The procedures and installation of riprap will be the same as described in Phase 1.

Articulated concrete mat will be provided in front of the inlet structure extending to the boat ramp to prevent scour and erosion in Butte Slough. Riprap will be placed to abut the

side faces of the boat ramp and inlet structure to 40 feet from the structure on the north side and 90 feet from the structure on the south side up to elevation 46 feet.

## 4 POST-PROJECT OPERATION AND MAINTENANCE

Post-project operation and maintenance (O&M) will be similar to existing activities. The reclamation districts (or potentially DWR Sutter Maintenance Yard) will operate the slide gates to maintain a water surface elevation between 41 to 43 feet for irrigation outside of flood season. During flood season the slide gates can be partially to fully opened during high water events to allow the maximum available flow to be routed from Butte Slough into the Sacramento River. There will be an overall reduction in environmental impacts since maintenance staff will not need to disturb banks (causing erosion or degradation of habitat along this area) or access unpaved dirt areas.

Once the rehabilitation is complete, the outlet gates will be able to be automatically programmed or manually operated and will allow for previously unattainable gate opening adjustments. The new inlet structure will function 24 hours a day, 7 days a week. The facility will be primarily unmanned and will only require operation to change flows. Crews of two workers will be on-site on a monthly basis from spring through fall (sometimes more frequently if needed) to check operations. Accumulated debris on the structure and gates (especially the inlet side) will be mechanically removed as needed and hauled to an offsite disposal area. On-site equipment will be maintained annually or semi-annually, as necessary. The structure will be monitored by off-site maintenance yard personnel by using flow, stage, and temperature data that is corrected and posted on the California Data Exchange Center. Outages of two to four weeks would be required for major equipment inspections or maintenance.

Mitigation measures designed to avoid impacts to species and habitats during routine post-project maintenance are described under the environmental checklist sections in the initial study.

After the project is completed, DWR will continue its program of routine annual maintenance of the structure, levees, vegetation, and adjacent roads within the area. These activities are anticipated to include:

- Structure-related maintenance and inspections: including removal of debris to prevent flow obstruction from the front of the gates; disposal of debris off-site; and repair/inspections of structure, outfall gates, ramp, and/or fencing.
- Levee maintenance: including removal of debris, spraying herbicides, mowing and/or burning of vegetation on slopes, dragging of levee slopes, rodent control using rodenticides, and grouting of rodent holes or other voids in levees.
- Vegetation management: including cutting, pruning, and spraying of young trees and the lower branches of mature trees to allow visual inspection of the levee and maintenance of channel capacity; planting, irrigating, and associated maintenance of mitigation or restoration plantings or areas that are established in compliance with project-specific agreements and permitting requirements. No established trees that are 4-inch-diameter breast height or larger will be

removed. These trees will be limbed up to 6 feet above the ground level and pruned as deemed appropriate for flood's needs.

- Road maintenance: including grading and/or disking of roads and adding and compacting road base material to maintain roadways associated with the structure.

## 5 PERMITS AND REGULATORY APPROVALS

The following federal, State and local permits and regulatory approvals are anticipated for project implementation. DWR will work with individual permitting authorities to determine specific permits as needed.

### POTENTIAL PERMITS AND APPROVALS

Permit	Permitting Authority	Affected Project and Construction Elements
<b>Federal Permits/Approvals</b>		
Clean Water Act Section 404/ Rivers and Harbor Act Section 10 Dredge and Fill Permit	U.S. Army Corps of Engineers	In-water work
Federal Endangered Species Act compliance	U.S. Fish and Wildlife Service	Land and/or in-water work
Federal Endangered Species Act compliance	National Marine Fisheries Service	In-water work
<b>State Permits/Approvals</b>		
Clean Water Act Section 401 Water Quality Certification	Central Valley Regional Water Quality Control Board	Land and in-water work
Porter Cologne Waste Discharge Requirements	Central Valley Regional Water Quality Control Board	Land and in-water work
National Pollutant Discharge Elimination System General Construction Activity Permit	Central Valley Regional Water Quality Control Board	Land and in-water work
General Order for Dewatering and Other Low Threat Discharge to Surface Water Permit	Central Valley Regional Water Quality Control Board	Dewatering operations
Fish and Game Code Section 1602 et seq. Streambed Alteration Agreement	California Department of Fish and Wildlife	Land (channel) and/or in-water work
California Endangered	California Department of	Land and/or in-water work

<b>Permit</b>	<b>Permitting Authority</b>	<b>Affected Project and Construction Elements</b>
Species Act compliance	Fish and Wildlife	
General Lease	State Lands Commission	In-water work
Encroachment Permit	Central Valley Flood Protection Board	Land and/or in-water work
National Historic Preservation Act Section 106 Compliance	Historic Preservation Office	Land and/or in-water work
<b>Local Permits/Approvals</b>		
Encroachment Permit	Colusa County / Sutter County	County roads/ROW

## 6 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- |   |  |  |
|---|--|--|
| <input checked="" type="checkbox"/> Aesthetics                      | <input type="checkbox"/> Agriculture and Forestry Resources          | <input checked="" type="checkbox"/> Air Quality                        |
| <input checked="" type="checkbox"/> Biological Resources-Aquatic    | <input checked="" type="checkbox"/> Biological Resources-Terrestrial | <input type="checkbox"/> Cultural and Historical Resources             |
| <input checked="" type="checkbox"/> Geology and Soils               | <input type="checkbox"/> Greenhouse Gas Emissions                    | <input type="checkbox"/> Groundwater Resources                         |
| <input checked="" type="checkbox"/> Hazards and Hazardous Materials | <input checked="" type="checkbox"/> Hydrology                        | <input type="checkbox"/> Land Use and Planning                         |
| <input type="checkbox"/> Mineral Resources                          | <input checked="" type="checkbox"/> Noise                            | <input type="checkbox"/> Population and Housing                        |
| <input type="checkbox"/> Public Services                            | <input checked="" type="checkbox"/> Recreation                       | <input checked="" type="checkbox"/> Transportation and Traffic         |
| <input type="checkbox"/> Utilities and Service Systems              | <input checked="" type="checkbox"/> Water Quality                    | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

**DETERMINATION:**

On the basis of the initial evaluation that follows:

- I find that the proposed project WOULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, the project impacts were adequately addressed in an earlier document or there will not be a significant effect in this case because revisions in the project have been made that will avoid or reduce any potential significant effects to a less than significant level. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MAY have a significant effect on the environment. An ENVIRONMENTAL IMPACT REPORT will be prepared.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
For

## 6.1 Aesthetics

### 6.1.1 Environmental Setting

The BSOG falls between two counties- Sutter and Colusa. Marty Road/Butte Slough Road, which is a levee road, bisects the two counties. The project site is surrounded by agricultural lands as well as views of the Sutter Buttes to the east and Sacramento River to the west. Butte Slough, located on the northeast side of the levee road, and the Sacramento River to the southwest side of the road are vegetated with a mix of native and non-native riparian vegetation. The levee road slope and portions of the adjacent bank slope within the project area on the Butte Slough side are covered with bank stabilization material interspersed with vegetation. The Sacramento River side of the project area consists of steep slopes (approximately 2:1 or steeper slopes) and is sparsely covered with native and non-native vegetation. Bank stabilization is located near the bank and water interface in the project area. Other notable visual features within and around the project area include a private residence and privately-owned marina on the Sacramento River side. Also, there are overhead utility and electrical lines on both sides of the levee road. Nighttime views of the Butte Slough side of the project site are typical of those within an agricultural setting while nighttime views on the Sacramento River side consist of rural residential lighting due to the residential home, marina, and mobile homes. There are no officially recognized scenic roadways in Sutter County (PBS&J 2008). The BSOG project site is not located within a federal, local, or State-designated scenic area and no State-designated highways are located within or near the project site (CDOT 2013).

The borrow site at Tisdale Bypass is surrounded by an agricultural field, row crops, and is adjacent to the seasonally-flooded Tisdale Bypass. Small toe drains and irrigation canals divide agricultural fields adjacent to the borrow site. The borrow site is not located within a designated federal, local, or State scenic area and no State-designated highways are located within or near the project site (CDOT 2013).

Post-construction O&M activities will not cause any potential aesthetic impacts since routine O&M activities will take place during the daytime.

### 6.1.2 Environmental Checklist and Discussion

#### AESTHETICS:

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Have a substantial adverse effect on a scenic vista	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**AESTHETICS:**

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**a) Have a substantial adverse effect on a scenic vista?**

*Less Than Significant Impact.* The levee road that crosses the outfall gate structure is considered a scenic resource in the Sutter County General Plan (2011) since it provides views of the Sacramento River. Construction equipment will be in place during temporary construction activities but will not eliminate views of the Sacramento River. The structure and associated work will alter the aesthetics of the bank along the inlet and outlet sides but the applied bank stabilization (riprap) will be minimized and/or plantings will be placed along the banks of the Sacramento River and Butte Slough.

The control building will be built with neutral-colored split face cinder blocks to preserve a more natural look to the structure and surrounding area. To protect the facility from its high visibility along the road and to preserve scenic views of the Sutter Buttes and river, both sides of the outfall structure and associated buildings will be surrounded by open-type fencing, such as wrought iron. Barbed-wire will be placed above the open fencing to protect and reduce vandalism (from activities such as shooting and graffiti) to the facility. The impacts to the outfall structure, control building, boat ramp, and fencing are minimal in comparison to the existing conditions

**b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?**

*Less Than Significant Impact.* The levee road is not an officially designated state-scenic highway and the existing gage station and small housing are not historic.

Although some trees will be removed, no heritage oaks will be removed. Aesthetic changes made to the project site will not be significantly different from the existing surrounding marina and structures.

**c) Substantially degrade the existing visual character or quality of the site and its surroundings?**

*Less Than Significant Impact.* As noted in a) and b) above, the proposed project would not result in substantial changes to the existing visual character of the site.

**d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?**

*Less Than Significant Impact with Mitigation.* Existing lighting at the project site includes some roadway light fixtures and individual lights illuminating the gage station and small building. Adjacent properties including the private residence, marina, and mobile homes also have outdoor lighting illuminating the surrounding area. New outdoor lighting will be installed around the new control building, on the outfall structure, near ingress/egress areas, and/or along the fenced perimeter. A few additional floodlights will be added to the structure on each of the inlet and outlet sides, but these floodlights will only be needed during emergency situations and will not be lit on a regular basis. These installations of outdoor lighting may cause a significant aesthetic impact. Normal O&M activities will take place during the daytime so lights and glare should not be an impact.

The following project-specific measures will reduce this impact to a less than significant level:

**Mitigation Measure VIS-1 – Reduce Light and Glare During and Post-Construction** (similar to *CVFPP PEIR Mitigation Measure VIS-4 - Establish and Require Conformance to Lighting Standards, and Prepare and Implement a Lighting Plan*):

- If construction lighting is needed, contractors will be required to shield or screen lighting fixtures and direct lights downward onto the work site and prevent significant light spill onto adjacent properties
- Contractors will place and direct flood or area lighting needed for construction activities or for security so as not to significantly disturb adjacent residential areas, passing motorists, or other light-sensitive receptors
- The use of harsh mercury vapor, low-pressure sodium, or fluorescent bulbs or light fixtures that are of unusually high intensity or brightness will be prohibited unless there is no practicable alternative
- Design features that will reduce the effects of nighttime lighting, namely directional shielding for all substantial light sources, will be included in the project designs. In addition, automatic shutoffs or motion sensors for lighting features will be considered in the project designs to further reduce excess nighttime lighting. All nighttime

lighting will be shielded to prevent the light from shining off the surface intended to be illuminated.

- Materials with natural colors and low-reflection materials will be used on all new or replacement structures to the extent feasible so that the facilities appear more consistent with the existing character of the area and do not generate excessive glare.

## 6.2 Agriculture and Forestry Resources

### 6.2.1 Environmental Setting

The BSOG project site is located in an agricultural area which straddles Colusa County to the north and west and Sutter County to the south and east. The agricultural area is categorized by the California Department of Conservation (CDOC), Division of Land Resource Protection, Farmland Mapping and Monitoring Program (FMMP) and the California Land Conservation Act of 1965 (Williamson Act) (CDOC 2010a). The FMMP maps the statewide inventory of farmlands, which are updated every two years with the use of aerial photographs, color infrared imagery, satellite data, a computer mapping system, public review, and field reconnaissance. Farmlands are divided into the following five categories based on their suitability for agriculture:

- **Prime Farmland**—land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained yields of crops when treated and managed.
- **Farmland of Statewide Importance**—land other than Prime Farmland that has a good combination of physical and chemical characteristics for crop production.
- **Unique Farmland**—land that does not meet the criteria for Prime Farmland or Farmland of Statewide Importance, but has been used for the production of specific crops with high economic value.
- **Farmland of Local Importance**—land that either is currently producing crops or has the capability of production, but does not meet the criteria of the categories above.
- **Grazing land**—land on which the vegetation is suited to the grazing of livestock.

These categories are referred to as Important Farmland by the FMMP. Other categories used in the FMMP mapping system are "Urban and Built-Up Lands" and "Other Lands" (land that does not meet the criteria of any of the other categories).

Agricultural land is also categorized by local governments through the Williamson Act (California Land Conservation Act of 1965). The Williamson Act is utilized as one of the state's primary agricultural conservation tools. Local governments can enter into contracts with private property owners to protect land (within agricultural preserves) for agricultural and open space purposes. Landowners receive substantially reduced property tax assessments in return for enrollment under Williamson Act contract. Williamson Act contracts are required for a ten year term and are extended each year unless the landowner or the contracting city or county notifies the other of the intent not to renew the contract. The contract lands are categorized as follows:

- **Prime Agricultural Land**—land which is enrolled under the Williamson Contract and meets any of the following criteria:
  - Land which qualifies for rating as class I or class II in the Natural Resources Conservation Service land use capability classifications;

- Land which qualifies for rating 80 to 100 in the Storie Index Rating;
- Land which supports livestock used for the production of food and fiber and has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the U. S. Department of Agriculture;
- Land planted with fruit or nut-bearing trees, vines, bushes, or crops which have a nonbearing period of less than five years and will normally return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production non less than two hundred dollars an acre;
- Land which has returned from the production of unprocessed agricultural plant production and has an annual gross value of not less than two hundred dollars per acre for three of the previous five years.
- **Non-Prime Agricultural Land**—land which is enrolled under the Williamson Contract and does not meet any of the criteria for classification as Prime Agricultural Land. Non-Prime Land is defined as Open Space Land of Statewide Significance under the California Open Space Subvention Act and may be identified as such in other documents. Most Non-Prime Land is in agricultural uses such as grazing or non-irrigated crops. However, Non-Prime Land may also include other open space uses which are compatible with agriculture and consistent with local general plans.
- **Farmland Security Zone (FSZ)**—also known as Super Williamson Act lands, the landowner agrees to keep land that is threatened by development in agricultural use for at least 20 years. In return, the landowner receives the benefits of lower property tax bills, parcel tax exemptions, annexation exemptions, and exemptions from school use.

Parts of the project area surrounding BSOG are defined as Important Farmland by the FMMP of the CDOC (CDOC 2010b, 2010c). The project area does not encompass any areas that are currently farmed or have agricultural activities taking place on them. Lands adjacent to the project site are classified mainly as Prime Farmland (CDOC 2010b, 2010c). Row crops, walnut orchards, and winter wheat are currently grown on the adjacent fields/land. The linear patches of riparian habitat, which are most extensive on waterside levees bordering the Butte Slough and Sacramento River waterways, are classified as Other Land by the FMMP. These riparian areas are also considered forest land as defined by Public Resources Code 12220(g). The Colusa County side of the project area is classified as Farmland Security Zone under the Williamson Act (CDOC 2013a). On the Sutter County side of the project area, adjacent farmlands are not enrolled under the Williamson Act, with a few parcels of mixed enrollment agricultural land in the general vicinity (CDOC 2013b). Under the Sacramento Area Council of Governments (SACOG) which includes Sutter, El Dorado, Placer, Sacramento, Yolo, and Yuba Counties, the project site is classified as Agricultural-40 (AG-40), a designation for agricultural lands with a minimum of 40 acres (SACOG 2014).

Additionally, the reconstruction of the BSOG will require imported fill material from a borrow site north of the landside levee of Tisdale Bypass, west of Reclamation Road.

This borrow site is a 65 acre spoils pile from a sediment removal project from the Tisdale Bypass that had been taken out of agricultural production in 2007. The agricultural area surrounding the borrow site is classified as Prime Farmland (CDOC 2010c). The SACOG also classifies this area as Agriculture-80, a designation for agricultural lands with a minimum of 80 acres (SACOG 2014). The agricultural lands adjacent to the north, west, and south of the borrow site are not enrolled as Williamson Act land (CDOC 2013b). Williamson Act lands occur mainly to the east of Reclamation Road in the Tisdale Bypass area.

The operation of BSOG is very important to the local agricultural economy. The BSOG maintains water surface elevations of 41 to 43 feet during spring and summer months to regulate irrigation water. The gates open to allow drainage from Butte Slough to the Sacramento River when the Sacramento River stages are lower than Butte Slough and close to increase available irrigation water to lands adjacent to the Sutter Bypass. Therefore the structure relieves northern, upstream low-lying lands of excess water to allow planting and harvesting earlier in the growing season and regulates irrigation water to downstream diversions located along Butte Slough and in the Sutter Bypass.

Post-construction O&M activities will not cause any potential agricultural impacts.

### 6.2.2 Environmental Checklist and Discussion

#### AGRICULTURE AND FORESTRY RESOURCES:

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping Monitoring Program of the California Resources Agency, to nonagricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**AGRICULTURE AND FORESTRY RESOURCES:**

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
c) Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined in Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined in Government Code Section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in substantial conversion of Farmland to nonagricultural use or substantial conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

*No Impact.* The proposed project would not convert any farmland to nonagricultural use. All impacts, including the construction site and laydown/staging areas will be confined to nonagricultural areas within the waterside levees of Butte Slough and Sacramento River. There will be no conversion of farmland to nonagricultural use at the borrow site.

**b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?**

*No Impact.* The proposed project would not convert any land designated by existing zoning for agricultural use, under a Williamson Act contract, or in Farmland Security Zone to an inconsistent use. All impacts, including the construction site and laydown/staging areas will be confined to nonagricultural areas within the waterside

levees of Butte Slough and Sacramento River. There will be no conversion of farmland to nonagricultural use at the borrow site. The proposed project would not involve land development activities (i.e., residential subdivisions, or commercial or industrial land uses) that would directly or indirectly induce changes in the use of surrounding land, such as the need for schools, public services, etc. The proposed project would not induce new residential, commercial, or industrial land development activities to occur in the future.

**c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)), timberland (as defined in Public Resources Code section 4526), or timberland zoned Timberland Production (as defined in PRC section 51104(g))?**

*Less Than Significant Impact.* The proposed project would not conflict with existing zoning for forest land, but some riparian vegetation along the Sacramento River and Butte Slough will be removed as part of the project construction activities.

Approximately 15 trees are anticipated to be removed along the Sacramento River bank and the Butte Slough side. The previous cobble along both the inlet and outlet sides will be replaced with angular bank stabilization (riprap) which will have soil incorporated into the voids/gaps in lifts so plantings can be incorporated after construction is complete. The borrow site does not include forest lands and is used for spoils staging.

**d) Result in the loss of forest land or conversion of forest land to a non-forest use?**

*Less Than Significant Impact.* Some riparian vegetation along the Sacramento River and Butte Slough will be removed as part of the project construction activities. As mentioned in c), approximately 15 trees are anticipated to be removed along the Sacramento River bank and the Butte Slough side. Native willows and/or other native plantings will be incorporated into the riprap/soil mix above the OHWM and where feasible on the Butte Slough and Sacramento River banks. The borrow site does not include forest lands and is used for spoils staging.

**e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to nonagricultural use or conversion of forest land to non-forest use?**

*Less Than Significant Impact.* There will be no conversion of Farmland to nonagricultural or forest land to non-forest use at the project site. The borrow site does not include forest lands and is used for spoils staging. The proposed project would not involve land development activities (i.e., residential subdivisions, or commercial or industrial land uses) that would directly or indirectly induce changes in the use of surrounding land, such as the need for schools, public services, etc. The proposed project would not induce new residential, commercial, or industrial land development activities to occur in the future. Please refer to questions c) and d) for details on proposed project site's vegetation changes.

## **6.3 Air Quality**

### **6.3.1 Environmental Setting**

The proposed project site is located within Colusa County and Sutter County, and both are part of the Sacramento Valley Air Basin. The project's air quality is under the jurisdiction of the Colusa County Air Pollution Control District (CCAPCD) and Feather River Air Quality Management District (FRAQMD). Currently, operations and maintenance of BSOG contributes to the criteria air pollutants of the region. The Sutter Maintenance Yard staff drives 14 miles to the site daily to operate and maintain the BSOG.

In addition to the project site, construction borrow/spoil material will be obtained/placed at the Tisdale Bypass borrow site. The borrow site is located in Sutter County and also under the jurisdiction of the FRAQMD.

### **6.3.2 Regulatory Background**

The California Air Resources Board (CARB) and the Environmental Protection Agency (EPA) have set ambient air quality standards for California through the California ambient air quality standards (CAAQS) and the national ambient air quality standards (NAAQS). The CAAQS and NAAQS established standards for six air pollutants (criteria pollutants): carbon monoxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), ozone (O<sub>3</sub>), fine particulate matter (PM<sub>2.5</sub>), suspended particulate matter (PM<sub>10</sub>), and sulfur dioxide (SO<sub>2</sub>). As part of the CAAQS, CARB also adopted standards for hydrogen sulfide, sulfates, lead, vinyl chloride, and visibility reducing particles.

CARB and the EPA evaluate whether counties have met the CAAQS and NAAQS by using monitored pollutant data throughout California to create updated pollutant attainment status designations for each county. The county is designated as attainment or nonattainment for each pollutant or is designated unclassified if there is not enough information. Table 2 below describes the pollutant attainment status for Colusa and Sutter County. Both counties have not met the state pollutant attainment standards for particulate matter (PM<sub>10</sub>) and Sutter County has not met attainment standards for Ozone.

Table 2. Federal and State Air Quality Status for Colusa and Sutter County.

Pollutant	Designation/Classification			
	Colusa County		Sutter County	
	Federal Standards <sup>a</sup>	State Standards <sup>b</sup>	Federal Standards <sup>a</sup>	State Standards <sup>b</sup>
<i>Carbon Monoxide</i>	Unclassified/Attainment	Unclassified	Unclassified/Attainment	Attainment
<i>Hydrogen Sulfide</i>	No Federal Standard	Unclassified	No Federal Standard	Unclassified
<i>Lead (Particulate)</i>	Unclassified/Attainment	Attainment	Unclassified/Attainment	Attainment
<i>Nitrogen Dioxide</i>	Unclassified/Attainment	Attainment	Unclassified/Attainment	Attainment
<i>Ozone</i>	Unclassified/Attainment (1-Hour Standard)	Attainment	Nonattainment (1-Hour Standard)	Nonattainment/Transitional
	Unclassified/Attainment (8-Hour Standard)		Unclassified/Attainment (8-Hour Standard)	
<i>PM<sub>2.5</sub></i>	Unclassified/Attainment (Annual NAAQS)	Attainment	Unclassified/Attainment (Annual NAAQS)	Attainment
	Unclassified/Attainment (24-Hour for 2006 NAAQS)		Nonattainment (24-Hour for 2006 NAAQS)	
<i>PM<sub>10</sub></i>	Unclassified <sup>c</sup>	Nonattainment <sup>d</sup>	Unclassified <sup>c</sup>	Nonattainment <sup>d</sup>
<i>Sulfates</i>	No Federal Standard	Attainment	No Federal Standard	Attainment
<i>Sulfur Dioxide</i>	Unclassified	Attainment	Unclassified	Attainment
<i>Visibility Reducing Particulates</i>	No Federal Standard	Unclassified	No Federal Standard	Unclassified

Sources: CARB 2014; Attainment Status Designations- California 2013.

Notes: <sup>a</sup> See 40 CFR Part 81. <sup>b</sup> See CCR Title 17 Sections 60200-60210. <sup>c</sup> Listed as Total Suspended Particulate- See 40 CFR Part 81.300 (a).

<sup>d</sup> Listed as Suspended Particulate Matter- See CCR Title 17 Section 60205.

### 6.3.3 Thresholds of Significance

As required by the California Clean Air Act (CCAA), each district must prepare a plan to improve district air quality to meet the CARB and EPA standards. The CCAPCD, FRAQMD, and adjacent air quality management districts and air pollution control districts formed the Northern Sacramento Valley Planning Area (NSVPA) to address nonattainment air quality issues through a joint NSVPA Air Quality Attainment Plan. The NSVPA Air Quality Attainment Plan is multi-year strategy that requires a tri-annual review process to assess attainment progress. As a part of the NSVPA 2012 tri-annual review, each district considered adopting CEQA Air Quality Guidelines to reduce stationary source emissions of non-attainment air pollutants by identifying potential development projects that have adverse effects on air quality and identifying measures to mitigate for those significant effects. While CCAPCD is considering but has not scheduled to adopt CEQA air quality guidelines, FRAQMD has adopted Indirect Source Review Guidelines (FRAQMD Guidelines) for Air Quality CEQA review of development projects within the district.

Within the FRAQMD Guidelines, FRAQMD adopted Thresholds of Significance for key pollutants to assist Lead Agencies to determine in the Initial Study if a proposed project may have a significant impact on air quality. Table 3 lists those FRAQMD thresholds.

Table 3. FRAQMD Thresholds of Significance.

Project Phase	Nitrogen Oxides (NO <sub>x</sub> )	Reactive Organic Gases (ROG)	Particulate Matter less than 10 microns (PM <sub>10</sub> )	Particulate Matter less than 2.5 microns (PM <sub>2.5</sub> )	Greenhouse Gases (CO <sub>2</sub> , CH <sub>4</sub> )
<i>Operational</i>	25 lbs/day	25 lbs/day	80 lbs/day	Not Yet Established	Not Yet Established
<i>Construction</i>	25 lbs/day multiplied by project length, not to exceed 4.5 tons/year <sup>a</sup>	25 lbs/day multiplied by project length, not to exceed 4.5 tons/year <sup>a</sup>	80 lbs/day	Not Yet Established	Not Yet Established

Sources: FRAQMD CEQA

Notes: <sup>a</sup> NO<sub>x</sub> and ROG Construction emissions may be averaged over the life of the project, but may not exceed 4.5 tons/year

If the project is at or below the thresholds, FRAQMD recommends that the Lead Agency implement standard mitigation measures and prepare a Negative Declaration or state the project has less than significant impacts to air quality if an EIR for the project is required. If a project's life emissions exceed any of the thresholds, it is recommended that an EIR be prepared and apply recommended mitigation measures. A Mitigated Negative Declaration can be prepared if the project includes the mitigation measures and is successful at mitigating emissions below the thresholds.

### 6.3.4 Emissions Calculation

To calculate the project's emissions, only the construction emissions were used. The project's future operational impacts to air quality would be minimal since exhaust emissions from driving to the site in order to maintain BSOG is performed only as necessary. These future operational impacts would be less than the current impacts to air quality since the remote monitoring of future operations would eliminate the roadway emissions produced by the maintenance yard workers daily site inspections. The project's operational emissions would be negligible to the project's overall air quality impacts so only the temporary construction emissions were used in the evaluation.

The FRAQMD Guidelines recommends using the Roadway Construction Emissions Model (RCEM) to calculate emissions for projects where significance should be based on the construction phase. The model calculates emissions based on fugitive dust and vehicle exhaust. The emissions modeling results of BSOG Rehabilitation Project is listed below in Table 4 (the full analysis can be reviewed in Appendix A- BSOG Rehabilitation Project Roadway Construction Emissions Model

Table 4. BSOG Rehabilitation Project Roadway Construction Emissions Model (RCEM).

Project Phases	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/ Land Clearing	2.6	12.9	20.8	76.3	1.3	75.0	16.8	1.2	15.6	2382.32
Grading/ Excavation	4.0	18.8	41.6	77.0	2.0	75.0	17.4	1.8	15.6	4487.6
Drainage/ Utilities/ Sub- Grade	2.3	11.9	16.5	101.1	1.1	100.0	21.8	1.0	20.8	2089.82
Paving	1.3	8.0	10.2	0.6	0.6	-	0.6	0.6	-	1407.28
<b>Maximum (pounds/day)</b>	4.0	18.8	41.6	101.1	2.0	100.0	21.8	1.8	20.8	4487.6
<b>Average (pounds/day)<sup>a</sup></b>	3.3	16.1	32.8	71.0	1.7	69.3	15.9	1.5	14.4	14.4
<b>Total (tons/ construction project)</b>	0.4	2.1	4.3	9.9	0.2	9.7	2.2	0.2	2.0	478.6
<p>Notes: Project Start Year -&gt; 2015 Project Length (months) -&gt; 12 Total Project Area (acres) -&gt; 8 Maximum Area Disturbed/Day (acres) -&gt; 8 Total Soil Imported/Exported (yd<sup>3</sup>/day)-&gt; 239</p> <p>-PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.</p> <p>-Total PM10 emissions are the sum of exhaust and fugitive dust emissions. Total PM2.5 emissions shown are the sum of exhaust and fugitive dust emissions</p>										

Source: Road Construction Emissions Model, Version 7.1.5.1

Notes: <sup>a</sup> Calculation for average emissions was not obtained from the Roadway Construction Emissions Model.

The results of the BSOG emissions model in Table 4 are within the FRAQMD adopted thresholds for key pollutants except for NO<sub>x</sub>. The results of model's project impacts in Table 4 were calculated without factoring mitigation measures.

### 6.3.5 Environmental Checklist and Discussion

#### AIR QUALITY:

Would the project...	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard (e.g., NAAQS or CAAQS) or contribute substantially to an existing or projected air quality violation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Exceed or be inconsistent with any applicable air district thresholds of significance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### a) Conflict with or obstruct implementation of the applicable air quality plan?

*Less Than Significant Impact with Mitigation.* The project construction activities would generate air pollutants as estimated by the RCEM Version 7.1.5.1 (Table 4). The estimated project criteria air pollutants quantities besides NO<sub>x</sub> fall below the FRAQMD pollutant thresholds limits (Table 3) and would not conflict with the FRAQMD air quality plan. Since NO<sub>x</sub> emissions (see Table 4) are above the FRAQMD suggested emission threshold, the project may have significant impacts to obstructing the applicable air quality plan. However, DWR will mitigated for the evaluated the air quality impacts by incorporating the applicable mitigation measures suggested in the FRAQMD Guidelines

to reduce the NO<sub>x</sub> emissions to threshold limits. Additionally, the CVFPP PEIR assessed and included mitigation measures for air quality impacts by DWR near-term management activities (activities include the “improvement, remediation, repair, reconstruction, and operation and maintenance of existing facilities” such as BSOG) (DWR 2012).

To minimize the project’s NO<sub>x</sub> and other criteria pollutant emissions impact, DWR will apply the following appropriate FRAQMD recommended Standard Mitigation Measures, FRAQMD recommended Best Available Mitigation Measures, and the CVFPP PEIR mitigation measures where feasible:

**Mitigation Measure AQ-1 – Eliminate Construction Disposal Burning** (similar to *CVFPP PEIR Mitigation Measure AQ-1-Implement Measures to Reduce Construction-Related Emissions and FRAQMD Best Available Mitigation Measures 12*): No open burning to dispose of any excess material generated during site preparation or other project activities.

**Mitigation Measure AQ-2 – Measures to Reduce Fugitive Dust Emissions** (similar to *CVFPP PEIR Mitigation Measure AQ-1-Implement Measures to Reduce Construction-Related Emissions; FRAQMD Standard Mitigation Measure 1, 6; FRAQMD Best Available Mitigation Measures 1-11*):

- Submit an air quality control plan with fugitive dust control measures prior to construction and implement the plan during construction. The air quality control plan will include the following items.
- Phase long-duration construction activities to reduce the size of the disturbed area at any given time.
- An operational water truck should be available at all times. Water all exposed surfaces sufficiently to prevent visible dust emissions from exceeding 20 percent opacity beyond the construction boundaries. Construction sites shall also be watered as required by the Air Quality Management District.
- Apply water, nontoxic chemical stabilizers, dust suppressants, tarps or other suitable material (e.g., vegetative ground cover) in all disturbed areas once active work has been completed. Inactive construction areas will be stabilized using appropriate erosion control methods during and at the completion of construction activities for the season.
- Suspend excavation and grading activities as needed when winds exceed 20 mph.
- Restrict the speed of construction vehicles to 15 mph on any unpaved surface.
- Implement measures to reduce or eliminate carryout and trackout of fugitive dust or soil on construction vehicles. Methods to limit carryout and trackout include but are not limited to using wheel washers; sweeping and picking up any trackout on adjacent public streets as needed; and lining access points with gravel.
- Operators should minimize the free fall distance and fugitive dust emissions during transfer processes involving a free fall of soil or other particulate matter.

- Cover or wet the filled cargo compartment of material transport trucks to limit visible dust emissions during transport. Clean or cover the cargo compartment of empty material transport trucks before they leave the site.
- Reestablish ground cover on the construction site as soon as possible and prior to final occupancy through seeding and watering.

**Mitigation Measure AQ-3 – Measures to Reduce Exhaust Emissions** (similar to *CVFPP PEIR Mitigation Measure AQ-1-Implement Measures to Reduce Construction-Related Emissions*, *FRAQMD Standard Mitigation Measure 2-7*, and *CVFPP PEIR Mitigation Measure CLM-1a- Implement Greenhouse Gas-Reducing Construction BMPs 6-9*):

- The portable engines and portable engine-driven equipment units used at the project site should obtain proper state and local registration and permits.
- Plan to minimize traffic flow interference from construction activities. Minimize obstruction of through-traffic lanes and provide a flag person as needed to guide traffic properly.
- Construction equipment exhaust emissions cannot exceed 40% opacity or Ringelmann 2.0
- Use alternative-fueled (e.g. compressed natural gas (CNG), liquefied natural gas (LNG), propane, biodiesel) or electricity-powered construction equipment, where feasible. Utilize existing power sources or clean fuel generators rather than temporary power generators as feasible.
- Minimize idling time by requiring that equipment be shut off after 5 minutes when not in use (as required by the State airborne toxics control measure (Title 13, Section 2485 of the California Code of Regulations)). Provide clear signage that posts this requirement for workers at the entrances to the site.
- Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an air quality control plan prior to commencement of construction.<sup>1,2,4</sup>
- Implement a tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every 2 weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an air quality control plan prior to commencement of construction.
- Develop a project-specific ride share program to encourage carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes.

After incorporating mitigation measures, the project would fall below the suggested FRAQMD emissions thresholds and would not conflict with or obstruct implementation of the FRAQMD air quality plan.

**b) Violate any air quality standard (e.g., NAAQS or CAAQS) or contribute substantially to an existing or projected air quality violation?**

*Less Than Significant Impact with Mitigation.* The project is in Sutter County which has not attained the CAAQS for Ozone or particulate matter (PM<sub>10</sub>). Since Ozone is formed through the chemical reaction between emissions of ROG and NO<sub>x</sub>, the project's NO<sub>x</sub> emissions may impede on the NSVPA Air Quality Attainment Plan because the NO<sub>x</sub> emissions are modeled to exceed the suggested FRAQMD emissions threshold (Table 3 and Table 4). Therefore, the project may have significant impacts to air quality by contributing to a projected air quality violation, but implementation of the air quality mitigation measures listed in Air Quality checklist question a) above would reduce impacts to less than significant by reducing construction NO<sub>x</sub> emissions to meet FRAQMD emissions thresholds. Also, as the structure can be remotely monitored, the project should reduce operational NO<sub>x</sub> emissions since maintenance yard staff will no longer need to commute to the site daily. Colusa County has attained the CAAQS for Ozone so no air quality standards will be violated.

The following project-specific measures will reduce this impact to a less than significant level:

**Mitigation Measure AQ-1 – Eliminate Construction Disposal Burning** (similar to *CVFPP PEIR Mitigation Measure AQ-1-Implement Measures to Reduce Construction-Related Emissions and FRAQMD Best Available Mitigation Measures 12*)

**Mitigation Measure AQ-2 – Measures to Reduce Fugitive Dust Emissions** (similar to *CVFPP PEIR Mitigation Measure AQ-1-Implement Measures to Reduce Construction-Related Emissions; FRAQMD Standard Mitigation Measure 1, 6; FRAQMD Best Available Mitigation Measures 1-11*)

**Mitigation Measure AQ-3 – Measures to Reduce Exhaust Emissions** (similar to *CVFPP PEIR Mitigation Measure AQ-1-Implement Measures to Reduce Construction-Related Emissions, FRAQMD Standard Mitigation Measure 2-7, and CVFPP PEIR Mitigation Measure CLM-1a- Implement Greenhouse Gas-Reducing Construction BMPs 6-9*)

**c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

*Less Than Significant Impact with Mitigation.* The project may have significant impacts to air quality since it could potentially increase Ozone, a criteria pollutant which Sutter County is designated as non-attainment. However, the air quality mitigation measures AQ-1 thru AQ-3 are expected to reduce the impact to less than significant. Please refer to Air Quality checklist question b) discussion for more detail.

The following project-specific measures will reduce this impact to a less than significant level:

**Mitigation Measure AQ-1 – Eliminate Construction Disposal Burning** (similar to *CVFPP PEIR Mitigation Measure AQ-1-Implement Measures to Reduce Construction-Related Emissions and FRAQMD Best Available Mitigation Measures 12*)

**Mitigation Measure AQ-2 – Measures to Reduce Fugitive Dust Emissions** (similar to *CVFPP PEIR Mitigation Measure AQ-1-Implement Measures to Reduce Construction-Related Emissions; FRAQMD Standard Mitigation Measure 1, 6; FRAQMD Best Available Mitigation Measures 1-11*)

**Mitigation Measure AQ-3 – Measures to Reduce Exhaust Emissions** (similar to *CVFPP PEIR Mitigation Measure AQ-1-Implement Measures to Reduce Construction-Related Emissions, FRAQMD Standard Mitigation Measure 2-7, and CVFPP PEIR Mitigation Measure CLM-1a- Implement Greenhouse Gas-Reducing Construction BMPs 6-9*)

**d) Expose sensitive receptors to substantial pollutant concentrations?**

*Less Than Significant Impact.* There are residences surrounding the project area that would be exposed to construction related pollutants. These private residences are located within 1000 feet of the project site. Following the FRAQMD guidelines for sensitive receptors, an environmental analysis was conducted to determine the diesel particulate matter (PM) impacts on nearby residential receptors. The construction of the project would result in 12 months of intermittent diesel exhaust emissions from on-site heavy-duty equipment. Recommendations on levels of exposure for sensitive receptors by short-term toxic air contaminant emissions are limited as there is inadequate exposure-response information in acute health effect studies (EPA 2002). The project diesel emission exposure period and concentration was analyzed to assess the project's impact on sensitive receptors. The project's period of exposure is relatively short since the 12 month construction period is minimal in comparison to the 30-year exposure minimum that the Office of Environmental Health Hazard Assessment suggests scenario health risk assessments for individual cancer risk determination should be conducted (OEHHA 2012). Also, the project's concentration of diesel PM should not significantly affect nearby sensitive receptors since diesel PM pollutants, including ultra-fine particles, are highly dispersive and concentrations decrease as distance increases with dramatic decreases approximately 300 feet from sources (Zhu et al. 2002). Since these diesel emissions would be temporary, intermittent, and would dissipate rapidly with time and distance from the source, the project would not significantly expose sensitive receptors to substantial pollutant concentrations. Additionally, the project will apply all applicable measures of Mitigation Measure AQ-3 that will reduce exposure of the projects potential diesel exhaust emissions to nearby residents or sensitive receptors.

**e) Create objectionable odors affecting a substantial number of people?**

*Less Than Significant Impact.* Diesel exhaust emissions are the only anticipated odor created from the project. These diesel exhaust emissions would be temporary, intermittent, and dissipate over time and distance. So, the short-term operation of the project would not significantly impact nearby residents. Various chemicals used in construction, and dust may cause localized odor, but this would be temporary, intermittent, and dissipate over time and distance.

**f) Exceed or be inconsistent with any applicable air district thresholds of significance?**

*Less Than Significant Impact with Mitigation.* The Roadway Construction Emissions Model has estimated the project's NO<sub>x</sub> emissions to exceed the FRAQMD Thresholds which may cause the project to significantly impact air quality. However, the air quality mitigation measures AQ-1 thru AQ-3 are expected to reduce the impact to less significant. Please refer to Air Quality checklist question a) discussion for more detail.

## 6.4 Biological Resources-Aquatic

### 6.4.1 Environmental Setting

The BSOG, located at the downstream end of Butte Slough channel, discharges into the Sacramento River (approximately River Mile [RM] 138) approximately 3.73 miles downstream from the town of Colusa (RM 143.5). The BSOG are operated to discharge floodwaters and excess agricultural water from Butte Basin to the Sacramento River and to control water levels in the Butte Basin for irrigation and drainage purposes (USACE 1957). During the flood season when stages in the Sacramento River are higher than water elevations behind the BSOG, the flapgates close and Sacramento River water is prevented from flowing into the Butte Slough Basin. When stages in the Sacramento River are lower than water elevations behind the gates, the gates can be opened and drainage from Butte Slough flows through the BSOG into the Sacramento River. During the irrigation season, the BSOG are used to control water levels from the Butte Basin so that diversions downstream of the BSOG can be provided with water. The Hydrology section (beginning on page 104) includes additional details about the area's hydrology and water system.

The borrow/spoil material site is located adjacent to the Tisdale Bypass, approximately 20 miles southeast of the project site. The borrow site was previously farmed and cleared so that spoils from the 2007 DWR Tisdale Bypass sediment removal project could stockpile spoils across the site. The borrow/spoil site is not hydrologically connected to Tisdale Bypass and is buffered by agricultural land. However a small drainage ditch surrounds the approximately 70-acre site, but the, borrow/spoil material will not impact the aquatic feature.

The sediment removal spoils were staged for use on future projects, such as BSOG. Although the borrow site was estimated in its entirety, only a portion of the approximately 70-acre site will be used to as suitable borrow material and to spoil soil that is removed from and cannot be reused on the project site.

Native and non-native fish utilize habitat within and around the project area. Some of the fish that may be found within the Sacramento River and Butte Slough project area include native green and white sturgeon (*Acipenser medirostris*, *Acipenser transmontanus*); steelhead (*Oncorhynchus mykiss*); and spring-, fall- and winter-run Chinook salmon (*Oncorhynchus tshawytscha*). Non-native fish species such as bass (*Micropterus* sp.), sunfish, crappie, catfish, pikeminnow (*Ptychocheilus oregonensis*), and carp may also be present on both sides of BSOG in the Sacramento River and/or Butte Slough.

Vegetation around the Sacramento River and Butte Slough sides is a mix of native and nonnative riparian scrub shrub consisting of valley oak (*Quercus lobata*), Fremont cottonwood (*Populus fremontii*), box elder (*Acer negundo*), Oregon ash (*Fraxinus latifolia*), Himalayan blackberry (*Rubus armeniacus*), poison oak (*Toxicodendron diversilobum*), and other riparian species. Buttonbush (*Cephalanthus occidentalis*)

grows along the water's edge of both waterbodies. Butte Slough also contains small patches of woolly rose-mallow (*Hibiscus lasiocarpus* var. *occidentalis*) along the bank.

Annual grasses and ruderal vegetation are common in disturbed areas along dirt roads and areas that have been maintained by discing or burning. Active agricultural fields and ornamental tree and plant species (around the residential and marina areas) surround the project site.

#### **6.4.2 Description of Special Status Species and Their Habitat**

FMO Environmental support staff conducted a records search of the USFWS Critical Habitat, NMFS's Essential Fish Habitat, and CDFW's California Natural Diversity Database (CNDDDB) for the project area and a USFWS species list for USGS Meridian 7.5 minute Quadrangles. Using the information obtained from the database records search and field reconnaissance, DWR developed a list of special status aquatic species and critical habitat potentially occurring in and near the project area. Table 5 includes the scientific and common name for federal and State listed aquatic species, its status, a brief description of its habitat, and its potential for occurrence within the BSOG project area.

Species considered are:

- Green Sturgeon (*Acipenser medirostris*)
- Central Valley Steelhead (*Oncorhynchus mykiss*)
- Central Valley Spring-run Chinook Salmon (*Oncorhynchus tshawytscha*)
- Sacramento River Winter-run Chinook Salmon (*Oncorhynchus tshawytscha*)
- Delta Smelt (*Hypomesus transpacificus*)

Table 5. USFWS, NMFS, and CDFW Aquatic Species List with Habitat Summary and Occurrence Potential within the B SOG project area.

Sensitive Species/Habitat	Common Name	Status	Habitat	Potential for Occurrence
<i>Acipenser medirostris</i>	North American Green Sturgeon, Southern Distinct Population Segment (DPS)	FT/SSC /X	Mainstem Sacramento River, Sacramento-San Joaquin River Delta and San Francisco Bay estuary, coastal waters. Benthic fish and have been observed in off-channel habitat with deep pools and little current. Thought to prefer spawning in areas where large cobble exists.	May be present but there is no spawning habitat at or downstream of the project site along the Sacramento River. In-water construction activities will be conducted outside the adult migratory period.
<i>Oncorhynchus mykiss</i>	California Central Valley Steelhead DPS	FT/X	Central Valley rivers; Delta, San Francisco Bay estuary. Requires cold, freshwater streams with suitable spawning gravel.	May be present but no in-water work will be conducted during the primary migration period. Critical habitat is located within the project site but there is no spawning habitat at or downstream of the project site
<i>Oncorhynchus tshawytscha</i> spring-run	Central Valley Spring-run Chinook Salmon Evolutionary Significant Unit (ESU)	FT/ST/X	Central Valley rivers; Delta, San Francisco Bay estuary. Requires cold, freshwater streams with suitable spawning gravel.	May be present but no in-water work will be conducted during the primary migration period. Critical habitat is located within the project site but there is no spawning habitat at or downstream of the project site
<i>Oncorhynchus tshawytscha</i> winter-run	Sacramento River Winter-run Chinook Salmon ESU	FE/SE/X	Central Valley rivers; Delta, San Francisco Bay estuary. Requires cold, freshwater streams with suitable spawning gravel.	May be present but no in-water work will be conducted during the primary migration period. Critical habitat is located within the project site but there is no spawning habitat at the project site.
<i>Hypomesus transpacificus</i>	Delta Smelt	FT/SE/X	Occurs throughout the Sacramento - San Joaquin River Delta. Typically rears in shallow, fresh, or slightly brackish water.	Not expected to occur; nearest documented record is downstream of the site near Knight's Landing (RM 90). Lack of adequate and suitable habitat.

- (FE) Federally ESA Listed Endangered
- (FT) Federally ESA Listed Threatened
- (X) ESA Designated Critical Habitat
- (SE) State CESA Listed Endangered
- (ST) State CESA Listed Threatened
- (SSC) State CDFW Species of Special Concern

### **6.4.3 Anadromous Fish**

Threatened, endangered, and candidate anadromous fish species are present in the Sacramento River and Sutter Bypass near or within the project area (no fish are present in and around the immediate borrow site at Tisdale Bypass). These species include green sturgeon, Central Valley steelhead, Central Valley spring-run Chinook salmon, and Sacramento River winter-run Chinook salmon.

Salmonids migrating through the Butte Creek system migrate from the Sacramento River through Sacramento Slough and travel up the Sutter Bypass West Borrow Canal (WBC) to its confluence with Willow Slough, which connects the WBC with the East Borrow Canal (EBC). There are a few locations within the Sutter Bypass where fish can move between the WBC and the EBC: at Nelson Weir, Willow Slough Weir, and where the canals reunite near the upper end of the Sutter Bypass at the Sutter Bypass diversion weir. Adult fish continue their journey upstream from Sutter Bypass through Butte Slough and into upper Butte Creek to their holding pools and spawning grounds. Emigrating juvenile fish follow the same general route back to the ocean.

The following section describes critical habitat (Figure 6) and the federal and State listed threatened or endangered aquatic species with a potential to occur in the project area. The mitigation measures that DWR will implement to minimize impacts to sensitive resources during project construction are also described. Species with no potential for occurrence are not included in the discussion.

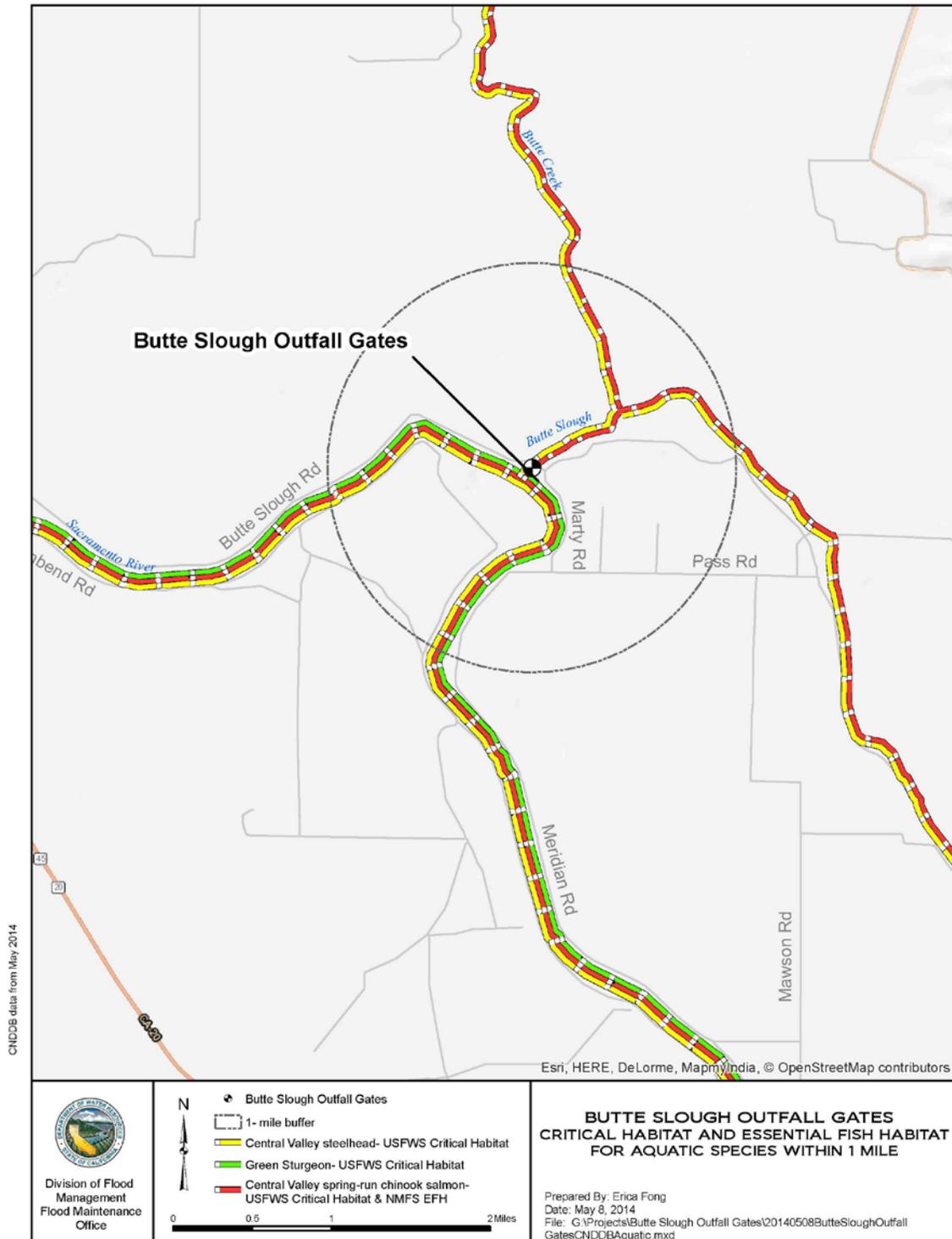


Figure 6. Butte Slough Outfall Gates Designated ESA Critical Habitat and Essential Fish Habitat.

#### **6.4.3.1 Green Sturgeon (*Acipenser medirostris*)**

The southern Distinct Population Segment (DPS) of North American green sturgeon, was listed as Threatened by NMFS in 2006 under the federal Endangered Species Act (ESA). Critical habitat for the green sturgeon was designated in 2009 and includes the Sacramento River and the Sacramento-San Joaquin Delta.

Green sturgeon spend the majority of their lives in the ocean but move to freshwater systems to spawn. They can be found throughout their natal river systems in the Sacramento River (up to Keswick Dam), lower Feather River, and lower Yuba River as well as the Yolo and Sutter Bypasses and the Delta.

Adult green sturgeon spawn every 2 to 5 years. Most females reach sexual maturity at 20–25 years while males reach sexual maturity at 15–17 years (Beamesderfer and Webb 2002). Adults spend most of their lives in the ocean and typically migrate into fresh water up the Sacramento River beginning in late February. Spawning occurs from March through July with peak activity from April through June (Moyle et al. 1995). Green sturgeon spawn in deep pools in large, turbulent rivers (Moyle et al. 1995); the preferred spawning substrate is likely large cobble-containing crevices in which eggs can become trapped and develop, but may also range from clean sand to bedrock (Beamesderfer and Webb 2002). After spawning, adult sturgeon usually hold for several months in deep pools near their spawning sites, in both the upper mainstem Sacramento River and in the Feather River. They migrate back downstream when flows increase in fall, and reenter the ocean in winter (Heublein et al. 2009). Spawning was recently confirmed to occur in the lower Feather River, in the Thermalito Afterbay overflow and has been known to occur in the Upper Sacramento River between the confluence with Battle Creek (RM 271) and the area approximately 15 miles downstream of Red Bluff (Seesholtz, pers comm. 2014; Israel and Klimley 2008).

Green sturgeon larvae grow quickly, and metamorphosis to the juvenile stage is complete in 45 days. Juveniles spend 1 to 4 years in fresh and estuarine waters and disperse into salt water at lengths of 1 to 2.5 feet (Houston 1988). Little is known about juvenile green sturgeon's downstream migration and rearing habitats except that larvae and juveniles migrate downstream and rear in the San Francisco Bay estuary and the Delta, in the Lower Sacramento and Lower San Joaquin River, before migrating to the ocean (Beamesderfer et al. 2007).

Critical habitat for green sturgeon is located within the project area on the Sacramento River side of the BSOG. (Figure 6). The project's activities are not expected to diminish the conservation value of critical habitat for this species.

Green sturgeon may be present on the Sacramento River side of the project during construction but there is low probability of presence since in-water pile driving, cofferdam establishment, and dewatering work will occur between June 15 and November 1, after the adult migratory period. Additional mitigation measures will be implemented to reduce potential impacts to green sturgeon and other fish species. No impact to green sturgeon spawning habitat is anticipated to occur since there is no

suitable spawning habitat located along the Sacramento River portion of the project area.

#### **6.4.3.2 Central Valley Steelhead (*Oncorhynchus mykiss*)**

California Central Valley steelhead DPS is federally listed as Threatened by NMFS under ESA and has no State designation. Portions of the Sacramento River were designated as ESA Critical Habitat for the Central Valley steelhead. Central Valley steelhead migrate from the ocean and historically inhabited large and small streams throughout the Sacramento-San Joaquin watershed. Currently populations are found in the Sacramento River and its tributaries; the Consumnes and Mokelumne Rivers; and the San Joaquin River and its tributaries.

Adult steelhead may be able to spawn multiple times and typically ascend Butte Creek in August through March and spawn between December through April (CSU Chico 1998). Steelhead eggs hatch 19–80 days after spawning, depending on water temperature (warmer temperatures result in faster hatching times), and the young remain in the gravel for several weeks before emerging as fry (Raleigh et al. 1984). Steelhead juveniles spend between one to two years in freshwater before emigrating to the ocean as smolts (Reynolds et al. 1993). After spending two to three years in the ocean, steelhead return to their natal streams to spawn as four- or five-year-olds.

Steelhead may occur in the project area during migration to and from spawning grounds in Butte Creek and other tributaries. They are present within the Butte Creek system year-round, either as juveniles rearing, emigrating or as adults migrating upstream or downstream. Although there are only limited observations, steelhead are thought to ascend Butte Creek in the late-fall and winter where they proceed to spawn in both the mainstem and tributaries (Brown 1992). There is very little information regarding the number of adult steelhead in Butte Creek. Estimating production of steelhead in Butte Creek is complicated because of its hydrologic connections with the Sacramento River. Steelhead adults have been reported in Butte Creek through CDFW warden reports of angler catches (CSU Chico 1998). Steelhead are also known to use Sutter Bypass as rearing habitat (CSU Chico 1998). Juvenile steelhead in the Sacramento River migrate to the ocean in spring and early summer, with peak migration through the Delta in March and April (Reynolds et al. 1993).

Critical habitat is located within the project boundaries on both the Sacramento River and Butte Slough sides (Figure 6). The project's activities are not expected to diminish the conservation value of critical habitat for this species

Central Valley steelhead may be present in the Sacramento River, Butte Slough, and/or Butte Creek; however, in-water work activities such as pile driving, cofferdam establishment, and dewatering are scheduled to occur before the adult migratory period and after most juveniles have expected to emigrate so potential impacts to this species should be avoided. Once the cofferdam is established and dewatered, potential impacts to fish are greatly reduced. Additional mitigation measures will also be

implemented to reduce potential impacts. The bottom of the Butte Slough and Sacramento River channel adjacent to BSOG is sediment-laden (fine silty) and/or do not contain suitable spawning gravel. Therefore no suitable spawning habitat is located or will be impacted at or downstream of the project.

#### **6.4.3.3 Central Valley Spring-run Chinook Salmon Evolutionarily Significant Unit (ESU) (*Oncorhynchus tshawytscha* spring-run)**

Central Valley Spring-run Chinook salmon ESU was listed as federally Threatened on September 16, 1999, under the ESA (update April 14, 2014). ESA Critical Habitat for the species was federally designated on September 2, 2005. It was also listed as State Threatened on February 5, 1999, under CESA.

Spring-run Chinook salmon historically inhabited streams throughout the Sacramento-San Joaquin watershed but have been completely extirpated in the San Joaquin system. Spawning habitats and populations are limited to Butte, Deer, and Mill Creeks, which are tributaries to the Sacramento River (Moyle 2002). Spring-run Chinook salmon that spawn in Butte Creek enter the Sutter Bypass through Sacramento Slough and swim up the EBC to get to spawning areas in the upper reaches of Butte Creek near Chico.

Adult spring-run Chinook salmon migrate up the Sacramento River and tributaries to upstream spawning areas from February through June. Adults seek deep, cold-water holding pools to over-summer and spawn when water temperatures begin to cool between late August through October. Juveniles emerge from the gravel as early as late November. Trapping studies indicate that the majority migrate as fry or fingerlings, while a small portion of juveniles over-summer and emigrate as yearlings the next fall (McReynolds et al. 2005). Rearing and outmigration occurs November through April. Yearling spring-run Chinook salmon migrate from October through March, with peak migration in November (Hill and Webber 1999).

Butte Creek spring-run Chinook salmon juveniles migrate downstream through the Sutter Bypass or BSOG into the Sacramento River primarily from December through February. Life history investigations have shown that many juveniles entering the Sutter Bypass remain there for several weeks (McReynolds et al. 2005). Sutter Bypass is an important nursery for spring-run Chinook salmon. A recent study conducted between January through April found that the average fish passage time was 46 days for individuals that were marked just below their spawning grounds and recaptured in the Sutter Bypass near its confluence with the Sacramento River (McReynolds et al. 2005).

Critical habitat for spring-run Chinook salmon is located within the project boundaries on both the Sacramento River and Butte Slough sides (Figure 6). The project's activities are not expected to diminish the conservation value of critical habitat for this species.

Spring-run Chinook salmon may be present in Butte Slough and Butte Creek in the winter through late spring. Pile driving, cofferdam establishment, and dewatering

activities could potentially impact these fish; therefore, in-water work windows from June 15 to November 1 were chosen to avoid the adult migratory period. Spring-run Chinook juveniles migrate down Butte Creek through the Sutter Bypass in winter through spring before in-water activities commence and occur. This will reduce potential impacts to this species. Additional mitigation measures will also be implemented to reduce potential impacts. No impacts to spawning habitat will occur since there is no suitable spawning habitat located at Butte Slough near the outfall gates or downstream of BSOG in the Sacramento River.

#### **6.4.3.4 Sacramento River Winter-run Chinook Salmon ESU (*Oncorhynchus tshawytscha*)**

Sacramento River winter-run Chinook salmon ESU was listed as federally Endangered on January 4, 1994 (updated April 14, 2014) and State Endangered under CESA since September 22, 1989. Critical habitat was federally-designated on June 16, 1993. This run of Chinook salmon historically spawned in the upper reaches of the Sacramento River and its major tributaries, the McCloud and Pit Rivers. The Sacramento River upstream from Red Bluff Diversion Dam is the only currently known natural spawning reach for winter-run Chinook salmon.

Winter-run adults migrate through the Delta and into the Sacramento River between winter and spring and typically spawn in the mainstem Sacramento River and Battle Creek (Coleman National Fish Hatchery) during late spring and early summer. Juvenile winter-run Chinook salmon emerge between July through October and rear in the river for 5 to 10 months (Moyle 2002). This species of salmon are present in the upper Sacramento River year-round and typically above Colusa during wet years.

Although it is not shown on Figure 6, critical habitat for winter -run Chinook salmon is located within the project boundaries on the Sacramento River side. The project's activities are not expected to diminish the conservation value of critical habitat for this species. Butte Creek does not support a spawning population of Sacramento River winter-run Chinook salmon. However, Sacramento River overflows and/or high flood flows can inundate into the Butte Sink/Basin, Butte Creek, Butte Slough and the Sutter Bypass via the Tisdale, Colusa, and Moulton weirs (CSU Chico 1998). During these times of high flood flows, the Sutter Bypass can function as a migratory corridor for juvenile winter-run Chinook salmon (USFWS 2000).

Winter-run Chinook salmon may be present in the Sacramento River side during construction but in-water work windows (from June 15 to November 1 when pile driving, cofferdam establishment, and dewatering activities will occur) were selected to take place after the adult migratory period. This will reduce potential impacts to this species. Additional mitigation measures will be implemented to reduce impacts to outmigrating juveniles that may be in the area during the pile driving, cofferdam establishment, and dewatering activities. There is no spawning habitat located at or downstream of the project.

Potential impacts to aquatic biological resources from on-going O&M activities will be similar to or less than current O&M activities. Structure-related maintenance and inspection activities are conducted on an annual basis or as needed. If dewatering of an area or water-disturbing work is required to conduct repair/inspections of a structure, applicable aquatic biological resource mitigation measures such as (or similar to) BIOAQ-2 and BIOAQ-3 described in the environmental checklist and discussion will be implemented during these activities to make these potential impacts less than significant.

#### 6.4.4 Environmental Checklist and Discussion

##### **BIOLOGICAL**

##### **RESOURCES-AQUATIC:**

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
<hr/> Would the project...				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any fish species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW, NMFS, or USFWS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Interfere substantially with the movement of any native resident or migratory fish species or impede the use of native fish nursery sites	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on riparian vegetation that functions as shaded riverine aquatic habitat	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**BIOLOGICAL**

**RESOURCES-AQUATIC:**

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
<hr/> Would the project...				
d) Substantially reduce the habitat of a fish species; cause a population to drop below self-sustaining levels; or threaten to eliminate a fish community	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Reduce the number or restrict the range of a rare or endangered aquatic species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Substantially reduce habitat designated as critical habitat or Essential Fish Habitat (EFH)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Substantially conflict with the provisions of an adopted habitat conservation plan (HCP), natural community conservation plan, or other approved local, regional, or State HCP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**a) Have a substantial adverse effect, either directly or through habitat modifications, on any fish species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW, NMFS, or USFWS?**

*Less Than Significant Impact with Mitigation.* Pile driving, cofferdam establishment, and dewatering activities from the project could potentially have significant impacts to fish, but the project will minimize these impacts through avoidance and mitigation measures. In-water work windows were discussed with NMFS and CDFW (Umlauf 2012, 2013 and McReynolds 2012, 2013 Pers. Comm.) and a work window from June 15 to November 1 was proposed because listed anadromous fish, especially spring-run Chinook salmon, are less likely to use the area for emigration to spawning habitat and outmigration to the ocean. Impacts to spring-run Chinook and steelhead migrating up to Butte Creek would be minimized as fish passage to and from Butte Creek will still be available through the Sacramento River to the Sutter Bypass route.

In-water construction work will be conducted only in dry, dewatered areas behind sheet pile cofferdams. The cofferdams will be constructed around both sides of the BSOG

structure, prior to any in-water soil-disturbing activities. The Sacramento River cofferdam will be constructed to an elevation high enough to avoid flooding during the construction period. Sutter Maintenance Yard staff will control the stage elevations downstream of BSOG during all phases of construction to avoid flooding the cofferdam on the Butte Slough side. Water velocities in the immediate vicinity of the Butte Slough cofferdam and into the Sutter Bypass are expected to increase as water will be routed through Sutter Bypass when the outfall gates are closed off.

Construction of the inlet and outlet structures will require installation of sheet pile cofferdams on each side of the levee, followed by temporary dewatering of the construction areas. Because hydroacoustic impacts on fish from pile installation can potentially cause damage ranging from behavioral (i.e. a fish leaving feeding or spawning sites) to physical (body tissue damage and/or death) (Transportation Research Board 2011), the in-water work window will be at a time when fish species are least likely to be present, and sheet piles will be driven using a vibratory pile driver hammer as the primary means of driving piles. If an impact pile driver is used (only if necessary because resistant soil layers are encountered, etc.) additional precautions and minimization measures will be implemented. The levee bank protection will be monitored for any disturbance/deformation during vibratory pile driving activities.

Although it is anticipated that most sheet pile installation will occur using equipment staged on the banks or a barge, it is possible that up to two temporary construction pads will need to be constructed adjacent to the bank in Butte Slough and/or Sacramento River to facilitate the installment of the sheet pile beyond the crane's reach. This activity and other construction activities will disturb soils and could mobilize sediment into the Sacramento River and/or Butte Slough, producing temporary increases in turbidity and sedimentation downstream of the construction sites. Potential impacts could include periods of localized, high suspended-sediment concentrations which can cause clogging and abrasion of gill filaments in fish and reduce feeding opportunities for sight-feeding fish. Accidental spills or seepage of hazardous materials could also occur this time. To ensure compliance with mandated water quality standards are met, turbidity measurements will be taken up and downstream of the work during pile driving activities.

Cofferdam dewatering for construction will be accomplished with engine-driven dewatering pumps and either trench sumps, pit sumps, groundwater wells, or a combination. Drawdown rates will be established to reduce and/or avoid bank collapse. Water from dewatering efforts will be used for construction water (dust control, etc.) with the remaining balance being discharged into Butte Slough or Sacramento River. During initial dewatering the pump intakes will be fitted with appropriate sized fish screens (following NMFS and/or CDFW guidelines) to prevent fish from becoming entrained. Turbidity measurements will be taken up and downstream of the work during dewatering activities. Upon completion of construction the dewatering wells will be capped and abandoned in compliance with applicable regulations. If water is pumped back into the waterways, settling tanks or other BMPs may be employed as needed to control turbidity.

Sheet piles will be installed on both sides of the BSOG structure in Phases 1 and 2, as needed. Once sheet pile installation is completed, fish may become trapped in the isolated area behind the cofferdams. To minimize impacts to less than significant levels, DWR ES's will capture and relocate fish to outside the cofferdams. Fish trapped within the cofferdam will be rescued before the cofferdam is completely drained. DWR biologists will capture and relocate fish within the cofferdammed areas as specified in a NMFS and/or CDFW-approved fish rescue/relocation plan.

Fish rescue and relocation operations are expected to minimize project impacts to less-than-significant to all special-status fish species by removing them from areas where they would have experienced high rates of injury or mortality.

Between Phases 1 and 2 of construction, fish will be able to access the Sacramento River via the BSOG structure as well as through the Sutter Bypass. Sheet piles on the Sacramento River side will be removed between the construction seasons. Sheet piles on the Butte Slough side will be modified so a maximum elevation of 43 feet can be maintained between Butte Creek and Sutter Bypass. Butte Slough flow will be able to pass over the sheet piles and through the structure and open flap gate(s) on the Sacramento River side. The flap gate(s) will remain in an open position between Phase 1 and 2 to allow for hydrologic connectivity to the Sacramento River during this time so fish stranding is not anticipated.

The following project-specific measures will reduce this impact to a less-than-significant level:

**Mitigation Measure BIOAQ-1 - Secure Applicable State and/or Federal Permits and Implement Permit Requirements** (similar to *CVFPP PEIR Mitigation Measure BIO-A-2a - Secure State and Federal Permits and Implement Permit Requirements*)

DWR will consult with State and federal environmental regulatory agencies and apply for and obtain all applicable environmental permits relevant project work in order to reduce and/or minimize potential project impacts. DWR will comply with all terms and conditions of the agreed upon permits including measures to protect species and habitat or to restore, replace, or rehabilitate any species or habitat.

**Mitigation Measure BIOAQ-2 - Pre-Construction Environmental Training, Site Preparation, and Monitoring**

A qualified biologist will develop and administer a worker environmental awareness training program to all construction personnel before construction activities begin. All construction staff working on the project will be required to attend an on-site environmental awareness training given by the biologist. The training will include instruction regarding species identification, natural history, habitat, and protection needs of special status species (e.g. Central Valley spring-run Chinook salmon, Swainson's hawk, etc.) that may occur on-site.

Project boundaries will be established and staked, flagged and/or surrounded by

construction fencing to minimize impacts. No clearing or grubbing beyond these areas will be allowed. Silt fence will be placed at soil/water interfaces where there is a possibility for soils entering the waterways. Sensitive environmental and cultural resource areas within the project boundary will be flagged.

A qualified biologist will be on-site during the initial construction period to monitor work activities at the start of construction to ensure compliance with all requirements. The biologist will be available on an on-call basis on subsequent days and will periodically visit the site during work activities. If a sensitive species is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the species will not be harmed.

### **Mitigation Measure BIOAQ-3 - Avoid and Minimize Impacts to Special Status Fish Species**

To avoid and minimize impacts to special status fish species, in-water work will be conducted between June 15 and November 1. A qualified biologist will be on-site or on-call during in-water construction activities. If a sensitive species is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the species will not be harmed. Additional specific measures to minimize impacts are detailed below:

#### *Dewatering*

A dewatering plan will be prepared and submitted to DWR prior to the commencement of dewatering activities. Pump intakes will be fitted with appropriate sized NMFS and/or CDFW-approved fish screens to prevent fish from becoming entrained. Turbidity measurements will be taken up and downstream of the work during dewatering activities.

Drawdown rates will be established to reduce and/or avoid bank collapse. Water from dewatering efforts will be used for construction water (dust control, etc.) with the remaining balance being discharged into Butte Slough or Sacramento River. If water is pumped back into the waterways, settling tanks or other BMPs may be employed as needed to control turbidity. If dewatering wells are utilized on the project, they will be capped and abandoned in compliance with applicable regulations after construction is complete.

#### *Fish Relocation*

A fish rescue plan will be developed by DWR and approved by CDFW prior to the start of the project. The plan will reference and implement adapted fish relocation measures defined in the CDFW *California Salmonid Stream Habitat Restoration Manual (CDFG 2010)*. Fish entrapped within the cofferdam will be rescued before the cofferdam is completely drained as removing or excluding fish during installation is difficult and not feasible. DWR biologists will capture fish within the cofferdammed areas and relocate as specified in the fish rescue plan.

**Mitigation Measure BIOAQ-4 - Avoid and Minimize Underwater Sound Pressure due to Pile Driving** (similar to *CVFPP PEIR Mitigation Measure BIO-A-4 - Conform to NMFS Guidelines for Pile-Driving Activities*):

A qualified biologist shall be present during such work to monitor construction activities and compliance with terms and conditions of permits. If any injury or mortality to fish is observed, CDFW, NMFS and/or USFWS will be immediately notified and in-water pile driving will cease.

A vibratory hammer for installing piles is preferred but if an impact hammer is needed to drive piles, noise levels should not exceed the following threshold levels established by USFWS and NMFS (for fish greater than 2 grams):

- Peak pressure = 206 decibel
- Accumulated SEL = 187 decibel

To comply with the thresholds, DWR will employ the following mitigation measures:

- Use of an impact hammer cushion block.
- Hammers will be used only during daylight hours, and will initially be used at low energy levels and reduced impact frequency. Applied energy and frequency shall be gradually increased until necessary full force and frequency are achieved.
- Turbidity measurements will be taken up and downstream of the work during pile driving activities to ensure compliance with mandated water quality standards.
- If noise thresholds are not met using the above mitigation measures, DWR will consult with the regulatory agencies and one or both of the following mitigation measures may be implemented as feasible: A bubble curtain may be implemented, surrounding the pile to be driven.
- Shortening the daily duration of pile driving activities.

**Mitigation Measure BIOAQ-5 - Implement Spill and Storm Water Pollution Prevention Plans**

*Spill Prevention and Control Plan and Spill Control Materials*

A Spill Prevention Plan will be developed by the contractor prior to the start of construction. The plan will include spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous materials used for equipment operation, and emergency procedures for responding to spills. It will be updated as needed to reflect changes in on-site hazardous materials. In addition, spill control materials will be available on-site and available for deployment during all phases of work.

*Storm Water Pollution Prevention Plan (SWPPP)*

A SWPPP will be prepared by the contractor and submitted to DWR prior to mobilization to the site. The SWPPP will identify and specify (but is not limited to) the use of an effective combination of appropriate temporary and/or between season erosion and sediment control BMPs for use on the project site, spill prevention and contingency

measures, waste disposal, and emergency contacts and responsibilities. A copy of the approved SWPPP will be available at all times on the construction site.

**b) Interfere substantially with the movement of any native resident or migratory fish species or impede the use of native fish nursery sites?**

*Less Than Significant Impact.* BSOG has been in place since 1935. Since that time, the majority of the spring run Chinook salmon population have used the Sutter Bypass as their main migration route up the area. DWR DFM has completed recent improvements over the past five years along the Sutter Bypass, these include fish passage improvements to the Willow Slough Weir and Weir 2. These fish passage improvements make it easier for spring-run Chinook, as well as steelhead and other Chinook salmon runs, to access upstream spawning areas in Butte Creek.

During the summer and fall (when proposed in-water work windows are in place) little to no water is released out of BSOG into Sacramento River. Even if some water is released, there is limited space for fish to enter Butte Slough from the Sacramento River since the culverts are covered with flapgates that do not completely open. The majority, if not all, of the summer and fall runoff and agricultural water flows are directed down Sutter Bypass where it meets the Sacramento River near Verona.

No major changes are being made to the BSOG structure that will change its function and operations (e.g. change in flows or water management activities), so no new significant impacts will be created by the rehabilitation of this structure.

**c) Have a substantial adverse effect on riparian vegetation that functions as shaded riverine aquatic habitat?**

*Less Than Significant Impact with Mitigation.* Existing riparian vegetation along the Sacramento River and Butte Slough will be removed as part of the project construction activities which may have significant impacts to the riverine aquatic habitat. Up to 15 trees are anticipated to be removed along the Sacramento River bank and on the Butte Slough bank. Riparian trees provide shade and important ecological functions for fish and reduction of this vegetation could pose a potentially significant impact. The previous cobble bank protection along both the inlet and outlet sides will be replaced with engineered angular bank stabilization (riprap).

The following project-specific measures will reduce this impact to a less-than-significant level:

**Mitigation Measure BIOAQ-6 - SAM Assessment** (similar to *CVFPP PEIR Mitigation Measure BIO-A-3 - Inventory and Replace Shaded Riverine Aquatic Habitat*)

DWR will conduct a Standard Assessment Methodology (SAM) analyses prior to the project permitting. SAM is a tool designed by USACE, DWR, other regulatory agencies, and private counterparts to model, track and monitor vegetation that is removed and/or planted on the project site.

**Mitigation Measure BIOAQ-7 - Revegetation to Compensate for Construction-Related Effects** (Similar to *BIO-T-1a - Conduct Biological Resources Surveys to Quantify Sensitive Natural Communities in Project Areas, and Avoid, Minimize, and, Where Appropriate, Compensate for Construction-Related Effects*)

Disturbed soil areas will be stabilized using appropriate erosion control BMPs during and at the completion of construction activities for Phase 1 and 2 work. If hydroseeding is used to cover disturbed areas, native grass/forb/herbaceous plant, sterile rye, or other non-invasive seed mixes will be used.

If any trees need to be removed or trimmed, a certified arborist will be present to supervise tree removal and trimming to preserve tree health and ensure that appropriate methods are used. Any riparian habitat that is removed along the Sacramento River and/or Butte Slough will be replaced, with replacement to occur on site. Native willows, oaks and/or other native plantings will be replanted on bank slopes in or near the project area. In areas where riprap will be replaced or installed, native willows and/or other native trees and shrubs plantings will be incorporated into the voids/gaps. Lifts of riprap/soil mixes will be placed above the OHWM and where feasible (dependent upon slope and other factors) on the Butte Slough and Sacramento River banks near the project area. Plantings can be incorporated into the riprap/soil mix after construction is complete or during the final stages of construction.

A mitigation and monitoring plan will be developed and implemented to ensure that the proposed on-site plantings fully compensate for losses of shaded riverine aquatic habitat as imposed by any permits issued after project approval. Proposed mitigation habitat will be created at or along the site. DWR will coordinate with the appropriate regulatory agencies regarding compensation numbers/amount, locations, and details. If DWR cannot create on-site mitigation, off-site mitigation may be utilized with agency approval.

**d) Substantially reduce the habitat of a fish species; cause a population to drop below self-sustaining levels; or threaten to eliminate a fish community?**

*Less Than Significant Impact.* This impact is similar to b); no major changes are being made to the structure that will change its function and operations (e.g. change in flows or water management activities) so impacts are less than significant. Butte Slough and Sutter Bypass is an established migratory route for spring-run Chinook salmon and steelhead spawning and/or rearing in Butte Creek (McReynolds 2012 pers. comm. and CSU Chico 1998). Fish passage structural improvements were recently completed at Willow Slough and Weir 2 along the Sutter Bypass East Borrow Canal. These structures function to allow easier fish passage and access to upstream waters at all times during the year. Butte Slough has no gradient and its silty-clay channel bottom is not considered spawning habitat.

**e) Reduce the number or restrict the range of a rare or endangered aquatic**

**species?**

*Less Than Significant Impact.* This work will not reduce the number of fish or further restrict the range of green sturgeon, Central Valley steelhead, spring-run Chinook salmon, or winter-run Chinook salmon. As previously described in d), no major changes are being made to the structure that will change its function or operations (e.g. change in flows or water management activities) and recent structural improvements have been made in the Sutter Bypass to enhance fish passage up to Butte Creek.

**f) Substantially reduce habitat designated as critical habitat or Essential Fish Habitat (EFH)?**

*Less Than Significant Impact.* Figure 6 shows area in and near the project footprint that is considered critical habitat and EFH. The project will not substantially reduce habitat designated for reasons described in d) and e). As mentioned earlier, Butte Slough has a silty-clay channel bottom and is not desirable spawning habitat.

This project may have temporary habitat reduction impacts (less than 1.48 acres- open water) during the construction phase. However, the special status fish species that may occur within the project area are not expected to be in the area during the in-water work windows. The habitat is not prime spawning and rearing habitat and is mainly used in transit to spawning and rearing habitat up or downstream. As result of the project, the channel and banks along the Sacramento River and Butte Slough will be contoured so that there are no shallow fish stranding areas. The project will not appreciably diminish the conservation value of the critical habitat for these fish species in the short or long-term.

**g) Substantially conflict with the provisions of an adopted habitat conservation plan (HCP), natural community conservation plan, or other approved local, regional, or State HCP?**

*No Impact.* The project area is partially within the Yuba-Sutter Natural Community Conservation Planning (NCCP) and Habitat Conservation Planning (HCP) plan area. A final Yuba-Sutter NCCP/HCP planning agreement was signed by all participating parties in 2012 and work on an HCP/NCCP should be forthcoming (although no set date has been established) (Yuba County et al. 2011). Since no NCCP or HCP plan has been completed or currently exists (Yuba Sutter RCP 2014), project work doesn't conflict with any applicable NCCP or HCP.

## 6.5 Biological Resources-Terrestrial

### 6.5.1 Environmental Setting

The plant community along Butte Slough consists of valley oaks and riparian species from the valley oak series (Sawyer and Keeler-Wolf 1995). This community consists mainly of valley oak (*Quercus lobata*) with Goodding's black willow (*Salix gooddingii*), Northern California black walnut (*Juglans hindsii*), California wild grape (*Vitis californica*), arroyo willow (*Salix lasiolepis*), Oregon ash (*Fraxinus latifolia*), box elder (*Acer negundo*), white alder (*Alnus rhombifolia*), and Fremont cottonwood (*Populus fremontii*) making up the overstory, with California rose (*Rosa californica*), Himalayan blackberry (*Rubus armeniacus*), and poison oak (*Toxicodendron diversilobum*) in the understory on the waterside levees. Near the water's edge is buttonbush (*Cephalanthus occidentalis*) and woolly rose-mallow (*Hibiscus lasiocarpus* var. *occidentalis*), a California Native Plant Society List 1B.2 plant (CNPS 2014). A plant on the List 1B.2 indicates that this species is considered rare, threatened, or endangered in California and elsewhere. Oregon ash grows higher up on the levees above the buttonbush and woolly rose-mallow, with the levee tops dominated by valley oaks and willows. Agricultural fields are on each side of the landside levees. California annual grassland (Sawyer and Keeler-Wolf 1995) species such as slender wild oats (*Avena barbata*), wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft chess brome (*Bromus hordeaceus*), and rye grass (*Festuca perennis*), mixed with ruderal forbs such as yellow star-thistle (*Centaurea solstitialis*), redstem filaree (*Erodium cicutarium*), and black mustard (*Brassica nigra*) are common in disturbed areas along dirt roads and areas that have been disced or disturbed. Vegetation on the Sacramento River side of the BSOG consists of many of the same native tree and understory species as the levees along Butte Slough. Valley oak, Oregon ash, willows, California wild grape, and poison oak are present with Fremont cottonwood as the dominant overstory species. Ornamental tree species such as mulberry (*Morus alba*) and mimosa (*Albizia julibrissin*) are planted near the campsites in the marina, whereas the private residence across from the marina has oleander (*Nerium oleander*) planted along Butte Slough Road. Common annual grasses and ruderal plant species such as those listed above also occur along the perimeter of the marina and the private residence.

BSOG will be using borrow material/sediment from and spoiling excavated material from BSOG at the Tisdale Bypass spoils pile site. The approximately 70 acre spoils pile was created adjacent to the north levee at Tisdale Bypass just west of Reclamation Road to store the sediment removed from the Tisdale Bypass in 2007. The spoils pile/borrow site is a flat surface which consists mainly of common non-native annual grasses, ruderal species, and forbs which are also found at the BSOG structure site. Although the borrow site was estimated in its entirety, only a portion of the approximately 70-acre site will be used as a suitable borrow material and to spoil soil that is removed from and cannot be reused on the project site.

Riparian tree species such as Fremont cottonwood, Goodding's black willow, arroyo willow, red willow (*Salix laevigata*), sandbar willow (*Salix exigua*), and boxelder (*Acer*

*negundo*) line the waterside portion of the Tisdale Bypass north levee. The levee crown road separates the line of riparian trees from the spoils/borrow site.

### 6.5.2 Description of Special Status State Species and Their Habitats

DWR environmental staff have conducted several field reconnaissance visits to determine if special status species or habitats occur within or adjacent (within 1 mile) of the BSOG project site and the equipment staging area. Additionally, DWR environmental staff conducted a records search of the USFWS species list for USGS Meridian 7.5-minute Quadrangles, CDFW's California Natural Diversity Database (CNDDDB) for the project area and a California Native Plant Society (CNPS online inventory of rare and endangered plants for the Meridian quadrangle (CNPS 2014). Using the information obtained from the database records search and field reconnaissance, DWR developed a list of special status terrestrial species and habitat potentially occurring in the project area. Table 6 includes the scientific and common name for federal and State listed terrestrial species, its status, a brief description of its habitat, and its potential for occurrence within the BSOG project area.

Table 6. USFWS and CNPS Special-Status Species List for the Meridian USGS 7.5” Quadrangle (including CDFW CNDDDB information).

Sensitive Species/Habitat	Common Name	Status	Habitat	Potential For Occurrence
<b>BIRDS</b>				
<i>Agelaius tricolor</i> (Nesting colony)	Tricolored Blackbird	SSC	Central Valley; nest in dense colonies of cattails, tules, trees, blackberries and shrubs. Breeds mid April - late July.	Moderate potential for occurrence as moderately suitable habitat exists in the project area. A 1971 CNDDDB occurrence is located over 1 mile NE of BSOG. However, no nesting colonies were detected during bird surveys conducted during March through May at the project site.
<i>Buteo swainsoni</i>	Swainson's Hawk	ST	Large open native grasslands, pastures, or agriculture fields with low to moderate vegetation heights for foraging. Nests in April until July	High potential for occurrence as suitable habitat exists in the project area at BSOG and the Tisdale Bypass borrow site. There are CNDDDB occurrences within ¼ mile of BSOG and adjacent to the borrow site. However, recent protocol surveys

Sensitive Species/Habitat	Common Name	Status	Habitat	Potential For Occurrence
				conducted at the BSOG project and Tisdale Bypass sites did not find any active nests within 1/2 mile.
<i>Coccyzus americanus</i>	Western Yellow-billed Cuckoo	FC/SE	Western Yellow-billed Cuckoos build nests in dense vegetation (primarily trees) and prefer to breed in large blocks of riparian habitat, particularly riparian woodlands with cottonwoods and willows.	Moderate potential for occurrence as suitable habitat exists at the project site. A general locational CNDDDB record from 1976 shows an occurrence that extends from the BSOG to 2 miles to the northeast.
<b>REPTILES</b>				
<i>Thamnophis gigas</i>	Giant Garter Snake	FT/ST	Adequate water during the active season, emergent, herbaceous wetland vegetation, grassy banks and uplands for cover and winter refugia.	Very low potential for occurrence. The project site and surrounding area lacks adequate and suitable habitat, but the surrounding area of the borrow site may have potential suitable habitat. No CNDDDB species occurrences within 1-mile of the project.
<b>INVERTEBRATES</b>				
<i>Desmocerus californicus dimorphus</i>	Valley Elderberry Longhorn Beetle	FT FPD	VELB occur in association with elderberry shrubs. Shrubs are found in Central Valley riparian forest.	Elderberry shrubs are found adjacent to the project site but are not at the staging area or within the project site. No elderberry shrubs will be impacted.
<b>MAMMALS</b>				
<i>Lasiurus blossevillii</i>	Western Red Bat	SSC	Roosts only in tree foliage, and is closely associated with cottonwoods in riparian areas at elevations below 6,500 feet.	Low potential for occurrence due to the small number of cottonwoods at and around the project site.

Sensitive Species/Habitat	Common Name	Status	Habitat	Potential For Occurrence
<b>PLANTS</b>				
<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	Woolly Rose-mallow	CNPS 1B.2	Wet banks and marshes	Species present at or near the project site, but will be flagged for avoidance.
<b>HABITATS</b>				
Great Valley Mixed Riparian Forest	Great Valley Mixed Riparian Forest		Community of medium to tall broad-leaved winter-deciduous trees including cottonwoods, sycamores, and willows; understory composed of shrubs, vines, and perennial grasses. Habitat usually found away from active river channel where flooding is less frequent (Holland and Roye 1989).	Habitat occurs within BSOG project site. Some trees will be impacted at or near the BSOG.

- (FE) Federally Listed Endangered
- (FT) Federally Listed Threatened
- (FC) Candidate species to be considered listed under ESA
- (FPD) Proposed to be delisted
- (SE) State Listed Endangered - CDFW
- (ST) State Listed Threatened - CDFW
- (SSC) Species of Special Concern - CDFW
- (CNPS) California Native Plant Society

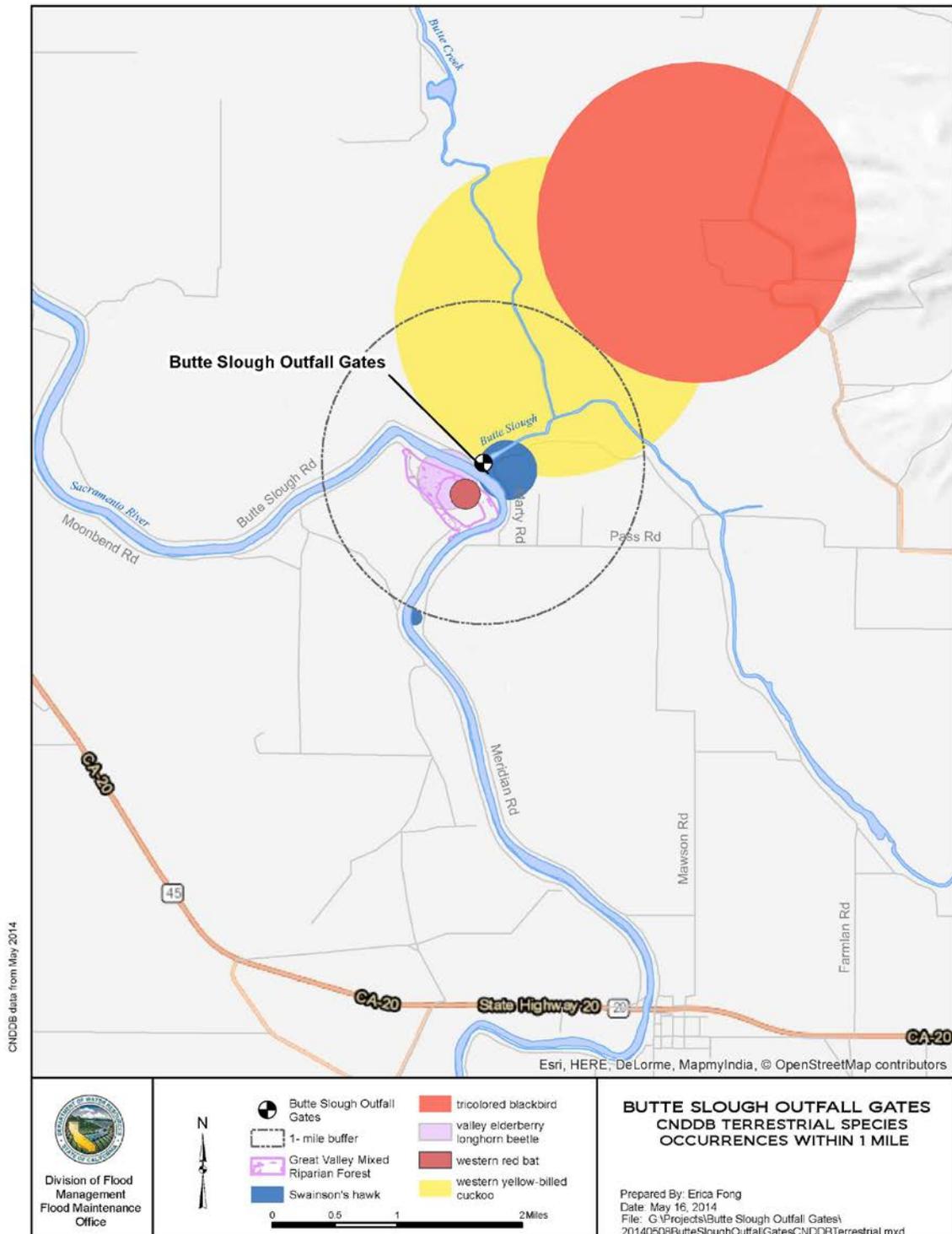


Figure 7. CNDDB Terrestrial Species Occurrences Within 1 Mile

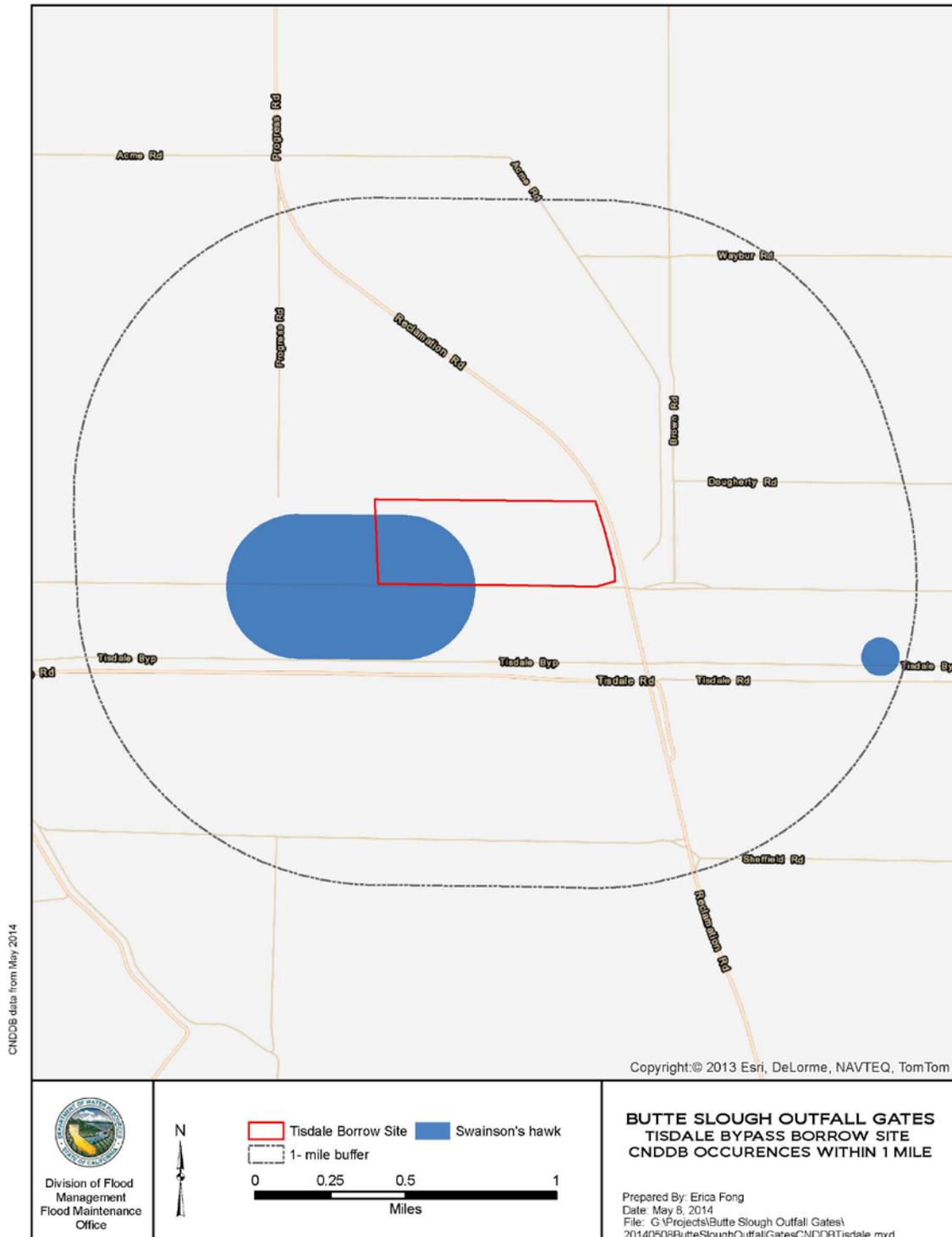


Figure 8. Tisdale Bypass Borrow Site- CNDDDB Occurrences Within 1 Mile

The following sections describe the special-status species with a potential to occur in the project area. Species that have no potential of occurrence are not included in the discussion. In addition, species listed on the CNPS inventory of rare and endangered plants are also described below.

### **6.5.3 Birds**

In general nesting migratory birds are covered and protected under the Migratory Bird Treaty Act. This section focuses on special status bird species that may be present at the BSOG and Tisdale Bypass spoil sites.

#### **6.5.3.1 Tricolored Blackbird (*Agelaius tricolor*)**

The Tricolored Blackbird is a CDFW species of special concern. The Tricolored Blackbird is a permanent resident of California, but makes extensive migrations during the breeding season and in winter. Major wintering concentrations occur in and around the Sacramento-San Joaquin River Delta and coastal areas. The Tricolored Blackbird typically breeds from mid-March to early August, but can breed as late as September to October as seen in some populations in the Central Valley and at Point Reyes (Beedy 2008). Tricolored Blackbird select breeding sites that include open accessible water, a protected nesting substrate (including either flooded or thorny/spiny vegetation), and sites within a few kilometers of suitable foraging space that provides adequate insect prey (Beedy and Hamilton 1999).

There are Himalayan blackberry bushes growing at the project site that could potentially serve as nesting areas for the Tricolored Blackbird. No nesting colonies were detected along the project's banks during bird surveys conducted between March through May 2013 and 2014. Therefore, the proposed project is unlikely to impact the tricolored blackbird.

#### **6.5.3.2 Swainson's Hawk (*Buteo swainsoni*)**

The Swainson's Hawk is a State listed Threatened species under CESA. It is a long-range migratory raptor, flying as far south as Argentina, where it overwinters. The Swainson's Hawk returns to the Central Valley around March 1 and has usually selected a nest site by the March 31. In California, Swainson's Hawks range throughout the Central Valley, with the highest nesting densities found in Yolo, Sacramento and San Joaquin counties. Preferred habitat features include large open native grasslands, pastures, or agriculture fields with low to moderate vegetation heights for foraging (Schlorff and Estep 1993). The Swainson's Hawk starts nesting in April or May and continues until July through mid-September. Preferred nesting habitats are in lone trees or utility poles in large flatlands with valleys, plateaus, large flood plains and low rolling hills (Wheeler 2003, Bloom 1980). In the Central Valley, the majority of Swainson's Hawks tend to nest within a mile of riparian habitat (Bloom 1980). The average clutch size is 2 to 3 eggs, with a range of 1 to 4, and the incubation period is about 28 days. The young fledge at about 38 to 46 days after hatching and typically remain with their

family until fall migration in late August (Wheeler 2003).

Based on the CNDDDB database, nesting sites have been observed within one mile of the BSOG project site and Tisdale Bypass borrow site. Swainson's Hawk habitat has been identified along Butte Slough northeast of the project site, on the south side of the Sacramento River southwest of the BSOG, and along the Tisdale Bypass levees. FMO Environmental staff conducted nesting bird surveys within and adjacent (within ½ mile) to the BSOG during spring 2013 and 2014 and to the Tisdale Bypass borrow site during spring 2014. No active Swainson's Hawk nests were observed. Michael Bradbury, a DWR wildlife biologist and member of the Swainson's Hawk Technical Advisory Committee, has been surveying Tisdale Bypass for Swainson's Hawk nests... According to Bradbury (pers. comm. 2014), no active Swainson's Hawk nests have been identified within a half mile of the borrow site for the last two or three years.

### **6.5.3.3 Western Yellow-billed Cuckoo (*Coccyzus americanus*)**

The Western Yellow-billed Cuckoo is a candidate species for federal listing under the ESA and is State listed as Endangered under CESA. Yellow-billed Cuckoo breeds throughout much of North America and winters in South America (Hughes 1999). The California breeding range is restricted to the Sacramento Valley, the South Fork of the Kern River, the lower Colorado River Valley, and sometimes the Prado Basin in Riverside and San Bernardino Counties (Gaines and Laymon 1984).

Yellow-billed Cuckoos are occasional brood parasites, laying eggs in nests of other cuckoos or in nests of other species. In the western U. S., cuckoos breed in broad, low-elevation riparian woodlands composed primarily of mature cottonwoods and willows. Typical nest sites in California have moderately high canopy closure and low total ground cover, and are close to water (Laymon and Halterman 1987). Western Yellow-billed Cuckoos arrive in California from late May to until late June, nesting normally until late July.

A CNDDDB record from 1976 shows a generalized occurrence from the BSOG site 2 miles to the northeast. This species has not been sited at the BSOG or the Tisdale Bypass borrow site, however, this is a very difficult species to detect. Site fidelity is low for Western Yellow-billed Cuckoos (Halterman 2009), therefore assumptions based on previous occurrence records or lack thereof cannot necessarily be relied on. It is unlikely that the project will impact Western Yellow-billed Cuckoos.

## **6.5.4 Reptiles**

### **6.5.4.1 Giant Garter Snake**

The Giant Garter Snake (GGS) was listed as federally Threatened under ESA, and State Threatened under CESA. While historically the GGS ranged in wetlands throughout the Central Valley to the Sierra Nevada foothills, the current distribution ranges from Chico to central Fresno County (USFWS 2006).

The following are essential habitat components for the GGS: (1) adequate water during the snake's active season (early spring through mid-fall) to maintain dense populations of food organisms, such as fish and amphibians; (2) emergent, herbaceous wetland vegetation with muddy bottoms, such as cattails and bulrushes, for escape cover during the active season; and (3) upland habitat with grassy banks and openings in waterside vegetation for basking during the active season and shielding from flood waters during the inactive winter (USFWS 2009). GGS is found in agricultural wetlands such as irrigation and drainage canals; rice fields; sloughs; ponds; small lakes; low gradient streams; and adjacent uplands in the Sacramento Valley (USFWS 2006). As a highly aquatic species, GGS is typically absent from large rivers for a number of reasons including presence of large predatory fish, dominance of adjacent uplands by thick riparian vegetation which lacks sufficient basking sites, relatively rapid flows, and heavy flooding (Brode 1988; Hansen 1988).

The lack of suitable Giant Garter Snake (GGS) habitat at the BSOG lowers the potential for occurrence at the project site. The preferred habitat for GGS is open water with herbaceous wetland vegetation with grassy banks in the uplands. Riparian forest with the large canopy cover is the primary habitat at the project site. The riparian forest is home to nesting raptors which prey on GGS. GGS is associated with rice fields, which mimic the wetland habitats that this species occurs. There are no rice fields adjacent to the BSOG site with the closest field one mile away. There are permanent canals between the rice field and the BSOG, but the canals are lined with trees, which would attract nesting and roosting raptors. The agricultural crops grown adjacent to the BSOG are winter wheat and row crops. The periodic tilling of the fields is not advantageous for GGS use or occupation of the area. Also, flooding has an impact on the GGS. Floods tend to cause GGS to pass through the area, but with a frequency of flooding approximately every 10 years in the Butte Sink, not many snakes are expected. Due to the riparian forest cover for nesting raptors and lack of appropriate GGS "friendly" agricultural crops, the habitat potential for GGS is very low at best and is unlikely that GGS would be impacted by the project.

## 6.5.5 Invertebrates

### 6.5.5.1 Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)

The Valley Elderberry Longhorn Beetle (VELB) is federally listed as Threatened and critical habitat has been designated for the species. In 2006, the USFWS recommended delisting this species (USFWS 2006), which is endemic to the Central Valley. The VELB is found only in association with its host plant, the elderberry shrub (*Sambucus nigra* subsp. *caerulea*). To function as habitat for the VELB, host elderberry shrubs must have stems that are 1 inch or greater in diameter at ground level. The beetles are rarely seen because they spend most of their life cycle as larvae within the stems of the shrubs. The presence of cylindrical exit holes approximately 0.25 inches (0.635 centimeters) in diameter in elderberry stems are indications of VELB habitat use. The holes may be located on the stems from a few inches to about 9 to 10 feet (2.7 to 3 meters) above the ground and are sometimes the only indicator of beetle presence

(Barr 1991). In the Central Valley, the elderberry shrub is found primarily in riparian vegetation.

Elderberry shrubs are in the project area near the BSOG, adjacent to the project site. Elderberry shrubs will be flagged and avoided. It is unlikely that elderberry shrubs, and therefore VELB, will be impacted by the project.

## **6.5.6 Mammals**

### **6.5.6.1 Western Red Bat**

The Western Red Bat is a State species of special concern. The distribution of the Red Bat is from Shasta County to the Mexican border, west of the Sierra Nevada/Cascade crest and desert. The winter range includes western lowlands and coastal regions south of San Francisco Bay. Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. The red bat primarily roosts in trees, often in edge habitats adjacent to streams, fields, or urban areas. A wide variety of habitats are utilized for foraging for insects, including grasslands, shrublands, open woodlands and forests, and croplands (Harris 1988-1990).

A CNDDDB element occurrence of the Western Red Bat is across the Sacramento River from the BSOG. This species is closely associated with cottonwoods in riparian areas. At the BSOG, there are only a small number of cottonwoods at and around the proposed project site; so it is unlikely that the Western Red Bat would be impacted.

## **6.5.7 Plants**

### **6.5.7.1 Woolly Rose-mallow (*Hibiscus lasiocarpus* var. *occidentalis*)**

Woolly rose-mallow has the CNPS rank of 1B.2, which is rare, threatened, or endangered in California and elsewhere. Specifically for California, this species is fairly endangered. The woolly rose-mallow is not state-listed or federally-listed, so no critical habitat is designated.

Rose-mallow is a rhizomatous perennial subshrub in the mallow family and can reach heights of one to two meters tall. The large showy white flowers have a rose-red center and flowers from July through November. This species grows in freshwater marshes and wetlands, and is generally found on wet banks (Baldwin et al. 2012).

Rose-mallow occurs in Sacramento Valley and the northern part of San Joaquin Valley (San Joaquin and Contra Costa Counties). It is known from numerous occurrences in the Sacramento-San Joaquin Delta (CNPS 2014). There is an occurrence along Butte Slough near the project site. This species will be flagged and avoided and will unlikely be impacted by the proposed project.

Potential impacts to terrestrial biological resources from on-going O&M activities will be similar to or less than current O&M activities. Current and post-construction activities

that may have a potential impact include levee maintenance and vegetation management. These activities are conducted on an annual basis or only as needed. The implementation of applicable biological resource mitigation measures BIOAQ-2 and BIOT-1 described in the environmental checklist and discussion will make these potential impacts less than significant.

### 6.5.8 Environmental Checklist and Discussion

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**BIOLOGICAL  
RESOURCES-  
TERRESTRIAL:**

Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
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Would the project...

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a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by DFW or USFWS?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by DFW or USFWS?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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d) Interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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**BIOLOGICAL  
RESOURCES-  
TERRESTRIAL:**

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or State HCP?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

*Less Than Significant Impact with Mitigation.* Impacts to VELB, Tri-colored Blackbird, Western Red Bat, and woolly rose-mallow would be less than significant for one or more of the following reasons: 1) they have low potential to occur in the project area; 2) the project site is unlikely to provide quality habitat for the species; and 3) project implementation will not affect the habitat quality for the species.

Project implementation could result in the loss or disturbance of active nests of special-status bird species such as Swainson’s Hawk and Western Yellow-billed Cuckoo or roosting habitat for Western Red Bat. In addition to these special-status species, a number of common raptor species could nest in the project vicinity. A Red-Tailed Hawk nest is located within ¼ mile northeast of the BSOG and another nest is located adjacent to the Tisdale Bypass borrow site along the north Bypass waterside levee. Swainson’s Hawk nest surveys conducted in 2013 and 2014 have not identified any active Swainson’s Hawk nests within ¼ mile of the BSOG or Tisdale Bypass borrow site. The nests of all raptor species are protected under Section 3503.5 of the California Fish and Game Code. Nest disturbance resulting from project construction has the potential to cause nest abandonment or the loss of eggs or chicks as a result of reduced parental care, and removal of riparian vegetation could result in loss of nesting sites for these species. The loss or disturbance of active nests would be potentially significant without mitigation measures in place.

In addition, the timing of construction (between May 1 and November 1) should take place when sensitive animal species are less likely to be present.

The following mitigation measures will reduce this impact to a less-than-significant level:

**Mitigation Measure BIOAQ-1 - Secure Applicable State and/or Federal Permits and Implement Permit Requirements** (similar to *CVFPP PEIR Mitigation Measure BIO-A-2a and BIO-T-3c - Secure State and Federal Permits and Implement Permit Requirements*)

**Mitigation Measure BIOAQ-2 - Pre-Construction Environmental Training, Site Preparation, and Monitoring**

**Mitigation Measure BIOT-1 - Pre-construction Wildlife, Bird, and Plant Surveys** (similar to *CVFPP PEIR Mitigation Measure BIO-T-3a - Conduct Focused Surveys for Special-Status Plants and Wildlife, and Avoid Impacts*)

Pre-construction surveys for wildlife, bird nests (including song bird nests), special status plants, and/or sensitive habitat will be conducted by a qualified biologist prior to the construction contractor mobilizing to the site. Additionally, pre-construction surveys shall be implemented as follows:

- Swainson's Hawk: If work is to be conducted during the nesting season (April 1 - August 31), pre-construction surveys will be completed prior to construction, within a radius of 0.5 miles of the project site to identify any active nests (eggs or juveniles). Surveys will be completed in accordance with the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (SWHA TAC 2000). If an active nest is identified, CDFW will be notified and consulted. If possible, work will be postponed until September 1 or after the young have fledged. If that area cannot be avoided or work postponed, additional CDFW-approved measures may be implemented to reduce disturbance (i.e. a qualified biologist will monitor the nesting pair during until Sept 1, after the young have fledged, or the nest is no longer active).
- Special Status Raptors: Areas with 0.25 miles of the project site and spoil/borrow site will be surveyed. If active nests are found within 0.25 miles of the project site, impacts will be avoided by establishment appropriate buffers to minimize impacts. The size of the buffers may be adjusted, depending on the project activity and stage of the nest, if a qualified biologist determines that activity within a reduced buffer would not be likely to adversely affect the adults or their young. No trees with an active nest will be removed until a qualified biologist confirms that the nest is no longer active.

**b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

*Less Than Significant Impact with Mitigation.* CNDDDB identifies Great Valley Mixed Riparian Forest on the Sacramento River side of the BSOG project site. No Great Valley Mixed Riparian Forest habitat is designated on the Butte Slough side of the project. Project implementation could include removal of up to 15 riparian trees and

associated understory. The removal of these trees could have a significant impact on the CNDDDB designated Great Valley Mixed Riparian Forest at the BSOG site.

Riparian trees line the waterside levee on both the north and south sides of the Tisdale Bypass. The borrow site is north of these trees, adjacent to the Tisdale Bypass levee. The activities at the borrow site will not affect the trees along the levee. There will be no impact to the habitat from proposed project activities at the borrow site.

The following project-specific measure will reduce this impact to a less-than-significant level:

**Mitigation Measure BIOAQ-7: Revegetation to Compensate for Construction-Related Effects** (Similar to *BIO-T-1a - Conduct Biological Resources Surveys to Quantify Sensitive Natural Communities in Project Areas, and Avoid, Minimize, and, Where Appropriate, Compensate for Construction-Related Effects*)

**c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

*Less Than Significant Impact.* The BSOG project site and the Tisdale Bypass borrow/spoil site do not support federally protected wetlands, marsh, vernal pool, or coastal wetlands as defined by Section 404 of the CWA. Work will take place below the OHWM, which makes the project subject to USACE jurisdiction under Section 404 of the CWA (DWR 2013). Approximately 1.48 acres of potential waters of the U.S.; Sacramento River and Butte Slough in the project site will be temporarily impacted. Culvert pipes will be set back and the riprap footprint will be reduced on the Butte Slough side so that additional waters may be regained.

**d) Interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

*Less Than Significant Impact with Mitigation.* Butte Slough and the Sacramento River provide nesting and migration habitat for numerous native resident and migratory bird species and could provide a movement corridor for common resident wildlife species. Construction is expected to begin May 1 (with in-water work taking place between June 15 and November 1 when sensitive avian and animal species are less likely to be impacted). Many avian species will have completed their nesting season by the time the in-water work begins. Raptor surveys have been ongoing since 2013, with one active Red-Tailed Hawk nest located within 0.25 mile northeast of the project site. No active Swainson's Hawk nests have been identified thus far, though they are frequently seen foraging in the nearby agricultural fields. Project implementation would include removal of up to 15 riparian trees and associated understory that provides suitable potential habitat for migratory wildlife species.

Riparian trees line the waterside levee on both the north and south sides of the Tisdale Bypass. These are potential nest trees for raptors such as Red-Tailed Hawk, Swainson's Hawk, and Great Horned Owl. So construction could potentially impact those nesting raptors. However, Michael Bradbury, a DWR wildlife biologist and member of the Swainson's Hawk Technical Advisory Committee, has been surveying Tisdale Bypass for Swainson's Hawk nests and has not identified active Swainson's Hawk nests within a 0.5 miles of the borrow site for the last two or three years (pers. comm. 2014). Recent surveys done by environmental staff confirm his observation. One active Red-tailed Hawk nest was observed in the line of riparian trees on the waterside of the levee adjacent to the borrow site but was more than 0.5 miles away from the primary borrow/spoil areas. Work activity in the Tisdale Bypass spoils/borrow area will be minimal since trucks will be driving to the site to obtain spoils and/or deliver borrow material and the work will not require people to get in and out of their vehicles. The site also has regular levee traffic traversing the area so birds are acclimated to vehicular traffic and agricultural activities.

The following project-specific measures will reduce the impacts to a less-than-significant level:

**Mitigation Measure BIOAQ-7: Revegetation to Compensate for Construction-Related Effects** (Similar to *BIO-T-1a - Conduct Biological Resources Surveys to Quantify Sensitive Natural Communities in Project Areas, and Avoid, Minimize, and, Where Appropriate, Compensate for Construction-Related Effects*)

**Mitigation Measure BIOT-1 - Pre-construction Wildlife, Bird, and Plant Surveys** (similar to *CVFPP PEIR Mitigation Measure BIO-T-3a - Conduct Focused Surveys for Special-Status Plants and Wildlife, and Avoid Impacts*)

**e) Conflict with any applicable local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

*Less Than Significant Impact with Mitigation.* Colusa and Sutter Counties both have policies in their respective General Plans to avoid removal of native oak trees if possible. If oak trees are removed, replanting on-site is preferred over off-site.

Due to the site size limitations and safe access between the structure's two sides along Butte Slough Road/the levee, at least two oak trees (with a diameter breast height (DBH) of more than 4 inches) on the Butte Slough side of the project will need to be removed to allow access to the structure and new boat ramp. Minor trimming or limbing of additional oak tree(s) may be necessary around the project site and staging area for vehicle access. Up to 15 trees (including at least two oak trees) with associated shrub will need to be removed at the BSOG project site. If oak trees are removed at the BSOG site, the project may have significant impacts relating to biological policies associated in the General Plans. No native trees will be impacted at the Tisdale Bypass borrow site.

The following project-specific measure will reduce this impact to a less than significant level:

**Mitigation Measure BIOAQ-7: Revegetation to Compensate for Construction-Related Effects** (Similar to *BIO-T-1a - Conduct Biological Resources Surveys to Quantify Sensitive Natural Communities in Project Areas, and Avoid, Minimize, and, Where Appropriate, Compensate for Construction-Related Effects*)

**f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

*No Impact.* The project area is partially within the Yuba-Sutter Natural Community Conservation Planning (NCCP) and Habitat Conservation Planning (HCP) plan area. A final Yuba-Sutter NCCP/HCP planning agreement was signed by all participating parties in 2012 and work on an HCP/NCCP should be forthcoming (although no set date has been established) (Yuba County et al. 2011). Since no NCCP or HCP plan has been completed or currently exists (Yuba Sutter RCP 2014), project work doesn't conflict with any applicable NCCP or HCP.

## **6.6 Cultural and Historic Resources**

### **6.6.1 Environmental Setting**

The rehabilitation area of potential effects (APE) includes the BSOG, access roads, and staging areas; it is approximately 45.75 acres. The primary staging area will be immediately east of Butte Slough and a secondary staging area will be located on the outlet side, in an existing marina. The borrow site APE is near Tisdale Bypass and contains spoils from past Tisdale Bypass sediment removal projects; it is approximately 82.73 acres.

### **6.6.2 Records Search**

Two records searches were conducted for the APEs. One search was conducted for the portion of the project located within Sutter County by the staff of the Northeast Information Center (NEIC) of the California Historical Resources Information System (CHRIS), California State University, Chico on November 12, 2013; and one search was conducted for the portion of the project within Colusa County by the Northwest Information Center (NWIC) of CHRIS, Sonoma State University, on November 18, 2013 (DWR 2014).

#### *Sutter County*

The NEIC records search identified one previously recorded cultural resource within the APE. That resource (P-51-000233) was recorded during the overwater geotechnical phase of this project (DWR 2013) and consists of a flume, intake pipes, and historic refuse deposit. No additional studies have been conducted within a ¼-mile radius for the Sutter County portion of the project.

#### *Colusa County*

The NWIC records search for the portion of the project within Colusa County failed to identify any previously recorded cultural resource within the APE or within a ¼-mile radius of the project. One cultural resource study has been conducted within the APE (the overwater geotechnical study [DWR 2013]) and one has been conducted within a ¼-mile radius (DWR 2014b). One additional cultural resources study, classified as "Other", includes a record search of the area that is believed to be a regional overview.

### **6.6.3 Field Surveys**

Three cultural resources were identified as a result of the field surveys. The first resource was identified and recorded during the survey for the geotechnical activities, at the northeastern end of the primary staging area (Butte Slough Historic Site #1; P-51-000233). The resource consists of a historic site with a flume, a crossing, intake pipes, and ceramic and glass fragments. The second resource is the BSOG itself. The gates were noted during the geotechnical survey but not recorded. The third resource is a portion of the Butte Slough levee that falls within the APE.

#### **6.6.4 Findings**

A site visit and archival research was conducted to determine the history and significance of the three resources identified from the surveys. Review of historic aerials and topographic maps did not indicate any structures in the vicinity of P-51-000233. It was concluded that it is possible that the flume and trash scatter are associated with the construction of the gates or levees or other reclamation efforts in the area. Due to the lack of any association for the flume or trash scatter, it is unlikely that the site has a subsurface component to answer questions important in history and therefore the site does not appear to be eligible for listing in the NRHP or the CRHR.

The BSOG and the Butte Slough levee were both determined not to meet the criteria for listing in the NRHP or the CRHR. Both resources are part of a much larger flood control system and as individual structures within the larger system, but do not appear to meet Criterion A/1. While part of the movement to implement flood control measures in the Sacramento Valley, neither the BSOG nor the Levee are associated with significant persons of history and, therefore, do not to meet Criterion B/2. As engineering features, the BSOG and the Levee are common examples of their type, period, and method of construction. Therefore, they do not appear to meet NRHP/CRHR Criterion C/3. Under Criterion D/4, the BSOG and the Levee do not appear eligible as they are unlikely to yield information important to history because they are not principal sources of information.

As described above, none of the three resources appear to meet the criteria for listing in either the NRHP or the CRHR and therefore are not considered historic properties under NHPA or historical resources for the purposes of CEQA.

The study concluded that no historic properties or historic resources are present within the BSOG Rehabilitation APE and that the project determined that there are no impacts to historical resources (Section 15064.5 of the CEQA guidelines). A “Finding of No Historic Properties Affected” was recommended.

No cultural resources have been previously recorded within the Tisdale Bypass borrow area APE or within a ¼-mile radius. One cultural resource study was conducted within the APE for past DWR sediment removals in 2007 and 2008. An additional three studies have been conducted within a ¼-mile radius (DWR 2014).

Post-construction O&M activities will not cause any potential cultural impacts since routine O&M activities will not disturb soils and are only conducted as needed.

### 6.6.5 Environmental Checklist and Discussion

#### CULTURAL AND HISTORIC RESOURCES:

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Result in a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**a) Result in a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the CEQA Guidelines?**

*No Impact.* An inventory, evaluation and findings report was conducted for the project and Tisdale borrow sites. No resources were determined to be eligible as historical resources as defined in Section 15064.5 of the CEQA Guidelines.

**b) Result in a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines?**

*No Impact.* An inventory, evaluation and findings report was conducted for the project and Tisdale borrow sites as well as a separate Archaeological Survey Report (DWR 2013). No archaeological resources were identified within the project area and the activities at the Tisdale borrow site will only disturb borrow material placed onsite in 2007-2008, therefore there would be no impact.

The following measure will be implemented if a cultural resource is discovered:

**Mitigation Measure CULT-1 - Immediately Halt Construction if Cultural Resources are Discovered** (similar to CVFPP Mitigation Measure CUL-2 - If Cultural Resources

*Are Discovered, Immediate Halt Construction and Implement an Accidental-Discovery Plan)*

Should any cultural resources, such as structural features, unusual amounts of bone or shell, artifacts, human remains, or architectural remains, be encountered during any construction activities, work will be suspended immediately at the location of the find and within an appropriate radius. A qualified DWR archaeologist will conduct a field investigation of the specific site and recommend mitigation deemed necessary for the protection or recovery of any cultural resource concluded by the archaeologist to represent historical resources or unique archaeological resources. If any archaeological resources are discovered during this project, the appropriate federal and State agencies will be notified.

**c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

*No Impact.* The sediments adjacent to the Sacramento River and Butte Slough in the project area and the soils at the borrow site are Quaternary alluvium (QA) soils composed primarily of recent (Holocene) (10,000 years B.P. and younger) natural levee and stream channel deposits. These recent deposits are largely unconsolidated silt, sand, and gravel overlying older Pleistocene-age alluvial fan system and overbank deposits (DWR 2012, DWR 2014). By definition, to be considered a fossil, an object must be more than 10,000 years old. The project is not considered sensitive for the presence of paleontological resources, and there is no impact associated with the project construction and long-term maintenance activities.

**d) Disturb any human remains, including those interred outside of formal cemeteries?**

*No Impact.* No human remains are expected to be found within the project or Tisdale Bypass borrow site; therefore, there would be no impact.

The following mitigation measure will be implemented if human remains are discovered:

**Mitigation Measure CULT-2 - Immediately Halt Construction if Human Remains are Discovered** *(similar to CVFPP Mitigation Measure CUL-5b - Immediately Halt Construction if Human Remains are Discovered and Implement a Burial Treatment Plan)*

If human remains are uncovered while engaging in construction activities, all work must stop immediately and the appropriate County coroner must be contacted pursuant to California Health and Human Safety Code 7050.5(b).

## 6.7 Geology and Soils

### 6.7.1 Environmental Setting

The BSOG are located at the confluence of Butte Slough and the Sacramento River, 3.73 miles downstream from the town of Colusa on the left bank of the Sacramento River. The BSOG structure is located on both sides of the left bank of the Sacramento River levee, within Butte Slough and the Sacramento River, and situated in both Sutter and Colusa counties. At this location the Sacramento River levee is a natural levee with water-side slopes ranging from approximately 2H:1V to 3H:1V (Horizontal to Vertical). The soils in this vicinity as identified by the United States Department of Agriculture (USDA) National Resource Conservation Service ([www.ca.nrcs.usda.gov](http://www.ca.nrcs.usda.gov)) Soil Survey of Colusa County California (USDA, 2006) documents the non-channeled soils as the Scribner Silt Loam, a Cumulic Endoaquoll fine loamy mix present on 0 to 1 percent slopes, and occasionally flooded. The major use for this soil is irrigated crops. The Scribner Silt Loam soils are poorly drained and the surface runoff is very low. The referenced USDA document identifies the channelized soils as the Holillipah Loamy Sand, a Typic Xerofluvent sandy mix, present on 0 to 2 percent slopes and frequently flooded. The major use of these soils is irrigated cropland. The Holillipah Loamy Sand soils are somewhat excessively drained and have a very low surface runoff rate.

Helley and Harwood (1985) map the Sacramento River and Butte Slough channels as Quaternary stream channel deposits (Qsc) and Quaternary alluvium (Qa) generally consisting of gravel, sand and silt; with the channel deposits containing less fines. Similar deposits to those mapped by Helley and Harwood were encountered in land-based explorations and in in-water explorations conducted by DWR's Project Geology in 2012 and 2013, respectively (DWR, 2012, 2014).

Based on the DWR explorations, the project site geology consists of approximately 30 to 50 feet of embankment fill (af) overlying Quaternary alluvium (Qa) to at least 100 feet. The artificial fill comprises the embankment crown and toe forming Butte Slough Road and consists predominantly of interbedded, moist to wet, medium stiff to stiff sandy lean clay to lean clay and medium dense clayey sand, with minor amounts of silt. Quaternary stream channel (Qsc) deposits are present between the artificial fill and alluvium near the southern limits of the embankment.

The stream channel deposits were noted to consist of wet, loose to medium dense poorly graded sand. Woody organic fragments were present throughout the loose sand deposits. The alluvium underlying the stream channel deposits consists of stiff to hard silts and lean clays with varying amounts of sand. These finer grained deposits are underlain by dense poorly graded clayey and silty sands and gravels. The sand and gravel deposits are underlain by stiff to hard lean silts and clays. Both the middle and lower fine grained layers were noted to have scattered weak to moderate cementation (DWR, 2012).

Upstream and downstream of the stream channel deposits the alluvium is noted to be

similarly layered as described above; consisting of medium stiff to stiff sandy silts and lean clays underlain by poorly graded clayey sands and gravels. The coarse grained deposits are further underlain by stiff to hard sandy lean silts and clays, a dense poorly graded silty, clayey sand and gravel layer and then stiff to hard silts and lean clay.

The borrow site is located just north of the Tisdale Bypass. It consists of soil that was removed from the Tisdale Bypass as part of the Tisdale Bypass Rehabilitation Project in 2007. The Tisdale Bypass connects the Sacramento River to the Sutter Bypass during high flow events. As water flows through the bypass, sediment falls out and settles within the bypass.

A DWR Geology Report (DWR 2008) characterized the results of soil samples taken from the Tisdale Bypass Sediment Removal project, which is proposed to be used as fill material for BSOG. The sediment from the Tisdale Bypass and the background soils from the borrow site were analyzed for total and soluble metals, pesticides, pH, and size gradation. It was determined that the excavated sediment is as clean, or cleaner, than the background soils of the site where the spoils were eventually deposited.

The borrow site is within the Great Valley geomorphic province. Geologic mapping conducted and compiled by Saucedo and Wagner (1992) of the California Geologic Survey shows that the borrow site is entirely underlain by Quaternary alluvial deposits of clay, silt and sand. Soils within the Tisdale Bypass that were removed in 2007 and placed at the borrow site, have been mapped as natural levee and channel deposits (Qa) (Final Construction Geology Report Tisdale Bypass Sediment Removal, 2008).

### **Alquist-Priolo Earthquake Fault Zoning (AP) Map**

The Department of Conservation (DOC), California Geological Survey (CGS) released revised AP Maps on September 21, 2012. Based on the AP Map issued by the State Geologist, there are no fault zones or active faults located on or in the immediate vicinity of the project site. The 1992 CGS Geologic Map of the Chico Quadrangle shows that the Willows Fault underlies the vicinity of the project site. However, the Willows Fault has not demonstrated any Quaternary movement.

The closest active fault identified in the AP maps is the Cleveland Hills Fault, situated approximately 30 miles northeast of the project site. The Cleveland Hills Fault is a north trending, west-dipping normal fault believed to be an extension of the Swain River and Spenceville Lineament Fault Zones (aka Bear Mountain Fault Zone). The Bear River Fault Zone demonstrated eastward plate convergence and subduction in the early Mesozoic. The Cleveland Hills Fault is situated south of Oroville, east of Palermo and is a subtle west facing scarp coincident with the 1975 Oroville Earthquake. The Oroville earthquake, measuring Mw 5.7 created surface rupture (normal-down to the west, max vertical 4-5 centimeters) along the Cleveland Hills Fault. Oblique right-lateral slippage of 3 to 4 centimeters was also measured. Woodward Clyde (CDMG, 1983) estimated the rate of slip at approximately 0.005 millimeters per year.

The Seismic Hazards Mapping Act (SHMA) of 1990 (Public Resources Code, Chapter

7.8, Section 2690-2699.6) directs the CGS to identify and map areas prone to liquefaction, earthquake-induced landslides and amplified ground shaking. SHMA produces Seismic Hazard Zone Maps which designate as Zones of Required Investigation (ZORI) those areas prone to liquefaction and earthquake-induced landslides. There are no ZORI maps for the project site area on the CGS website. The CGS 2008 Probabilistic Seismic Hazard Ground Motion Interpolator estimates a peak ground acceleration of 0.218g for the site for a return period of 10 percent in 50 years (probability of 1 in 475 for being exceeded any given year).

Liquefaction is a soil strength and stiffness loss phenomenon that typically occurs in loose, saturated, cohesionless soils as a result of strong ground shaking during earthquakes. The potential for liquefaction at a site is usually determined based on the results of a subsurface geotechnical investigation and the groundwater conditions beneath the site. Hazards to structures associated with liquefaction at a site include bearing capacity failure, lateral spreading, and differential settlement of soils below foundations, which can contribute to structural damage or collapse. The soil conditions encountered in the DWR borings indicate the site is underlain by relatively dense silt, sands, and gravel.

Since the 1960's the CGS has produced numerous maps that show landslide features and delineate potential slope-stability problem areas. There are no landslide maps for the project area on the CGS website. The topography of the site is relatively flat with the exception of the levees and channels. The potential for mass movement within the levees is reduced through annual inspections of erosion that may lead to slope failure.

Post-construction O&M activities will not cause any potential geological impacts since routine O&M activities will not disturb soils and are only conducted as needed.

## 6.7.2 Environmental Checklist and Discussion

### GEOLOGY, SOILS, AND SEISMICITY:

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
<b>Would the project...</b>				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**GEOLOGY, SOILS, AND SEISMICITY:**

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
<b>Would the project...</b>				
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:**

- I. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.**

*No Impact.* Based on the AP Map issued by the State Geologist, there are no fault zones or active faults located on or in the immediate vicinity of the project site. The closest active fault identified in the AP maps is the Cleveland Hills Fault, situated approximately 30 miles northeast of the project site.

**II. Strong seismic ground shaking?**

*No Impact.* The Seismic Hazards Mapping Act (SHMA) of 1990 (Public Resources Code, Chapter 7.8, Section 2690-2699.6) directs the CGS to identify and map areas prone to liquefaction, earthquake-induced landslides and amplified ground shaking. SHMA produces Seismic Hazard Zone Maps which designate as Zones of Required Investigation (ZORI) those areas prone to liquefaction and earthquake-induced landslides. There are no ZORI maps for the project site area on the CGS website.

**III. Seismic-related ground failure, including liquefaction?**

*No Impact.* The soil conditions encountered in the DWR borings indicate the site is underlain by relatively dense silt, sands, and gravel. Based on the density of the subsurface soils, the moderate peak ground acceleration calculated for the site, and the proposed foundation design for the structure, the potential for liquefaction of the soils beneath the site to have a substantial adverse effect on the structure does not exist. SHMA produces Seismic Hazard Zone Maps which designate as Zones of Required

Investigation (ZORI) those areas prone to liquefaction and earthquake-induced landslides. There are no ZORI maps for the project site area on the CGS website.

#### **IV. Landslides?**

*No Impact.* SHMA produces Seismic Hazard Zone Maps which designate as Zones of Required Investigation (ZORI) those areas prone to liquefaction and earthquake-induced landslides. There are no ZORI maps for the project site area on the CGS website. Based on the relatively flat topography, lack of delineated slope stability problems, requirement for annual inspections, and the design of the structure, the potential for landslides to adversely impact the structure is very low.

#### **b) Result in substantial soil erosion or the loss of topsoil?**

*Less Than Significant Impact with Mitigation.* Project grading and ground disturbance could result in temporary exposure of recently excavated or stockpiled soil to wind and water erosion until construction-and paving are completed. This impact would be potentially significant. Implementation of Mitigation Measure GEO-1 would reduce this impact to less than significant.

#### **Mitigation Measure GEO-1 - Prepare and Implement Dewatering, Erosion Control, and Monitoring Plans as part of a Storm Water Pollution Prevention Plan.**

The contractor will prepare a storm water pollution prevention plan (SWPPP) that identifies best management practices (BMPs) for preventing or minimizing the discharge of sediments and other potential contaminants that have the potential to affect beneficial uses or lead to a violation of water quality objectives. The SWPPP will include the following components:

- *Dewatering Plan.* A dewatering plan will be developed and designed so that any potential discharges to surface water will meet the water quality objectives provided in the *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region* (CVRWQCB, 2007). The Dewatering Plan will describe the procedures necessary to satisfy the requirements of the State of California's General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Storm Water Permit). Construction dewatering activities that discharge to surface waters require National Pollutant Discharge Elimination System (NPDES) authorization under the Waste Discharge Requirements for Dewatering and Other Low Threat Discharges to Surface Waters (Order No. R5-2008-0081 NPDES NO. CAG995001). The dewatering plan is required to include details on the approach to season the channel before reestablishing flows so that flushing flows do not cause surging of sediments downstream. The General NPDES permit contains terms and conditions for discharge prohibitions, specific limits related to effluent and receiving-water quality, solids disposal activities, and water quality monitoring protocols.
- *Erosion Control Plan.* An erosion control plan will be developed for the proposed

project and designed to meet the water quality objectives provided in the Basin Plan as necessary to satisfy the requirements of the General Storm Water Permit. The erosion control plan will identify specific measures for construction, long-term management, and stabilizing soils, if necessary before the onset of winter. BMPs for erosion control, as set forth in the erosion control plan and further defined by DWR, will be implemented. Such BMPs may include the careful use of grading management techniques, silt fences, silt curtains, berms, sandbags, and revegetation.

- *Monitoring Plan.* A monitoring plan will be developed that includes a proposed inspection, monitoring, and reporting program for the proposed project. The monitoring plan will demonstrate the means by which the water quality objectives provided in the Basin Plan will be met during construction and long-term management. BMPs are expected to be fully effective. Notwithstanding, DWR or its contractor will evaluate BMP effectiveness during construction. If the quantity or quality of the BMPs needs to be addressed, DWR or its contractor will implement improvements within 24-hours after the initial discovery of before the onset of an expected storm event.

**c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?**

*No Impact.* See response to a) above.

**d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?**

*No Impact.* See response to a) above. Certain soils within the upper three feet that are subject to changes in moisture content are susceptible to expansion. Based on information from the Soil Survey and the subsurface investigation of soils in the top three feet, as well as the proposed design of the structure and that all critical surfaces will be regarded and backfilled with low expansive materials where necessary, expansive soils will not create substantial risks to the project.

**e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?**

*No Impact.* The project does not include the construction or use of a septic system or an alternative wastewater disposal system. Therefore, no impact related to septic systems would occur as a result of unstable soils.

## 6.8 Greenhouse Gas Emissions

### 6.8.1 Environmental Setting

#### GHG Emissions Analysis

In May 2012, DWR adopted the DWR Climate Action Plan-Phase I: Greenhouse Gas Emissions Reduction Plan (GGERP), which details DWR's efforts to reduce its greenhouse gas (GHG) emissions consistent with Executive Order S-3-05 and the Global Warming Solutions Act of 2006 (Assembly Bill (AB) 32). DWR also adopted the Initial Study/Negative Declaration prepared for the GGERP in accordance with the CEQA Guidelines review and public process. Both the GGERP and Initial Study/Negative Declaration are incorporated herein by reference and are available at: <http://www.water.ca.gov/climatechange/CAP.cfm>. The GGERP provides estimates of historical (back to 1990), current, and future GHG emissions related to operations, construction, maintenance, and business practices (e.g. building-related energy use). The GGERP specifies aggressive 2020 and 2050 emission reduction goals and identifies a list of GHG emissions reduction measures to achieve these goals. DWR specifically prepared its GGERP as a "Plan for the Reduction of Greenhouse Gas Emissions" for purposes of CEQA Guidelines section 15183.5. That section provides that such a document, which must meet certain specified requirements, "may be used in the cumulative impacts analysis of later projects." Because global climate change, by its very nature, is a global cumulative impact, an individual project's compliance with a qualifying GHG Reduction Plan may suffice to mitigate the project's incremental contribution to that cumulative impact to a level that is not "cumulatively considerable." (See CEQA Guidelines, § 15064, subd. (h)(3).)

More specifically, "[l]ater project-specific environmental documents may tier from and/or incorporate by reference" the "programmatic review" conducted for the GHG emissions reduction plan. "An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project." (CEQA Guidelines § 15183.5, subd. (b)(2).)

Section 12 of the GGERP outlines the steps that each DWR project will take to demonstrate consistency with the GGERP. These steps include: 1) analysis of GHG emissions from construction of the proposed project, 2) determination that the construction emissions from the project do not exceed the levels of construction emissions analyzed in the GGERP, 3) incorporation into the design of the project DWR's project level GHG emissions reduction strategies, 4) determination that the project does not conflict with DWR's ability to implement any of the "Specific Action" GHG emissions reduction measures identified in the GGERP, and 5) determination that the project would not add electricity demands to the State Water Project (SWP) system that could alter DWR's emissions reduction trajectory in such a way as to impede its ability to meet its emissions reduction goals.

Consistent with these requirements, a GGERP Consistency Determination Checklist is attached (Appendix B- DWR GHG Emission Reduction Plan Consistency Determination Checklist) documenting that the project has met each of the required elements.

### 6.8.2 Determination

Based on the analysis provided in the GGERP and the demonstration that the proposed project is consistent with the GGERP (as shown in the attached Appendix B), DWR as the lead agency has determined that the proposed project's incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs is less than cumulatively considerable and, therefore, less than significant. O&M GHG emissions will be cumulatively less than construction emissions analyzed. Additionally, post-construction O&M GHG emissions will be less than current O&M activities because less site visits will be needed and the gates will be automated.

### 6.8.3 Environmental Checklist and Discussion

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#### GREENHOUSE GAS EMISSIONS:

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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#### a) Generate GHG Emissions, either directly or indirectly, that may have a significant impact on the environment?

*Less than Significant Impact.* Based on the analysis provided in the GGERP and the demonstration that the proposed project is consistent with the GGERP (as shown in the attached Appendix B- DWR GHG Emission Reduction Plan Consistency Determination Checklist), DWR as the lead agency has determined that the proposed project's incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs is less than cumulatively considerable.

**b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?**

*No Impact.* DWR's GGERP is in compliance with all applicable plans and policies. This project is in compliance with the GGERP and all 15 Best Management Practices suggested in the GGERP are outlined in the Environmental Commitments and Mitigation Measures section of the Mitigated Negative Declaration for the project. Below are the GGERP Best Management Practices:

- BMP 1. Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the project or specific elements of the project.
- BMP 2. Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.
- BMP 3. Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.
- BMP 4. Evaluate the feasibility and efficacy of producing concrete on-site and specify that batch plants be set up on-site or as close to the site as possible.
- BMP 5. Evaluate the performance requirements for concrete used on the project and specify concrete mix designs that minimize GHG emissions from cement production and curing while preserving all required performance characteristics.
- BMP 6. Limit deliveries of materials and equipment to the site to off peak traffic congestion hours.
- BMP 7. Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.
- BMP 8. Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an Air Quality Control Plan prior to commencement of construction.
- BMP 9. Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an Air Quality Management Plan prior to commencement of construction

- BMP 10. Develop a project specific ride share program to encourage carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.
- BMP 11. Reduce electricity use in temporary construction offices by using high efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, Light,air conditioners, heaters, and other equipment each day at close of business.
- BMP 12. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy duty class 7 or class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay certified truck will be used to the maximum extent feasible.
- BMP 13. Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength where appropriate.
- BMP 14. Develop a project specific construction debris recycling and diversion program to achieve a documented 50% diversion of construction waste.
- BMP 15. Evaluate the feasibility of restricting all material hauling on public roadways to off peak traffic congestion hours. During construction scheduling and execution minimize, to the extent possible, uses of public roadways that would increase traffic congestion

## 6.9 Groundwater Resources

### 6.9.1 Environmental Setting

The BSOG project and borrow sites are located within the Sacramento River watershed of the Sacramento Valley. Regional groundwater flows generally from north to south flowing towards and/or along the flow path of the Sacramento River beginning at approximately 0 to 20 feet below the ground surface depending on the location, year, and season. Artesian groundwater conditions occur beneath confining lenses of alluvial clay beginning approximately 60 feet below the ground surface (DWR Project Geology 2014). Regional groundwater may contain various pollutants from agricultural, industrial and residential activities and are primarily located in their greatest concentrations above the confining lens strata. These surface water pollutants that could leach into groundwater include but are not limited to agricultural pollutants such as fertilizers, pesticides, and herbicides (from the agricultural runoff and activities which are widespread in Sutter County and near the project and borrow sites); and general urban runoff pollutants such as heavy metals, oils, lubricants, etc. (PBS&J 2008).

Groundwater recharge occurs naturally throughout the region, especially along major rivers and tributaries including: the Sacramento River, Butte Creek, Butte Slough, and Cherokee Canal. Groundwater replenishing is offset to varying degrees by agricultural pumping of groundwater for crop irrigation which fluctuates from year to year based on available surface waters.

Post-construction O&M activities will not cause any potential groundwater impacts.

### 6.9.2 Environmental Checklist and Discussion

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#### GROUNDWATER RESOURCES:

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Substantially degrade groundwater quality such that its use would be impaired	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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**GROUNDWATER RESOURCES:**

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase groundwater elevations such that overlying land use is impaired (e.g., groundwater levels would rise into the root zone of a crop and reduce yield substantially)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**a) Substantially degrade groundwater quality such that its use would be impaired?**

*Less Than Significant Impact.* Ground water will have only a minor possible exposure of fuel, grease, oil, or lubricants from heavy equipment during construction. The contractor will provide and follow a health and safety plan, water quality monitoring plan, hazardous materials management plan, and other Best Management Practices in order to minimize risk.

**b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)**

*Less Than Significant Impact.* Dewatering wells used for the project will be located above the confining clay lens and will not pull substantial volumes of groundwater through confining layer. Ground water levels/aquifer volumes will not be impacted.

**c) Substantially increase groundwater elevations such that overlying land use is impaired (e.g., groundwater levels would rise into the root zone of a crop and reduce yield substantially)?**

*Less Than Significant Impact.* Dewatering activities occur in channel and within soils above the confining clay lens. Water movement between soil strata could only occur in the immediate vicinity of each dewatered well within the channel. Little to no water movement from deeper confined layers should migrate through lens and capillary fringe to the upper unconfined soil strata, especially away from the project site and near crop locations. Crop yields will not be substantially reduced or otherwise impacted.

## **6.10 Hazards and Hazardous Materials**

### **6.10.1 Environmental Setting**

State agencies regulating hazardous materials are the California Environmental Protection Agency (Cal/EPA) and the Office of Emergency Services (OES). The California Highway Patrol and California Department of Transportation (DOT) enforce regulations for hazardous materials transport. Within the Cal/EPA, the California Department of Toxic Substances Control (DTSC) has primary regulatory authority for hazardous materials regulation enforcement. State hazardous waste regulations are contained primarily in the California Code of Regulations Title 22. The California Occupational Health and Safety Administration (Cal OSHA) has developed rules and regulations regarding worker safety around hazardous and toxic substances.

The BSOG project area and Tisdale Bypass borrow site were researched for “Cortese Sites” using multi-agency maps and lists which are designated as being hazardous materials sites under Government Code Section 65962.5. No Cortese sites were located within or immediately adjacent to the BSOG and borrow site (CDTSC 2014).

A DWR Geology Report (DWR 2008) characterized the results of soil samples taken from the Tisdale Bypass Sediment Removal project, which is proposed to be used as fill material for BSOG. The sediment from the Tisdale Bypass and the background soils from the borrow site were analyzed for total and soluble metals, pesticides, pH, and size gradation. It was determined that the excavated sediment is as clean, or cleaner, than the background soils of the site where the spoils were eventually deposited. The excavation of Bypass sediment and beneficial reuse of the spoil as an emergency levee repair material stockpile and levee buttress material outside of the Bypass, will have no net water quality impacts. (DWR 2008).

Post-construction O&M activities will not cause any potential hazards or hazardous materials impacts.

## 6.10.2 Environmental Checklist and Discussion

### HAZARDS AND HAZARDOUS MATERIALS:

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public-use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**HAZARDS AND  
HAZARDOUS  
MATERIALS:**

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

*Less Than Significant Impact.* Construction of the proposed project would involve the routine transportation and handling of hazardous substances such as diesel fuels, lubricants, asphalt, etc. Handling and transport of these materials could result in the exposure of workers to hazardous materials. However, these materials will be used, stored, and disposed of according to standard protocols for handling of hazardous materials. Personnel involved in use of hazardous materials will be trained in emergency response and spill containment. The construction contractor will be required to prepare and adhere to a stormwater pollution prevention plan (SWPPP), best management practices (BMPs), and a spill prevention plan that would minimize the potential for construction-related spills of hazardous wastes and would provide for appropriate and immediate cleanup of spills on-site, if any were to occur.

**b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

*Less Than Significant Impact with Mitigation.* Construction of the proposed project would involve the use of heavy construction equipment, which uses small amounts of hazardous materials such as oils, fuels, and other potentially hazardous substances.

There is the potential to have these hazardous materials released into the environment at the project site causing environmental and/or human exposure to these hazards.

In addition to the preparation and implementation of a SWPPP and BMPs, the following project-specific mitigation measure would reduce this potentially significant impact to a less-than-significant level:

**Mitigation Measure HHM-1 - Hazardous Materials Training**

Construction workers would be trained on the potential to encounter hazardous materials and proper notification procedures. The training will specify that if stained or odorous soils from an unknown source are encountered: 1) work in the vicinity must cease; 2) a qualified hazardous materials specialist must be consulted; and 3) DWR will also notify the appropriate federal, State, and/or local agencies. A variety of steps may be taken at the discretion of DWR. Among those steps are the following:

- Avoid the area containing the stained/odorous soils or infrastructure.
- Perform Site Assessments to evaluate the nature, extent, and level of hazard to the public and construction workers if construction needs to occur in the exact location of the soils or infrastructure.
- Clean up the area or coordinate with the owner of the affected parcel to perform cleanup activities.

Should DWR elect to clean up activities on its own, all hazardous substances encountered will be removed and properly disposed of by a licensed contractor in accordance with federal and State regulations.

**c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within a one-quarter mile of an existing or proposed school?**

*No Impact.* The proposed project would not emit any hazardous materials or require handling of acutely hazardous materials. Additionally, there are no schools located within 0.25-mile of the project area, spoils sites, borrow site, and haul route. The closest school to proposed haul route is Meridian Elementary School in the town of Meridian located 0.36 miles east of the route. The closest schools to the BSOG project site are Meridian Elementary School and Charity Baptist Academy in Colusa which are respectively located 4 miles southeast and 4 miles west of the project site.

**d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?**

*No Impact.* The project area does not contain any sites included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (CDTSC 2014).

**e) For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?**

*No Impact.* The project is not within an airport land use plan or within 2 miles of a public airport since the closest airport to the project site is the Colusa County Airport which is 3.4 miles west of the project site.

**f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?**

*No Impact.* No private airports are within two miles of the BSOG project site with the closest being the Davis Airport in Colusa, 6.2 miles west of BSOG.

**g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

*No Impact.* The Office of Emergency Management (OEM) is responsible for planning, response, and recovery activities associated with natural and man-made emergencies and disasters for Colusa and Sutter Counties (Colusa County 2014, Sutter County 2014). OEM coordinates response and recovery activities with county staff, allied agencies, neighboring jurisdictions, and state agencies to ensure the necessary procedures and networks are in place. The proposed project would not impair implementation of or physically interfere with any adopted emergency plan or emergency evacuation plan.

**h) Expose people or structures to a significant loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?**

*Less Than Significant Impact.* A riparian habitat along Butte Slough and Sacramento River is considered to have moderate fire hazard severity. However, the project site is unlikely to expose people or structures to significant loss, injury, or death by wildland fires. In general, the proposed project and surrounding areas are not rated for fire hazard severity (Cal Fire 2007a, 2007b, 2007c). Land uses in the area consist of agricultural uses, rural residence, and a private boat landing and campground. Because the project area is not located within a high or very high fire hazard severity zone and primarily consists of regularly irrigated agricultural land, implementation of the proposed project would have less-than-significant impacts to people or structures by wildland fires.

## **6.11 Hydrology**

### **6.11.1 Environmental Setting**

The BSOG project and borrow sites are located within the Sacramento River watershed of the Sacramento Valley. The area's climate generally consists of hot, dry summers from late spring to early fall and moderate, wet winters between late fall to early spring. Most streams and rivers dry and/or lower in stage during the summer since there are no significant water storage reservoirs in the area unless they are connected to agricultural irrigation, agricultural drainage, and/or upstream urban drainage areas (PBS&J 2008).

The Sacramento River is located to the west of the project site and runs through Colusa and Sutter counties down into the Delta. The river supports various beneficial uses, including recreational, agricultural, and wildlife, which all exist within or near the project footprint.

There are several major flood control canals/channels within and around the project and borrow sites. These canals include Sutter Bypass (which runs through the center of the County from north to south) as well as Tisdale Bypass (connects the Sutter Bypass to the Sacramento River on the west) and Wadsworth Canal (connects to the Sutter Bypass from the east).

The Sutter Bypass provides water to agricultural lands throughout Sutter County and acts as an overflow collector of flood flows in the Sacramento River after passing through the Butte Sink and the Butte Slough. It consists of two parallel canals that extend from the northern area of Sutter County, along the western side of the Sutter Buttes, and to the southern border of Sutter and Yolo Counties (PBS&J 2008). Land between the two canals include, but are not limited to a wildlife refuge (Sutter National Wildlife Refuge), agricultural fields, private lands, and open space to accommodate flooding.

The BSOG project site is important to the flood control system as it enables flood and agricultural water runoff regulation and equilibrium. The structure conveys excess water from northern low-lying lands, and regulates irrigation water within Butte Slough by maintaining water surface elevations of 41 to 43 feet during spring and summer months. In addition, BSOG regulates the dispersion of flood waters between the Butte Slough, which feeds into the Sutter Bypass and the Sacramento River during flood season and is a crucial facility for maintaining floodwater flow equilibrium. The BSOG structure conveys up to 3,500 cubic feet per second (cfs) of floodwaters from Butte Slough into the Sacramento River. Water which is not channeled into the Sacramento River flows into the Sutter Bypass.

The two borrow canals (also called the East-West Borrow Canals) divide at the Sutter Bypass diversion weir and flow on each side of the bypass. It is at the diversion weir that water is channeled to either the east or west canal. Although there is a gaging

station located upstream (at Meridian) of the East-West Borrow Canals' split near Highway 20, the actual flow split is not recorded and varies during the year. Flow splits of approximately 50%-50% or 60%-40% are targeted, but these splits are estimated since there is no way to measure and record exact flow data. In addition, the Sutter Bypass almost annually floods in the winter and inundates the East and West Borrow Canals (DWR 2003). Fine tuning of water elevations in the Bypass are balanced by opening and closing a combination of three Sutter Bypass structures, which are Weir 2, Willow Slough Weir, and the Nelson Bend Gates on the East Borrow Canal. The West Borrow Canal water elevations are equilibrated at Reclamation District and local land owner controlled weirs. The Sutter Bypass has the capacity to carry the entire flow of water from Butte Creek with BSOG closed (Keith Murray, pers. comm. 2014). The water levels in the Sutter Bypass will not increase, only the velocity of the water through the borrow canals.

Tisdale Bypass is situated to the south of the borrow site and is separated from the site by a levee and a strip of riparian forest. There is no direct hydrological connection from Tisdale Bypass to the borrow site.

Post-construction O&M activities will not cause any potential hydrology impacts.

### 6.11.2 Environmental Checklist and Discussion

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#### HYDROLOGY:

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would substantially increase deleterious erosion or siltation on- or off-site	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**HYDROLOGY:**

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
b) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Place housing within a 100-year (1-percent annual exceedence probability (AEP)) flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Place within a 100-year (1-percent AEP) flood hazard area structures, other than flood conveyance structures, which would impede or redirect flood flows, or modify the flood conveyance system such that it would redirect flood flows in a way that would substantially increase flood risk	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Substantially increase exposure of people or structures to a risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Substantially increase the risk of inundation by seiche, tsunami, or mudflow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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**HYDROLOGY:**

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
g) Substantially reduce existing water supplies in a manner that would require new or expanded supplies to meet existing demands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**a) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would substantially increase deleterious erosion or siltation on- or off-site?**

*Less Than Significant Impact with Mitigation.* The existing drainage patterns of the project and borrow/spoil sites will be temporarily altered during construction and could have potential erosion impacts in the disturbed work areas. Once the Butte Slough and Sacramento River cofferdams are established (during the in-water construction work periods), Butte Slough runoff will be unable to mix with Sacramento River water. Excess runoff will be temporarily diverted down the Sutter Bypass. Sutter Maintenance Yard and/or Reclamation District 70 staff will operate a Sutter Bypass diversion weir downstream of BSOG to allow the diversion of up to 5,000 cubic feet per second (cfs) down associated low flow channels (east and west low flow channels). The weir adjustments will accommodate the temporary change in water volumes and surface elevations. In addition, DWR will coordinate with upstream farmers to stagger agricultural water drainage into Butte Creek and if needed, excess water may be diverted through pumps into the Sacramento River. The additional water flows and volume are not anticipated to substantially increase erosion or siltation on- or off-site.

Structural operations of the gates between the two construction seasons will be maintained to ensure existing river flows and/or velocities will not be substantially altered to cause erosion or siltation. Minor erosion or siltation along the sheet pile cofferdam alignments is possible but not substantial.

There will be no long-term waterway changes or operations and management changes associated with the structure's rehabilitation. Post-construction erosion or siltation is not anticipated since current design flows are maintained and bank stabilization and plantings will be implemented to protect the slopes and channel so mobilization of sediment will be reduced near the BSOG structure.

The following mitigation measure will be implemented to reduce impacts to less than significant:

**Mitigation Measure BIOAQ-7 Revegetation to Compensate for Construction-**

**Related Effects** (Similar to *BIO-T-1a - Conduct Biological Resources Surveys to Quantify Sensitive Natural Communities in Project Areas, and Avoid, Minimize, and, Where Appropriate, Compensate for Construction-Related Effects*)

**b) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site?**

*Less Than Significant Impact.* Water flows and volumes will be diverted and structures will operate as mentioned in a).

Between construction seasons, the temporary sheet pile weir on the Butte Slough side will allow nearly normal functional performance of the BSOG structure. High waters will flow through the BSOG into the Sacramento River. Low waters will be confined to the Butte Slough channel to maintain water surface elevations for fish migration and agriculture uses.

DWR will coordinate with upstream farmers to stagger agricultural water drainage into Butte Creek. Additional excess water may still need to be diverted through pumps into the Sacramento River. Flood risk to the downstream agricultural users is not significantly increased since water supply in the Sutter Bypass will be manually maintained to capture and release water as necessary.

**c) Place housing within a 100-year (1-percent annual exceedence probability (AEP)) flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?**

*No Impact.* The project would not include construction of any housing. Thus, there would be no impact.

**d) Place within a 100-year (1-percent AEP) flood hazard area structures, other than flood conveyance structures, which would impede or redirect flood flows, or modify the flood conveyance system such that it would redirect flood flows in a way that would substantially increase flood risk?**

*Less Than Significant Impact.* Impact during construction would be similar to b). Flood risk is minimal during the time the sheet pile structure would be in place; the Sutter Bypass can handle influxes in water flows caused by the sheet pile structure since water flows are maintained by the diversion structure and downstream agricultural users will increase their diversions of Sutter Bypass water during the period of time the sheet pile structure is in place. The final structure will operate in a similar fashion to the existing structure; therefore, flood risk is not significantly increased.

**e) Substantially increase exposure of people or structures to a risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?**

*Less Than Significant Impact.* During construction, site modifications will result in maintained or increased flow from Butte Slough into the Sacramento River during high water events due to removed inlet slide gates in between the two construction seasons. Maximum flow potential will be maintained during winter storm events between construction seasons.

In the long-term the proposed project will continue to provide flood protection and reduce flood risk by enhancing the reliability to regulate water release rates from Butte Slough into the Sacramento River and away from adjacent residences and agricultural lands.

**f) Substantially increase the risk of inundation by seiche, tsunami, or mudflow?**

*No Impact.* The project area is geographically removed from areas where the potential for seiche, tsunami, or mudflow exists. Therefore, there would be no impact associated with seiche, tsunami, or mudflow.

**g) Substantially reduce existing water supplies in a manner that would require new or expanded supplies to meet existing demands?**

*No Impact.* The BSOG rehabilitation project does not reduce existing water supplies. The proposed project would continue to function similarly to the existing structure so new or expanded supplies will not be needed to meet existing demands.

## 6.12 Land Use and Planning

### 6.12.1 Environmental Setting

The BSOG project site is located approximately 4.1 miles southeast of the town of Colusa at the confluence of the Sacramento River (RM 138.25) and the Butte Slough, in the counties of Colusa and Sutter. Surrounding land uses include agriculture and open space (which includes recreation).

Colusa County includes the city/census-designated area of Colusa. Colusa County is part of the Tri-County Area Planning Council which includes the other counties of Glenn and Tehama. Existing land uses in Colusa County are primarily agricultural (De Novo Planning 2011). The Colusa side of the project is zoned Agricultural General (AG). This zoning designation is discussed in the earlier Agricultural section (what designation means, what is appropriate to use as, etc.)

Sutter County includes the city/census-designated areas of Live Oak, South Yuba City, Sutter, Tierra Buena, and Yuba City. Sutter County is part of the six-county region which is covered under the Sacramento Area Council of Governments (SACOG) that includes the other counties of El Dorado, Placer, Sacramento, Yolo, and Yuba. The project site is covered under the Sutter County General Plan since it is part of unincorporated lands (Yuba City and Live Oak have their own General Plans). The Sutter side of the project site is designated Agricultural-40 (AG-40) which means a minimum of 40 acres of project area is required to obtain the designation. The borrow site is zoned as Agricultural-80 (AG-80) which means a minimum of 80 acres or project area is required to obtain the designation. This zoning is discussed in the earlier Agricultural section (what designation means, what is appropriate to use as, etc.).

Post-construction O&M activities will not cause any potential land use and planning impacts.

### 6.12.2 Environmental Checklist and Discussion

<b>LAND USE AND PLANNING:</b>	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Physically divide an established community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or result in changes to an applicable land use plan, policy, or regulation, adopted for the purpose of avoiding or mitigating one or more environmental effects (including but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) that would result in alterations of land uses or patterns of land use that would cause a substantial adverse physical environmental effect

c) Conflict with any applicable HCP or NCCP

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**a) Physically divide an established community?**

*No Impact.* No established community will be divided since the structure currently exists and will be rehabilitated in place. Any new improvements such as the control building and ramp will be built in right of way and easement areas and no zoning changes or parcel splits will occur.

**b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or result in changes to an applicable land use plan, policy, or regulation, adopted for the purpose of avoiding or mitigating one or more environmental effects (including but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) that would result in alterations of land uses or patterns of land use that would cause a substantial adverse physical environmental effect?**

*No Impact.* The BSOG project consists of rehabilitating an existing structure and making minor improvements within right of way and easement areas. Existing land use will not change so there will be no impact.

**c) Conflict with any applicable HCP or NCCP?**

*No Impact.* The project partially falls under the Yuba-Sutter Natural Community Conservation Planning (NCCP) and Habitat Conservation Planning (HCP) plan area. A final Yuba-Sutter NCCP/HCP planning agreement was signed by all participating parties in 2012 (Yuba County et al. 2011) and work on an HCP/NCCP should be forthcoming. No HCCP or HCP plan currently exists (Yuba Sutter RCP 2014) so the work doesn't conflict with any applicable HCP or NCCP.

## **6.13 Mineral Resources**

### **6.13.1 Environmental Setting**

The State Mining and Geology Board (SGMB), in concert with the DOC, the CGS and the Office of Mine Reclamation (OMR), and its stakeholders, has been fully engaged in implementing the legislative mandates of the Alquist-Priolo Earthquake fault Zoning Act (AP Act), Seismic Hazards Mapping Act (SHMA), and the Surface Mining and Reclamation Act of 1975 (SMARA). Local lead agencies (cities and counties with surface mines within their jurisdictions) have primary responsibility for implementing SMARA. Each of these lead agencies must have a surface mining ordinance certified by the SGMB as being in accordance with SMARA. SHMA programs and mandates closely resemble those of the AP Act. During the 2012-2013 reporting period, no new SHMA maps were produced by the CGS to be considered and commented on by the SMGB (SMGB 2013).

According to the Sutter County General Plan, no areas within Sutter County are designated by SGMB to have regional or statewide significance. The county also contains areas classified as Mineral Resource Zones (MRZ)-1 and -3. MRZ-1 means that there is little likelihood for the presence of significant mineral deposits; MRZ-3 means that there are areas containing mineral deposits but its significance requires further evaluation. Colusa County's General Plan has policy to protect mineral resource exploration and extraction.

SMARA uses four categories referred to as mineral resource zones (MRZ) to classify the likelihood for the presence of significant mineral deposits for an area. MRZ-1 means that there is little likelihood for the presence of significant mineral deposits. MRZ-2 means the area has at least \$17.1 million worth (2009 threshold value) of suitable material that could be extracted and marketed profitably under present technological conditions. MRZ-3 means that there are areas containing mineral deposits but its significance requires further evaluation. MRZ-4 means that there is inadequate data for the area.

CGS maintains an Index of Publications of the SMARA Mineral Land Classification Project Dealing with Mineral Resources in California (CGS, March 2013). The Index provides a listing by County of special reports and open-file reports prepared by the CGS/DOC Division of Mines and Geology (DMG) that provide the basis for determining MRZ-2 and other mineral resource zone classifications. The Index shows that there are no SMARA Classifications for all of Colusa County. However, Colusa County's General Plan does have a policy to protect mineral resource exploration and extraction. According to the Sutter County General Plan, no areas within Sutter County are designated by SGMB to have regional or statewide significance.

The SMARA Index shows one special report prepared for Sutter County (CGS/DOC/DMG, 1988). Special Report 132 (SR-132) documents the MRZ-2 SMARA classification for the Yuba City-Marysville Production-Consumption Region (PCR). This

PCR, the closest to the project site, is situated approximately 20 miles to the east-southeast and situated primarily in neighboring Yuba County. The DMG concludes in SR-132 that “the aggregate resources within the PCR will be able to supply the local area with PCC-grade aggregate past the year 2035”. They further conclude that “the 50-year demand will consume only 2% of the resources for the PCR.” Sutter County also contains areas classified as MRZ-1 and -3.

Post-construction O&M activities will not cause any potential mineral resources impacts.

### 6.13.2 Environmental Checklist and Discussion

#### MINERAL RESOURCES:

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### **a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**

*No Impact.* There are no CGS SMARA Maps or mineral zone designations that exist for the project area and no known mineral resources are present within the project site, project staging areas, or the project borrow site. Because no known mineral resources exist in the project areas and the proposed project would not result in the loss of any known mineral resources, there would be no impact.

#### **b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?**

*No Impact.* See response to a).

## 6.14 Noise

### 6.14.1 Environmental Setting

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude. Given that the typical human ear is not equally sensitive to all frequencies of the audible sound spectrum, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes low and extremely high frequencies, referred to as A-weighting, and is expressed in units of A-weighted decibels (dBA).<sup>1</sup>

### Noise Exposure and Community Noise

Noise levels rarely persist consistently over a long period of time. Rather, noise levels at any one location vary with time. Specifically, community noise is the result of many distant noise sources that constitute a relatively stable background noise exposure where the individual contributors are unidentifiable. Throughout the day, short duration single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens) that are readily identifiable to the individual add to the existing background noise level. The combination of the slowly changing background noise and the single-event noise events give rise to a constantly changing community noise environment.

To legitimately characterize a community noise environment and evaluate cumulative noise impacts, community noise levels must be measured over an extended period of time. This time-varying characteristic of environmental noise is described using statistical noise descriptors, including the ones described below:

**L<sub>eq</sub>:** The equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L<sub>eq</sub> is the constant sound level that would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

**L<sub>max</sub>:** The instantaneous maximum noise level measured during the measurement period of interest.

**DNL:** The day-night average sound level (DNL) is the energy average of the A-weighted sound levels occurring during a 24-hour period, accounting for the greater sensitivity of most people to nighttime noise by weighting (“penalizing”)

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<sup>1</sup> All noise levels reported herein reflect A-weighted decibels unless otherwise stated.

nighttime noise levels by adding 10 dBA to noise between 10:00 p.m. and 7:00 a.m.

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise would be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur (Caltrans, 2013a):

- except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- a change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- a 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of the decibel system. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

## **Vibration**

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal and is expressed in term of inches per second (FTA, 2009). The PPV is most frequently used to describe physical vibration impacts on buildings. Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors to vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick people), and vibration-sensitive equipment.

### **6.14.2 Regulatory Background and Sensitive Receptors**

#### **Colusa County Regulatory Setting**

Section 13-8 of the Colusa County Code specifically addresses noise from construction activities as a special provision of the Chapter. This section allows construction activities between the hours of 7:00 a.m. and 7:00 p.m. on Mondays through Fridays and between the hours of 8:00 a.m. and 8:00 p.m. on Saturdays and Sundays provided that the noise level at any point outside of the property plane of the project does not exceed 86 dBA. The provisions of this section do not apply to impact tools, such as pile drivers, provided that such equipment has intake and exhaust mufflers recommended by the manufacturer.

The Colusa County General Plan Noise Element contains no goals, objectives, or policies that directly address construction noise. Performance standards within the Noise Element are intended to ensure land use compatibility with respect to land use decision making and are not intended to apply to temporary construction activities which, while noisy, would not represent a long-term land use noise conflict.

### **Colusa County Noise Sensitive Receptors**

Noise-sensitive receptors in the project vicinity located within Colusa County consist of rural residential structures northwest of the Butte Slough on Butte Slough Road within the project footprint. These residences include three permanent structures and five semi-permanent recreational vehicles (RVs) and/or mobile homes. Additionally, there is a marina building that may also be considered noise sensitive.

### **Sutter County Regulatory Setting**

The Sutter County Code does not address noise and contains no provisions to restrict construction noise or time limits.

The Sutter County General Plan Noise Element contains two policies that directly address construction noise and vibration, respectively. Policy N.1.6 restricts discretionary project construction within 1,000 feet of noise-sensitive land uses to between 7:00 a.m. and 6:00 p.m. on weekdays, between 8:00 a.m. and 5:00 p.m. on Saturdays. Construction is prohibited on Sundays and holidays without a variance. Policy N.1.7 provides vibration standards which are addressed in response to CEQA Checklist item b) with regard to exposure of persons to groundborne vibration. Policy N 1-D of the Noise Element directs the City to adopt a noise ordinance that includes separate standards for construction equipment, but this ordinance has not yet been adopted.

### **Sutter County Noise Sensitive Receptors**

There is one rural residence within the vicinity of the project footprint in Sutter County, approximately 170 feet southeast of the proposed outflow structure. Additionally, there is a lone rural residence approximately 400 feet from the Tisdale borrow area and 13.5 miles southeast of the project footprint.

Noise impacts from on-going O&M activities will be similar to or less than current O&M baseline conditions. Staff will not need to be on-site as frequently since the outlet gates can be operated automatically and debris removal will occur with similar equipment and at the same frequency as it is currently maintained.

### 6.14.3 Environmental Checklist and Discussion

**NOISE:**

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public-use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

*Less Than Significant Impact with Mitigation.* The proposed BSOG project would cause construction activity noise, but, once constructed, would not result in any new stationary noise sources or other operational noise. Consequently, the impact assessment below solely addresses construction noise.

The construction activities would occur in and affect receptors within the jurisdictions of unincorporated Colusa and Sutter Counties. Each of these counties has separate General Plan policies and County Codes and, therefore, this impact is addressed separately for each jurisdiction.

**Colusa County Noise Impacts**

The Roadway Construction Noise Model (RCNM) was used to estimate noise levels from construction at the most-highly impacted receptor for each construction phase. Generally, the most-highly impacted receptors in Colusa County are the semi-permanent mobile homes and vacation trailer location. Construction would proceed in phases with construction work occurring simultaneously on both sides of the levee during phase-1 and only on Butte Slough side during phase-2 (some work may include both sides of levee during phase-2). Construction activities consist of sheet pile cofferdam installation; demolition of existing inlet structure, outlet structure, control room and water gauge; excavation for the proposed inlet and outlet structures; foundation pile installation for inlet and outlet structures; bank stabilization on both sides of levee; concrete paving inlet and outlet access roads; and borrow site excavation. The construction activities analyzed represent the construction phases with the most equipment or the equipment with the greatest noise generating potential. These construction activities would occur discretely over a period of two to four weeks. Other construction activities such as dewatering and concrete pumping for foundation work would have lesser noise impacts. Additionally, on-road truck trips are not subject to local regulation in the County Code, but are addressed in response to CEQA Checklist item d) with regard to temporary increase in noise levels.

Estimated noise levels for the most-highly exposed receptor are presented in Table 7. Predicted noise levels reflect the worst case event. For example, noise from pile driving assumes that the pile is driven at the closest proposed location to a given receptor, while that may occur only for one or two days as pile installation locations progressively shift further from this location. RCNM also accounts for equipment usage percentages specific to each equipment type and predicts an overall hourly equivalent noise level (Leq). The Maximum noise level (Lmax) and the Leq are both presented in Table 7. The modeling also accounts for acoustical shielding provided by topographical conditions that separate some of the noise sources from the receivers.

**Table 7. Predicted Construction Noise by Activity for Local Receptors**

Construction Activity	Receptor	Worst Case Leq (dBA)	Worst Case Lmax (dBA)	Colusa County Limitation (Lmax, dBA)
Cofferdam Installation	Colusa County ME Residence	82.0	<b>88.8</b>	86
	Colusa Marina Building	86.7	<b>88.8</b>	86
	Sutter County ME Residence	82.0	93.6	NA
Demolition and Excavation	Colusa County ME Residence	71.6	71.7	86
	Colusa Marina Building	71.1	71.4	86
	Sutter County ME Residence	85.1	86.9	NA
Foundation Pile Installation	Colusa County ME Residence	84.9	90.9	NA
	Colusa Marina Building	81.4	87.3	NA
	Sutter County ME Residence	85.1	90.4	NA
Wing Wall Sheet Pile Installation	Colusa County ME Residence	84.3	<b>91.3</b>	86
	Colusa Marina Building	79.9	<b>86.8</b>	86
	Sutter County ME Residence	84.3	91.3	NA
Bank Stabilization	Colusa County ME Residence	70.0	71.7	86
	Colusa Marina Building	70.0	71.7	86
	Sutter County ME Residence	70.5	68.8	NA
Tisdale Borrow Site	Sutter County ME Residence	60.1	62.6	NA

*Notes: ME residence= maximally exposed residence; Bolded values exceed Colusa County Construction Noise Limits*

As can be seen from Table 7 without mitigation the Lmax at Colusa County receptors would exceed the 86 dBA limit of the County Code during cofferdam installation, foundation pile driving and wing wall sheet pile installation. Impact equipment such as pile driving is exempt from the limitations imposed by Section 13-8 of the County Code, provided adequate muffling is provided. Consequently, mitigation measures are required to reduce the severity of this significant construction noise impact with regard to generation of noise levels in excess of standards established in the Colusa County General Plan or noise ordinance. With implementation of Mitigation Measure NOI-1, this impact would be less than significant.

### **Sutter County Noise Impacts**

Neither the Sutter County Code nor the Sutter County General Plan Noise Element contain quantitative noise-level standards specific to construction activities. Policy N 1-D of the Noise Element indicates that Sutter County foresees the adoption of quantitative noise standards for construction that would be different than the land use-based standards identified elsewhere in the Noise Element. Consequently, the proposed project would not result in generation of noise levels in excess of standards established in the Sutter County General Plan or noise ordinance. Mitigation Measure NOI-1 contains restrictions on construction hours, although these are not noise level standards.

Noise impacts from on-going O&M activities will be similar to or less than current O&M baseline conditions. Staff will not need to be on-site as frequently since the outlet gates can be operated automatically. Debris removal will occur with similar equipment and at the same frequency as it is currently maintained.

The following mitigation measure would reduce this potentially significant impact to a less-than-significant level:

### **Mitigation Measure NOI-1 - Implement Noise-Reducing Construction Practices**

DWR will implement the following measures during construction activities when noise-sensitive receptors are located nearby and could be subject to substantial construction noise in excess of applicable standards or substantially greater than existing conditions.

- Implement a Traffic and Noise Abatement plan.
- Equipment will be operated, stored, and/or maintained as far away as practical from sensitive noise receptors.
- Construction equipment will be properly maintained per manufacturer specifications and fitted with the best available noise suppression devices (e.g., mufflers, silencers, wraps). All impact tools will be shrouded or shielded, and all intake and exhaust ports on power equipment will be muffled or shielded. Construction equipment will be inspected before first use and at least once during construction for compliance with these noise reduction measures.
- The use of cushion blocks shall be required between the hammerhead and concrete piles during impact pile driving.

- Equipment that is quieter than standard equipment will be used in the vicinity of sensitive noise receptors when practical. For example, electrically powered equipment will be used instead of internal combustion equipment where use of such equipment is a readily available substitute that accomplishes program tasks in the same manner as internal combustion equipment.
- Construction equipment operating in the vicinity of sensitive noise receptors will not be left idling for extended periods between construction activities.
- All construction activities, including truck operations (e.g., haul trucks and concrete delivery trucks), will be limited to the daytime weekday hours (8:00 a.m. to 5:00 p.m. in Colusa County and 7:00 a.m. to 6:00 p.m. in Sutter County) to the extent feasible. Construction outside of normal construction hours will be minimized or avoided completely when located adjacent to sensitive receptors. The contractor will work with DWR and notify the counties and/or immediate residents when work is scheduled to extend outside of normal construction times.
- Where stationary construction equipment would result in exceedence of noise standards at nearby sensitive receptor, temporary noise barriers will be installed where feasible between the stationary construction operation and the sensitive receptor.
- Speed limits will be established and enforced for construction traffic.

**b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?**

*Less Than Significant Impact.* Groundborne vibration from construction activities that involve “impact tools,” especially pile driving, can produce significant vibration. Vibratory pile drivers (which are not considered an impact tool) also can produce significant vibration. Foundation piles for the proposed inlet and outlet structures would require impact pile driving. Installation of cofferdams and outlet wing walls would require sheet piles that would be installed by vibratory pile drivers, if feasible and by impact pile drivers if needed. Pile driving can result in peak particle velocity (PPV) of up to 1.5 inches/second (in/sec) at a distance of 25 feet (FTA, 2006), but typically average about 0.644 in/sec at that distance. Caltrans also uses the 0.644 in/sec as a reference vibration level estimate for both impact and vibratory pile driver operations at a distance of 25 feet. Other construction equipment associated with vibration generation includes caisson drills, bulldozers and jack hammers, which would not be used for construction of the proposed BSOG rehabilitation project. Because the rubber tires and suspension systems of trucks provide vibration isolation, it is unusual for trucks to cause ground-borne vibration problems.

**Building Damage**

The Caltrans measure of the threshold of architectural damage for conventional structures is 0.5 in/sec PPV and 0.25 in/sec PPV for historic and older buildings, respectively.

Predicted maximum vibration levels for each receptor were calculated using Caltrans methodology (Caltrans, 2013b) for each receptor based on the nearest location and are presented in Table 8, which presents the distance between each receptor and the closest pile location and the resultant expected vibration level. As can be seen from Table 8, the separation of pile driving locations from receptors is sufficient to maintain vibration levels well below the Caltrans building damage criteria. Consequently, the project would have a less than significant impact with regard to generation of excessive groundborne vibration.

**Table 8. Predicted Peak Construction Vibration Levels at Local Receptors from the Closest Pile Location**

Construction Equipment	Receptor	Minimum Separation (feet)	Worst Case PPV (in/sec)
Impact Pile Driver	Colusa County ME Residence	165	0.038
Vibratory Pile Driver	Colusa County ME Residence	150	0.044
Impact Pile Driver	Colusa Marina Building	250	0.020
Vibratory Pile Driver	Colusa Marina Building	115	0.065
Impact Pile Driver	Sutter County ME Residence	175	0.035
Vibratory Pile Driver	Sutter County ME Residence	150	0.044

### Human Annoyance

Vibration levels can also result in interference or annoyance impacts at residences or other land uses where people sleep, such as residences, hotels and hospitals. Vibration impact criteria published by Caltrans relative to these land uses are stated in terms of PPV, in inches per second. For adverse human reaction, this analysis applies the Caltrans “strongly perceptible” threshold of 0.1 inches per second PPV for frequent intermittent sources.<sup>2</sup>

As can be seen in Table 8, the separation of pile driving locations is sufficient to maintain vibration levels below the Caltrans threshold for strongly perceptible vibration. Consequently, the project would have a less than significant impact with regard to exposure of persons to excessive groundborne vibration.

### c) A substantial permanent increase in ambient noise levels in the project

<sup>2</sup> Caltrans, *Transportation and Construction Vibration Guidance Manual*, September 2013

**vicinity above levels existing without the project?**

*Less Than Significant Impact.* The proposed Butte Slough Outfall Gates Rehabilitation Project would involve construction activities but, once constructed, would not result in any new stationary sources or other permanent increases in operational noise. Consequently, the Butte Slough Outfall Gates Rehabilitation Project would have a less than significant impact with regard to permanent increases in ambient noise levels.

**d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?**

*Less Than Significant Impact with Mitigation.* The construction activities that would generate temporary noise level increases are largely addressed in response to CEQA Checklist item a) with regard to exposure of persons to noise levels in excess of established noise standards. However, some construction-related activities are either exempt from the standards of the noise ordinance or are not regulated at the local level. Specifically, these activities include operation of an impact pile driver and on-road truck trips to transport and deliver materials.

To assess the potential impacts related to impact pile driving, this analysis employs the general assessment construction noise assessment methodology and criteria suggested by the Federal Transit Administration (FTA).<sup>3</sup> This guidance identifies a 1-hour  $L_{eq}$  of 90 dBA for daytime and 80 dBA for nighttime construction noise exposure at residential uses.

As can be seen from the data in Table 7, foundation pile installation would result in hourly  $L_{eq}$  values of 85.1, 81.4, and 84.9 dBA at the three (maximally exposed) receptors analyzed. These noise levels would be below the daytime criteria suggested by FTA but would exceed the nighttime criteria. Consequently, mitigation measures are identified to restrict pile driving activities to the least sensitive time of the day. It should be noted that the overall duration of impact pile driving would occur only over an estimated period of three to four weeks in July of 2015. Notwithstanding this relatively short duration, mitigation measures are identified to reduce temporary increases in ambient noise levels associated with impact pile driving.

In-water pile driving, such as for sheet piles for the cofferdams can also produce acoustic impacts on fish. This potential impact is addressed in Section 5.4 Biological Resources-Aquatic of this Initial Study.

The proposed project would also generate a number of truck trips on local roadways including Butte Slough Road, Marty Road, and Reclamation Road. These trucks would be used to remove approximately 8,350 cubic yards (cy) of exported excavated soils, 3,415 cy of imported concrete and 13,330 square feet of imported rip rap material.

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<sup>3</sup> U.S. Department of Transportation, Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

Additionally approximately 23,250 cy of material would be transported from the Tisdale borrow area to the project site. Construction phases involving excavation through compacted embankment would occur over approximately three months. Based on these volumes it may be expected that up to 20 truckloads or 40 one-way truck trips per day could be generated. These trips would be dispersed throughout the 12-hour work day averaging about three truck trips per hour on these local access roadways. The intermittent contribution of these truck trips to hourly average noise levels along these roadways (15 meters from the roadway center) would be approximately 55 dBA based on the FHWA's Highway Traffic Noise Prediction Model. Noise modeling conducted for Highway 20 in the Town of Meridian between the project site and the Tisdale borrow area for the Sutter County General Plan indicates roadside noise levels of between 60 and 65 dBA. The addition of 55 dBA to an existing noise level of 60 dBA would yield a resultant noise level of 61.2 dBA. Hence, truck trips would contribute to a localized increase in noise along roadways, but the magnitude of this increase would be less than 5 dBA which, for traffic impact analysis, is considered a readily perceptible increase in noise level (Caltrans, 2013b).

The following mitigation measure would reduce this potentially significant impact to a less-than-significant level:

**Mitigation Measure NOI-1 - Implement Noise-Reducing Construction Practices**  
(similar to *CVFPP PEIR Mitigation Measure NOI-1 - Implement Noise-Reducing Construction Practices*)

- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public-use airport, would the project expose people residing or working in the project area to excessive noise levels?**

*No impact.* The project area is not located within 2 miles of an airport. The Colusa County Airport is the closest airport located 3.4 miles west of the project site. Given the distance from the airport, the project would have no impact from aircraft source noise.

- f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?**

*No Impact.* The Davis Airport in Colusa is the closest airport located 6.2 miles west of the project site. Given the distance from the airport, the project would have no impact from aircraft noise.

## 6.15 Population, Employment, and Housing

### 6.15.1 Environmental Setting

Sutter County participates in and is a part of the Sacramento Area County of Governments (SACOG) while Colusa County is a part of the Tri-county Area Planning Council. Both county's populations have increased between the latest census counts in 2000 to 2010. The California Department of Finance projected 2050 growth for Sutter and Colusa Counties at 176% and 35% respectively (De Novo 2011).

The project is located approximately 4.1 miles southeast of the town of Colusa in Sutter and Colusa counties and the borrow site is located along Tisdale Bypass in Sutter County. The project and borrow sites are unincorporated, primarily rural and sparsely populated. No housing or commercial development is planned for the project and borrow sites. There are no known plans to develop or build a new housing development or new businesses in the area directly adjacent to the project site.

Post-construction O&M activities will not cause any potential population, employment, and housing impacts.

### 6.15.2 Environmental Checklist and Discussion

<b>POPULATION, EMPLOYMENT, AND HOUSING:</b>	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**POPULATION,  
EMPLOYMENT, AND  
HOUSING:**

Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
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Would the project...

c) Induce substantial unemployment in an area, either directly (for example, by displacing places of business in areas where no adequate relocation possibilities exist) or indirectly, by affecting land uses closely tied to regional economic output and employment (for example, by affecting recreational areas)

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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**a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

*No Impact.* The proposed project is not inducing a direct or indirect substantial growth in the area as the improvements are being conducted to rehabilitate and increase the longevity of the structure. Implementation of the work will not have an effect on current and/or planned population growth patterns in either county since the work is not increasing the infrastructure for new homes, businesses, or other buildings. The proposed project improvements will benefit the local property owners through more reliable and on-site control of the outlet structure, which can reduce local flood risk. Therefore, the proposed project would have no impact on population growth in the area, either directly or indirectly.

**b) Displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere?**

*No Impact.* The project area and the areas where roads will be improved or relocated are within existing right of way or easement areas and will not displace, divide or disrupt an existing housing or established community. Therefore, the proposed project would have no impact on displacing existing housing or people.

**c) Induce substantial unemployment in an area, either directly (for example, by displacing places of business in areas where no adequate relocation possibilities exist) or indirectly, by affecting land uses closely tied to regional economic output and employment (for example, by affecting recreational areas)?**

*Less Than Significant Impact.* The proposed project is located along the levee adjacent to agricultural fields, private residences, and a marina. Construction is scheduled to occur over two years between May 1- November 1. Access to the one of the marina ramps may be closed for up to 2 weeks during the first year of construction when pile driving equipment is being delivered and/or when pile driving or removal activities are implemented on the Sacramento River side. If construction on the Sacramento River side has not been completed during the first year, the ramp may be closed for an additional two weeks during the second year of construction for pile driving and removal activities on the Sacramento River side. The marina ramp closure could potentially impact business at the marina. However, the impact is minimal since the marina ramp will not be closed for a significant amount time. Employment should not be impacted.

## **6.16 Public Services**

### **6.16.1 Environmental Setting**

#### Fire Protection

Fire protection and emergency services at the Sutter County portion of the project site are provided by the Meridian Fire Protection District.

#### Police Protection

Law enforcement services at the project site are provided by the Sutter and Colusa Counties Sheriff's Departments, and California Department of Highway Patrol.

#### Schools

The closest schools to the project site are Meridian Elementary School in Sutter County and James M. Burchfield Primary School, George T. Egling Middle School and Colusa High School in Colusa County.

#### Parks

The closest parks to the project are located in Meridian (approximately 4 miles south of the project site) and the city of Colusa (approximately 4 miles northwest of the project site).

#### Emergency Services

Emergency Services at the project site are provided by the police and fire protection organizations listed above. Large-scale emergency services are handled by the county sheriff's departments in cooperation with the inland region of Cal EMA.

Post-construction O&M activities will not cause any potential public services impacts.

## 6.16.2 Environmental Checklist and Discussion

### PUBLIC SERVICES:

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
<p>a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:</p>				
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: Fire protection, Police protection, Schools, Parks or Other public facilities?**

#### **Fire Protection/Police Protection**

*Less Than Significant Impact.* Rehabilitation of BSOG will not result in the need for new or altered law enforcement or fire protection facilities. The fire marshal informed DWR that there is no need to install a hydrant at the site as the new facility is a concrete structure.

During construction activities, there could be slight delays to emergency access due to temporary lane closures and construction vehicles accessing the site. Construction activities would be short-term and temporary, and emergency vehicles would be waved through during single lane closures. There will be two days during project construction that vehicle access through the site via Butte Slough Road and Marty Road will be restricted. During this time, all vehicles, including emergency vehicles, will be routed via a clearly marked detour. The road closure and detour are short-term and would not cause a significant impact to emergency access.

**Schools/Parks/Other Public Facilities**

*No Impact.* The proposed project does not include any components that would result in an increased demand for school services, parks or other public facilities.

## **6.17 Recreation**

### **6.17.1 Environmental Setting**

Sutter and Colusa counties contain local, State, and federally operated recreational facilities such as wildlife areas and refuges, parks, and boating facilities. These provide a wide range of recreational opportunities including wildlife viewing, hunting, hiking, and fishing. The project site is located adjacent to the Sacramento River and Butte Slough. This area of the river and the cove adjacent to BSOG provides fishing opportunities and is used heavily during the spring and fall.

There are a few boat ramps in the vicinity of the project site that provide boat access to the river. Ward's Landing, a privately owned marina that includes a boat ramp, docks, bait shop, and trailer parking, is located along the Sacramento River, to the north and immediately adjacent to the project site. The next closest public boat launch facilities that provide access to the Sacramento River are at Colusa-Sacramento River State Recreation Area, located approximately 6.4 miles north of the project, and Tisdale Boat Launching Facility, located approximately 15 miles south of the project at Tisdale Weir.

One of the staging areas (0.2 acres) for the project is located at the marina. This staging area will be used primarily for installing and staging equipment and materials for sheet pile installation and removal. During sheet pile installation, the boat ramp at Ward's Landing may be temporarily closed, up to 2 weeks during each phase of construction, to allow for transport of pile driving materials and equipment. DWR is in contact with the marina owner and will provide details of the construction schedule as needed.

For certain portions of the work (e.g., constructing the cofferdam for the inlet structure) transport of equipment and materials by water (Sacramento River or Butte Slough) could be required. If a barge is used, the boat ramp and cove will be blocked and inaccessible during sheet pile installation. The barge will not block boats currently docked at the marina and will not cause delays in boat traffic on the river.

Marty/Butte Slough Road may be closed for up to 2 days during construction. Throughout the duration of the project, one lane of the road may be closed as needed for vehicle and equipment access.

All in-water work will occur between June 15 and November 1. If possible, DWR will conduct work outside the fishing season.

Post-construction O&M activities will not cause any potential recreation impacts.

## 6.17.2 Environmental Checklist and Discussion

### RECREATION:

Would the project...	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in substantial temporary restrictions to boat navigation or substantial delays to boat traffic passage on rivers? (CVFPP PEIR)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

*No Impact.* The proposed project involves construction to rehabilitate an existing flood control structure. The project would not increase the use of existing neighborhood and regional parks or other recreational facilities.

**b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

*No Impact.* The proposed project involves construction to rehabilitate an existing flood control structure. The project does not include recreational facilities or require the construction or expansion of recreational facilities.

**c) Result in substantial temporary restrictions to boat navigation or substantial delays to boat traffic passage on rivers?**

*Less Than Significant Impact with Mitigation.* There is an existing private boat ramp

adjacent to the project site to the north. There will be temporary closures to the boat ramp when the sheet pile driving occurs on the Sacramento River side of the project. The boat ramp closures will be temporary, up to 2 weeks during each phase of construction for sheet pile installation and removal. There are a few public boat launch facilities along the Sacramento River that can be used in lieu of Ward's Landing. The closest public boat launch facilities that provide access to the Sacramento River are at Colusa-Sacramento River State Recreation Area (Colusa SRA), located approximately 6.4 miles north of the project. This ramp is open seasonally depending upon water levels in the Sacramento River and silt deposition within the boat launch channel. A new boat ramp at Colusa SRA will be constructed within the next few years. The next closest boat launch facility is the Tisdale Boat Launching Facility, located approximately 15 miles south of the project at Tisdale Weir (pers. comm., Colusa SRA Park Office, May 2014).

Marty Road and Butte Slough Road may be closed for up to 2 days during construction. During this time, there will be a clearly marked detour route to provide access to the north and south of the project site, including Ward's Landing. Throughout the duration of the project, one lane of the road may be closed as needed for vehicle and equipment access. The contractor will provide flagmen and appropriate signage for the lane closure and delays will be minimal. When feasible, DWR will conduct work prior to the fishing season to reduce delays to boat traffic.

For certain portions of the work (e.g., constructing the cofferdam for the inlet structure) transport of equipment and materials by water (Sacramento River or Butte Slough) could be required. If a barge is used, the boat ramp at Ward's landing will be blocked and inaccessible during sheet pile installation. It is anticipated that sheet pile installation will last approximately 20 days. The barge will not block boats currently docked at the marina and will not cause delays in boat traffic on the river.

The following mitigation measure would reduce this potentially significant impact to a less-than-significant level:

**Mitigation Measure REC-1 – Recreational and Construction Activities Coordination**

DWR shall coordinate with the owner of Ward's Landing due to boat ramp closure during project construction. This is due to the physical activities of the project (traffic and boat ramp blocking or closures) that may impact normal business activities including loss of customer access to the temporary ramp closure. DWR will also provide notification to inform local anglers and boat enthusiasts about the boat ramp closure. Notifications will be distributed to local bait shops and posted at other appropriate locations. The notifications will include alternate public boat launches that are located near the project site.

## **6.18 Transportation and Traffic**

### **6.18.1 Environmental Setting**

The BSOG are located at the confluence of Butte Slough and the Sacramento River, 3.73 miles downstream from the town of Colusa on the left bank of the Sacramento River. The structure is located on both sides of the Sacramento River levee, within both Butte Slough and the Sacramento River, on the border of Sutter and Colusa Counties. There is one road, named Butte Slough Road in Colusa County and Marty Road in Sutter County, which is located on the Sacramento River levee at the project site. This road is used primarily by local residents by vehicles including cars, trucks, trucks with boat trailers and farm equipment.

Construction will occur four months per year over a two-year period, for a total of eight months for the duration of the project. Construction activities will include the daily arrival and departure of the construction workers and trucks hauling equipment and materials. Construction trucks on local roadways will include dump trucks, concrete trucks, and other delivery trucks and trailers. The local roads being affected by the construction of the inlet and outlet structures will be Marty Road and Butte Slough Road. Many of the trips related to construction will likely use the following major localized roads: Interstate 5 (I-5), Colusa Highway (State Route 20), Bridge Street, River Road, and Meridian Road. For certain portions of the work (e.g., constructing the cofferdam for the inlet structure) transport of equipment and materials by water (Sacramento River or Butte Slough) could be required.

Marty Road and Butte Slough Road may be closed for up to two days during the first year of project construction. The proposed detour route will redirect traffic to State Route (SR) 20 and 45 via Meridian Road and Butte Slough Road/Bridge Street. Throughout the duration of the project, one lane of the road may be closed as needed for vehicle and equipment access.

Approximately 23,250 cubic yards of fill material will come from an existing borrow site adjacently located north of the Tisdale Bypass in Sutter County. The proposed and most likely haul route from the project site to the borrow site is as follows: south on Marty Road, turn right onto Meridian Road, go east on Moroni Road, continue onto McGarth Road, continue south onto Progress Road, veer left onto Reclamation Road, turn right (west) to the borrow site. It is anticipated that two dump trucks will be used to haul fill material from the borrow site to the project site. Each truck will make approximately six roundtrips per day for a total of 12 trips per day for approximately 8 months of the project.

The proposed project includes construction of a new 12 foot wide concrete paved access road that will extend from the boat ramp to the existing dirt road on the southeast side of Butte Slough to provide access to the top of the inlet structure and control building for maintenance and to install stoplogs. The 10 foot concrete paved access road on the outlet side will follow the existing dirt road alignment from the levee

down to the outlet structure and will allow for maintenance and stoplog installation. The two access roads, one on the west side of Marty road and the other on the east site, will be aligned and maintenance vehicles may be crossing Marty Road at this location.

State Highways

**State Route 99**

SR 99 extends from the Sacramento County line north through Sutter County to the Butte County line. The roadway has two and four lanes over its length and provides regional access to the Sacramento metropolitan area in the south and the cities of Gridley and Chico in the north and beyond (Sutter County, 2008).

**State Route 20**

SR 20 is an east-west arterial linking the coastal areas of northern California with the Sierra foothill counties. SR 20 is primarily a two-lane roadway, except for a four-lane segment within the city of Colusa.

**State Route 45**

SR 45 is a north-south arterial that generally follows the Sacramento River. SR 45 begins at Knights Landing in Yolo County and follows the Sacramento River on its western side. Approximately seven miles southeast of Colusa, SR 45 merges with SR 20 and subsequently enters Colusa from the southeast, traveling north and then west (Colusa County General Plan, 2011).

County Roadways

County Roadways within the project vicinity, haul routes and proposed detour route include Butte Slough Road, Marty Road, Bridge Street, Meridian Road, Moroni Road, McGarth Road, Progress Road and Reclamation Road.

Traffic Types and Volumes

All roadways within the project vicinity are traveled by automobiles, trucks, motorcycles, emergency vehicles, trucks with trailers, and agricultural equipment (on county roadways). Traffic counts and levels of service (LOS) for roadways within the project vicinity are presented below in Table 9 and Table 10. Counts were not available for all local roads within the project vicinity.

Table 9. Existing Levels of Service on county roadways within the project area in Sutter County.

Road	From	To	Classification	Lanes	Count	LOS
SR 20	Colusa County Line	Sutter Bypass	Rural Arterial	2	7,200	C <sup>4</sup>
	Sutter Bypass	Acacia Avenue	Rural Arterial	2	7,200	C

<sup>4</sup> LOS C: Stable operating conditions, but the operation of individual users is substantially affected by the interaction with others in the traffic stream.

Moroni/McGrath Road	Tarke Road	Progress Road	Rural Collector	2	1,270	A <sup>5</sup>
Progress Road	McClatchy Road	Acme Road	Rural Collector	2	1,010	A
Reclamation Road	Progress Road	Pelger Road	Rural Collector	2	1,060	A
Data from Sutter County General Plan Technical Background Report						

Table 10. Existing Levels of Service on county roadways within the project area in Colusa County.

Road	Segment	Roadway Classification	Lanes	Average Daily Traffic	LOS
SR 20	East of SR 45	Class I Highway	2	7,600	C
	SR 45 to Wescott Road	Class I Highway	2	15,000	E <sup>6</sup>
	Wescott Road to Fremont Street	Class I Highway	2	20,900	E
	Colusa to Williams	Class I Highway	2	7,100	C
SR 45	South of SR 20	Class I Highway	2	2,200	B <sup>7</sup>
	North of Colusa	Class I Highway	2	2,300	B
Data from Public Draft EIR for the 2030 Colusa County General Plan Update					

Traffic count data was not available for local roads in the project vicinity. DWR recorded visual observations along local roads at the project site and along the haul route during several sites visits. Average hourly counts along these roads were approximately ten vehicles per hour.

### Airports/Airstrips

There are several airports/airstrips within 10 miles of the project site. These include Colusa-County Airport located 3.3 miles southwest of the project, Davis Airport located 6 miles east of the project and Farnsworth Ranch Airstrip located 6.5 miles south of the project.

### Transit

The Colusa County Transit Agency and The Yuba-Sutter Transit provide public transportation for Colusa and Sutter Counties. There are no bus routes that serve the project site.

### Pedestrian and Bicycle System

Pedestrian facilities include sidewalks, crosswalk, and pedestrian signals, and are generally located in the developed communities. There are no pedestrian or designated bicycle lanes at the project site.

### Railroads

<sup>5</sup> LOS A: free-flow travel with an excellent level of comfort and convenience

<sup>6</sup> LOS E: Operation conditions at or near capacity. Speeds are reduced to a low but relatively uniform value. Freedom to maneuver is difficult with users experiencing frustration and poor comfort and convenience. Unstable operation is frequent, and minor disturbances in traffic flow can cause breakdown conditions.

<sup>7</sup> LOS B: stable operating conditions, but the presence of other road users causes a noticeable though slight, reduction in comfort, convenience, and maneuvering freedom.

There are no railroads within the project area.

Potential transportation and traffic impacts from on-going O&M activities will be similar to or less than current O&M activities since less site visits will be needed and the gates will be automated. Therefore these potential impacts will be less than significant.

### 6.18.2 Environmental Checklist and Discussion

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#### TRANSPORTATION AND TRAFFIC:

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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**TRANSPORTATION AND TRAFFIC:**

Would the project...	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?**

*Less Than Significant Impact with Mitigation.* During construction, fill material will be brought from a borrow site north of Tisdale Bypass to BSOG. Each truck will make approximately 6 roundtrips per day (40-miles each) for a total of 12 trips per day through 8 months of the project. There will be additional vehicle trips each day to bring construction employees to and from the site. Post construction maintenance of BSOG would be similar with the existing maintenance at the site. Increased traffic due to construction of the project would be temporary and there would be no increased traffic due to operation of the BSOG.

Marty Road and Butte Slough Road may be closed for up to two days during the first year of project construction. No vehicle access through the site will be allowed and vehicles will be detoured around the project site. When the road is closed, there will be a clearly marked detour route to provide access to the north and south of the project site, including Ward's Landing. Throughout the duration of the project, one lane of Marty and Butte Slough Roads may be closed as needed for vehicle and equipment access. The contractor will provide flagmen and appropriate signage for the lane closure and delays will be minimal.

The following project-specific measure would reduce this potentially significant impact to

a less-than-significant level:

### **Mitigation Measure TRN-1 – Develop a Traffic and Noise Abatement Plan**

The contractor will be required to develop a Traffic and Noise Abatement Plan prior to construction, and coordinate all use of public roads with the counties of Colusa and Sutter as well as the California Department of Transportation. This plan would include the following measures:

- Construction vehicles would not be permitted to block any roadways or driveways.
- Access will be provided for emergency vehicles at all times (except during the 2 day complete road closure).
- Signs and flagmen would be used, as needed, to alert motorists, bicyclists, and pedestrians to the presence of haul trucks, construction vehicles and lane closures at all access points.
- A detour route will be identified, in coordination with DWR, and will be clearly marked using appropriate signage.
- Construction vehicles would be required to obey all speed limits, traffic laws, and transportation regulations during construction.
- Construction workers would be encouraged to carpool and required to park in designated staging areas.
- Closure of roads and construction sites would be clearly marked with appropriate closure signage.
- The contractor would be required to repair any private haul routes damaged by construction.

### **Mitigation Measure TRN-2 – Inform Public of Road Closure**

DWR will inform local residents, businesses, and Colusa and Sutter Counties regarding the 2 day closure of Butte Slough Road and Marty Road, and lane closures for the duration of the project. Appropriate signs will be placed in local businesses and on roads.

### **b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?**

*Less Than Significant Impact.* Initial mobilization/demobilization of construction equipment will occur at the beginning and end of each construction season. During construction, fill material will be brought from a borrow site north of Tisdale Bypass to BSOG. Each truck will make approximately 6 roundtrips per day (40-miles each) for a total of 12 trips per day throughout the duration of the project. There will be additional vehicle trips each day to bring construction employees to and from the site. Post construction maintenance of BSOG would be similar with the existing maintenance at the site. Increased traffic due to construction of the project would be temporary and there would be no increased traffic due to operation of the BSOG.

The increased traffic due to construction would be temporary and any associated degradation in LOS would be temporary. There would be no increased traffic due to operation of BSOG.

**c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?**

*No Impact.* The closest airport to the project site is located 3.3 miles northeast of the project. The proposed project would not change air traffic patterns, increase air traffic levels or result in a substantial safety risk.

**d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

*Less Than Significant Impact with Mitigation.* The proposed project includes construction of a new 12 foot wide concrete paved access road that will extend from the boat ramp to the existing dirt road on the southeast side of Butte Slough and a 10 foot concrete paved access road on the outlet side will follow the existing dirt road alignment from the levee down to the outlet structure. These two access roads will be aligned and maintenance vehicles may be crossing Marty Road at this location. There is minimal visibility due to curves in the road on the north and south side of the project. Additional vehicles crossing at this location may cause an increase in traffic hazards. This is a potentially significant impact if not mitigated for.

The following project-specific measure would reduce this potentially significant impact to a less-than-significant level:

**Mitigation Measure TRN-3: Install Traffic Signs**

DWR can install traffic signs at the south and north end of the project along Marty and Butte Slough Roads at locations before the curves in the road as deemed appropriate by Sutter and Colusa Counties as well as the California Department of Transportation.

**e) Result in inadequate emergency access?**

*Less Than Significant Impact.* During construction activities, there could be slight delays to emergency access due to temporary lane closures and construction vehicles accessing the site. Construction activities would be short-term and temporary, and emergency vehicles would be waved through during single lane closures. There will be two days during project construction that vehicle access through the site via Butte Slough Road and Marty Road will be restricted. During this time, all vehicles, including emergency vehicles, will be routed via a clearly marked detour. The road closure and detour are short-term and would not cause a significant impact to emergency access.

**f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or**

**safety of such facilities?**

*No Impact.* The road adjacent to the project does not have sidewalks or a designated bicycle lane. The project will not conflict with alternative transportation plans.

## 6.19 Utilities and Service Systems

### 6.19.1 Environmental Setting

BSOG is located in a rural part of Sutter and Colusa Counties. There are no major utility corridors within the project site. There is one 110 volt utility line, with two power poles within the project footprint, running parallel to Butte Slough/Marty Rd. on the Butte Slough side of the project. The power line may have to be temporarily relocated during project construction to allow equipment access to the site. If the line is temporarily relocated, there may be a brief disruption of power service to residents and businesses located near the project site.

The project involves construction of electrical conduits running from the inlet structure to the outlet structure by open trench excavating through the levee, or by jack and bore through the levee. After installation of the conduits, the levee will be restored to its previous condition by backfilling and grouting around the electrical conduits. The project may also require connecting to a power source located several hundred feet north of the project site. This may be done by trenching a five-foot deep trench and laying conduit.

Post-construction O&M activities will not cause any potential utilities and service systems impacts.

### 6.19.2 Environmental Checklist and Discussion

<b>UTILITIES AND SERVICE SYSTEMS:</b>	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**UTILITIES AND SERVICE SYSTEMS:**

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Degrade the level of service of a public utility or service system or result in substantial adverse physical effects associated with relocating utility infrastructure? (CVFPP PEIR)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?**

*No impact.* The proposed project involves construction to rehabilitate an existing flood control structure. It does not include new urban uses (e.g., residential, commercial land, or industrial) that would directly increase the demand for wastewater treatment.

**b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

*No impact.* The proposed project involves construction to rehabilitate an existing flood control structure. It does not include new urban uses (e.g., residential, commercial land, or industrial) that would require or result in the construction of new water or wastewater treatment facilities or require new or expanded facilities.

**c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

*No impact.* The proposed project involves construction to rehabilitate an existing flood control structure. It does not include new urban uses (e.g., residential, commercial land, or industrial) that would directly result in the construction of new storm water drainage facilities or the expansion of existing facilities.

**d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?**

*No impact.* The proposed project involves construction to rehabilitate an existing flood control structure. It does not include new urban uses (e.g., residential, commercial land, or industrial) that would directly result in an increased demand or change of entitlements of water supply.

**e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

*No impact.* The proposed project involves construction to rehabilitate an existing flood control structure. It does not include new urban uses (e.g., residential, commercial land, or industrial) that could generate any new sources of wastewater.

**f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?**

*No impact.* Excavated materials will be reused on site as fill around the structures and compacted embankment, as much as practicable. Excavated fill that is unsuitable to be used as backfill and material from demolition of existing structures will be hauled off-site for beneficial reuse or to an approved landfill.

**g) Comply with federal, state, and local statutes and regulations related to solid waste?**

*No impact.* All solid waste activities will comply with federal, state and local statutes

and regulations.

**h) Degrade the level of service of a public utility or service system or result in substantial adverse physical effects associated with relocating utility infrastructure?**

Less than significant impact. The power line may have to be temporarily relocated during project construction to allow equipment access to the site. If the line is temporarily relocated, there may be a brief disruption of power service to residents and businesses located near the project site. The Pacific Gas and Electric Company will conduct relocation of the power line and poles and all customers will be notified in advance of potential power outages. Prior to conducting work, the project area will be surveyed to locate and identify any underground gas pipes or electrical lines within the project area.

## 6.20 Water Quality

### 6.20.1 Environmental Setting

The project and borrow sites are located within the Sacramento River watershed. The watershed drains a large area that includes land uses that have the potential to affect water quality. These pollutants include but are not limited to fertilizers, pesticides and herbicides (from the agricultural runoff and activities which is very widespread in Sutter County and near the project and borrow sites), sediment from erosion, and general urban runoff pollutants such as heavy metals, oils, lubricants, etc. (PBS&J 2008). Sacramento River is not used for municipal or domestic water supplies in the county but supports other beneficial uses, including recreational, agricultural, and wildlife (which are all discussed in further detail in their respective sections).

According to the Central Valley Regional Water Quality Control Board's (Central Valley RWQCB) CWA Section 303(d) listings for the Sacramento River (between Red Bluff to Knights Landing), pollutants/stressors include DDT and dieldrin (pesticides) from agriculture, mercury from resource extraction, and PCBs (Polychlorinated biphenyls) from unknown source(s). The main pollutant in Sutter Bypass is mercury from resource extraction (SWRCB 2014, CVFPP 2012).

Potential impacts to water quality from on-going O&M activities will be similar to or less than current O&M activities. Structure-related maintenance and inspection activities are conducted on an annual basis or as needed. If dewatering of an area or water-disturbing work is required to conduct repair/inspections of a structure, applicable aquatic biological resource mitigation measures such as (or similar to) BIOAQ-2 described in the biological resources- aquatic environmental checklist and discussion will be implemented during these activities to make potential impacts less than significant.

### 6.20.2 Environmental Checklist and Discussion

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#### WATER QUALITY:

	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
Would the project...				
a) Violate applicable water quality standards or otherwise substantially degrade water quality	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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b) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in a substantial increase in the availability and mobilization of sediments and associated contaminants

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**a) Violate applicable water quality standards or otherwise substantially degrade water quality?**

*Less Than Significant Impact with Mitigation.* Current water flows from the Butte Slough into the Sacramento River can vary and can be highly turbid. The project has been designed to minimize soil disturbance and water quality degradation as much as possible. Construction equipment and activities could potentially degrade water quality, but preventative measures will be taken to place such as following permit requirements, placing silt fence at soil/water interfaces where soil might enter the waterways and implementing appropriate construction BMPs. Permanent stabilization and plantings on both the Butte Slough and Sacramento River sides will help to reduce post-construction water quality degradation.

Water quality will not be affected at the Tisdale Bypass site since activities will not occur directly adjacent to any waterways.

The following mitigation measures will be implemented to reduce impacts to less than significant:

**Mitigation Measure BIOAQ-1 - Secure Applicable State and/or Federal Permits and Implement Permit Requirements** (similar to *CVFPP PEIR Mitigation Measure BIO-A-2a - Secure State and Federal Permits and Implement Permit Requirements*)

**Mitigation Measure BIOAQ-2 - Pre-Construction Environmental Training, Site Preparation, and Monitoring**

**Mitigation Measure BIOAQ-5 - Implement Spill and Storm Water Pollution Prevention Plans**

**b) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in a substantial increase in the availability and mobilization of sediments and associated contaminants?**

*Less than Significant Impact.* There will be no significant alteration to drainage patterns of the BSOG and Tisdale Bypass borrow/spoil sites. There will be a minor reduction to

soil infiltration of BSOG levee due to construction of hard and impermeable concrete surfaces. Channel and slope protection as well as bank stabilization and plantings will reduce the mobilization of sediments and associated contaminants near the BSOG structure.

## 7 MANDATORY FINDINGS OF SIGNIFICANCE

MANDATORY FINDINGS OF SIGNIFICANCE – The lead agency shall find that a project may have a significant effect on the environment and thereby require an EIR to be prepared for the project where there is substantial evidence, in light of the whole record, that any of the following conditions may occur. Where prior to commencement of the environmental analysis a project proponent agrees to mitigation measures or project modifications that would avoid any significant effect on the environment or would mitigate the significant environmental effect, a lead agency need not prepare an EIR solely because without mitigation the environmental effects would have been significant (per Section 15065 of the State CEQA Guidelines):

Issues	Potentially Significant Impact	Less Than Significant Impact with Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of past, present and probable future projects)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

directly or indirectly?

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- a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

*Less than Significant with Mitigation.* As discussed in Sections 4.1 through 4.20 of this Initial Study, the proposed project would not significantly affect the environment. The project could have potential adverse effects on aesthetics, air quality, aquatic and terrestrial biological resources, geology and soils, hazards and hazardous materials, hydrology, noise, transportation and water quality but those temporary and short-term impacts would be reduced to less than significant by incorporating mitigation. The long-term benefits from the project include a reduction in environmental impacts (i.e. reduction in greenhouse gas emissions, erosion and habitat disturbance) from operations and maintenance activities.

- b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of past, present and probable future projects)?**

*Less than Significant with Mitigation.* Construction of the proposed project would result in short-term and temporary impacts that would mainly be limited to the project site. While impacts for resource areas such as air quality and greenhouse gas emissions would contribute to more regional impacts, these impacts would not be cumulatively considerable because of the relative small size of the proposed project.

- c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?**

*Less than Significant with Mitigation.* Mitigation measures have been provided to reduce the project’s potential effects on aesthetics, air quality, aquatic and terrestrial biological resources, geology and soils, hazards and hazardous materials, hydrology, noise, transportation and water quality. These mitigation measures address the short-term and temporary impacts associated with construction. The long-term benefits from the project include ensuring that the structure is reliable and functional and that daily and emergency flood operations can be conducted in a safe and efficient manner so that public safety concerns are met. All other impacts to resources in this Initial Study are less than significant or no impact.

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## 9 SUPPORTING INFORMATION SOURCES

### 9.1 Appendix A- BSOG Rehabilitation Project Roadway Construction Emissions Model

#### Road Construction Emissions Model, Version 7.1.5.1

Emission Estimates for -> Butte Slough Outfall Gates Rehabilitation											
Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)	
Grubbing/Land Clearing	2.6	12.9	20.8	76.3	1.3	75.0	16.8	1.2	15.6	2,382.3	
Grading/Excavation	4.0	18.8	41.6	77.0	2.0	75.0	17.4	1.8	15.6	4,487.6	
Drainage/Utilities/Sub-Grade	2.3	11.9	16.5	101.1	1.1	100.0	21.8	1.0	20.8	2,089.8	
Paving	1.3	8.0	10.2	0.6	0.6	-	0.6	0.6	-	1,407.3	
Maximum (pounds/day)	4.0	18.8	41.6	101.1	2.0	100.0	21.8	1.8	20.8	4,487.6	
Total (tons/construction project)	0.4	2.1	4.3	9.9	0.2	9.7	2.2	0.2	2.0	478.6	
Notes: Project Start Year -> 2015											
Project Length (months) -> 12											
Total Project Area (acres) -> 8											
Maximum Area Disturbed/Day (acres) -> 8											
Total Soil Imported/Exported (yd <sup>3</sup> /day)-> 239											
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.											
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.											
Emission Estimates for -> Butte Slough Outfall Gates Rehabilitation											
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)	
Grubbing/Land Clearing	1.2	5.9	9.4	34.7	0.6	34.1	7.6	0.5	7.1	1,082.9	
Grading/Excavation	1.8	8.5	18.9	35.0	0.9	34.1	7.9	0.8	7.1	2,039.8	
Drainage/Utilities/Sub-Grade	1.0	5.4	7.5	46.0	0.5	45.5	9.9	0.5	9.5	949.9	
Paving	0.6	3.6	4.7	0.3	0.3	-	0.3	0.3	-	639.7	
Maximum (kilograms/day)	1.8	8.5	18.9	46.0	0.9	45.5	9.9	0.8	9.5	2,039.8	
Total (megagrams/construction project)	0.4	1.9	3.9	9.0	0.2	8.8	2.0	0.2	1.8	434.1	
Notes: Project Start Year -> 2015											
Project Length (months) -> 12											
Total Project Area (hectares) -> 3											
Maximum Area Disturbed/Day (hectares) -> 3											
Total Soil Imported/Exported (meters <sup>3</sup> /day)-> 183											
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.											
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.											

**Road Construction Emissions Model** Version 7.1.5.1

**Data Entry Worksheet**

Note: Required data input sections have a yellow background.  
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.  
The user is required to enter information in cells C10 through C25.



**Input Type**

Project Name	Butte Slough Outfall Gates Rehabilitation	
Construction Start Year	2015	Enter a Year between 2009 and 2025 (inclusive)
Project Type	3	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	12.00	months
Predominant Soil/Site Type: Enter 1, 2, or 3	1	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
Project Length	0.13	miles
Total Project Area	8.00	acres
Maximum Area Disturbed/Day	8.00	acres
Water Trucks Used?	1	1. Yes 2. No
Soil Imported	200.00	yd <sup>3</sup> /day
Soil Exported	39.39	yd <sup>3</sup> /day
Average Truck Capacity	40	yd <sup>3</sup> (assume 20 if unknown)

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells C34 through C37.

Construction Periods	User Override of	Program	2005		2006		2007	
	Construction Months	Calculated Months		%		%		%
Grubbing/Land Clearing	1.36	1.20	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	7.91	4.80	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	1.36	4.20	0.00	0.00	0.00	0.00	0.00	0.00
Paving	1.36	1.80	0.00	0.00	0.00	0.00	0.00	0.00
<b>Totals</b>	<b>12.00</b>	<b>12.00</b>						

**NOTE: soil hauling emissions are included in the Grading/Excavation Construction Period Phase, therefore the Construction Period for Grading/Excavation cannot be zero if hauling is part of the project.**

Hauling emission default values can be overridden in cells C45 through C46.

<b>Soil Hauling Emissions</b>		User Override of					
<b>User Input</b>		Soil Hauling Defaults	Default Values				
Miles/round trip		40.00	30				
Round trips/day		6.00	6				
Vehicle miles traveled/day (calculated)				240			
<b>Hauling Emissions</b>		<b>ROG</b>	<b>NOx</b>	<b>CO</b>	<b>PM10</b>	<b>PM2.5</b>	<b>CO2</b>
Emission rate (grams/mile)		0.25	9.41	1.09	0.22	0.15	1694.67
Emission rate (grams/trip)		0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day		0.13	4.97	0.57	0.12	0.08	895.86
Tons per construction period		0.01	0.43	0.05	0.01	0.01	77.95

Worker commute default values can be overridden in cells C60 through C65.

<b>Worker Commute Emissions</b>		User Override of Worker					
		Commute Default Values	Default Values				
Miles/ one-way trip		60.00	20				
One-way trips/day		1.00	2				
No. of employees: Grubbing/Land Clearing		7.00	8				
No. of employees: Grading/Excavation		7.00	38				
No. of employees: Drainage/Utilities/Sub-Grade		7.00	28				
No. of employees: Paving		7.00	13				
		<b>ROG</b>	<b>NOx</b>	<b>CO</b>	<b>PM10</b>	<b>PM2.5</b>	<b>CO2</b>
Emission rate - Grubbing/Land Clearing (grams/mile)		0.164	0.219	1.956	0.047	0.020	443.518
Emission rate - Grading/Excavation (grams/mile)		0.164	0.219	1.956	0.047	0.020	443.518
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)		0.164	0.219	1.956	0.047	0.020	443.518
Emission rate - Paving (grams/mile)		0.164	0.219	1.956	0.047	0.020	443.518
Emission rate - Grubbing/Land Clearing (grams/trip)		0.558	0.363	4.666	0.004	0.003	95.528
Emission rate - Grading/Excavation (grams/trip)		0.558	0.363	4.666	0.004	0.003	95.528
Emission rate - Draining/Utilities/Sub-Grade (gr/trip)		0.558	0.363	4.666	0.004	0.003	95.528
Emission rate - Paving (grams/trip)		0.558	0.363	4.666	0.004	0.003	95.528
Pounds per day - Grubbing/Land Clearing		0.160	0.208	1.882	0.044	0.018	411.776
Tons per const. Period - Grub/Land Clear		0.002	0.003	0.028	0.001	0.000	6.175
Pounds per day - Grading/Excavation		0.160	0.208	1.882	0.044	0.018	411.776
Tons per const. Period - Grading/Excavation		0.014	0.018	0.164	0.004	0.002	35.829
Pounds per day - Drainage/Utilities/Sub-Grade		0.160	0.208	1.882	0.044	0.018	411.776
Tons per const. Period - Drain/Util/Sub-Grade		0.002	0.003	0.028	0.001	0.000	6.175
Pounds per day - Paving		0.160	0.208	1.882	0.044	0.018	411.776
Tons per const. Period - Paving		0.002	0.003	0.028	0.001	0.000	6.175
tons per construction period		0.021	0.028	0.248	0.006	0.002	54.354

Water truck default values can be overridden in cells C91 through C93 and E91 through E93.

Water Truck Emissions	User Override of	Program Estimate of	User Override of Truck	Default Values			
	Default # Water Trucks	Number of Water Trucks	Miles Traveled/Day	Miles Traveled/Day			
Grubbing/Land Clearing - Exhaust	1.00	2	2.00	80			
Grading/Excavation - Exhaust	1.00	2	2.00	80			
Drainage/Utilities/Subgrade	0.00	1	2.00	40			
	<b>ROG</b>	<b>NOx</b>	<b>CO</b>	<b>PM10</b>	<b>PM2.5</b>	<b>CO2</b>	
Emission rate - Grubbing/Land Clearing (grams/mile)	0.25	9.41	1.09	0.22	0.15	1694.67	
Emission rate - Grading/Excavation (grams/mile)	0.25	9.41	1.09	0.22	0.15	1694.67	
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.25	9.41	1.09	0.22	0.15	1694.67	
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.00	0.00	0.00	7.47	
Tons per const. Period - Grub/Land Clear	0.00	0.00	0.00	0.00	0.00	0.11	
Pound per day - Grading/Excavation	0.00	0.04	0.00	0.00	0.00	7.47	
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.65	
Pound per day - Drainage/Utilities/Subgrade	0.00	0.00	0.00	0.00	0.00	0.00	
Tons per const. Period - Drainage/Utilities/Subgrade	0.00	0.00	0.00	0.00	0.00	0.00	

Fugitive dust default values can be overridden in cells C110 through C112.

Fugitive Dust	User Override of Max	Default	PM10	PM10	PM2.5	PM2.5
	Acreage Disturbed/Day	Maximum Acreage/Day	pounds/day	tons/period	pounds/day	tons/period
Fugitive Dust - Grubbing/Land Clearing	5.00	8	75.0	1.1	15.6	0.2
Fugitive Dust - Grading/Excavation	5.00	8	75.0	4.0	15.6	0.8
Fugitive Dust - Drainage/Utilities/Subgrade	5.00	8	100.0	4.6	20.8	1.0

Off-Road Equipment Emissions									
Grubbing/Land Clearing	Default		Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	CO2 pounds/day
	Override of Default Number of Vehicles	Number of Vehicles <i>Program-estimate</i>							
0.00			Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Cranes	0.00	0.00	0.00	0.00	0.00	0.00
0.00		2	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.56		3	Excavators	0.25	1.56	2.75	0.14	0.12	320.77
0.05			Forklifts	0.01	0.05	0.10	0.01	0.01	8.27
0.38			Generator Sets	0.21	1.14	1.55	0.11	0.10	185.08
0.00			Graders	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Pavers	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.56			Plate Compactors	0.02	0.12	0.14	0.01	0.01	19.29
0.00			Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
1.50			Pumps	0.71	3.71	5.06	0.38	0.35	594.21
0.00			Rollers	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
0.56			Rubber Tired Dozers	0.74	2.47	7.97	0.37	0.34	528.99
0.00			Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
0.75		1	Signal Boards	0.30	1.05	1.03	0.08	0.07	118.08
0.00			Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
0.56			Tractors/Loaders/Backhoes	0.21	0.88	1.93	0.15	0.14	188.38
0.00			Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Welders	0.00	0.00	0.00	0.00	0.00	0.00
		Grubbing/Land Clearing	pounds per day	2.5	11.0	20.5	1.2	1.1	1963.1
		Grubbing/Land Clearing	tons per phase	0.0	0.2	0.3	0.0	0.0	29.4

Grading/Excavation	Default		ROG	CO	NOx	PM10	PM2.5	CO2
	Override of Default Number of Vehicles	Number of Vehicles <i>Program-estimate</i>						
0.00		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
0.51	2	Cranes	0.39	1.53	4.46	0.20	0.19	306.91
0.00	3	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.75	5	Excavators	0.33	2.09	3.68	0.18	0.17	429.60
0.00		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
0.75		Generator Sets	0.42	2.25	3.06	0.22	0.20	365.30
0.75	3	Graders	0.83	2.62	8.15	0.46	0.42	503.98
0.00		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Pavers	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Pumps	0.00	0.00	0.00	0.00	0.00	0.00
0.50	4	Rollers	0.19	0.75	1.67	0.12	0.11	139.78
0.00		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
0.75	4	Rubber Tired Loaders	0.41	2.34	5.13	0.18	0.16	497.00
0.40	5	Scrapers	0.61	2.90	7.48	0.30	0.28	643.65
0.75	1	Signal Boards	0.30	1.05	1.03	0.08	0.07	118.08
0.00		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
0.50	3	Tractors/Loaders/Backhoes	0.19	0.79	1.72	0.13	0.12	168.20
0.00		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Welders	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation	pounds per day	3.7	16.3	36.4	1.9	1.7	3172.5
	Grading	tons per phase	0.3	1.4	3.2	0.2	0.2	276.0

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles <i>Program-estimate</i>		ROG	CO	NOx	PM10	PM2.5	CO2
			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
0.08	2	Air Compressors	0.06	0.27	0.37	0.03	0.03	40.64
0.00		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Cranes	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Excavators	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
0.75	2	Generator Sets	0.42	2.25	3.06	0.22	0.20	365.30
0.20	3	Graders	0.22	0.70	2.17	0.12	0.11	134.40
0.00		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Pavers	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.30	2	Plate Compactors	0.01	0.06	0.08	0.00	0.00	10.33
0.00		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
1.50	2	Pumps	0.71	3.71	5.06	0.38	0.35	594.21
0.00		Rollers	0.00	0.00	0.00	0.00	0.00	0.00
0.08	2	Rough Terrain Forklifts	0.02	0.16	0.24	0.01	0.01	29.81
0.00		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
0.16	5	Scrapers	0.24	1.16	2.99	0.12	0.11	257.46
0.75	1	Signal Boards	0.30	1.05	1.03	0.08	0.07	118.08
0.00		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
0.38	3	Tractors/Loaders/Backhoes	0.14	0.60	1.31	0.10	0.09	127.83
0.00		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Welders	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage	pounds per day	2.1	10.0	16.3	1.1	1.0	1678.0
	Drainage	tons per phase	0.0	0.1	0.2	0.0	0.0	25.2

Paving	Default		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	CO2 pounds/day
	Override of Default Number of Vehicles	Number of Vehicles Program-estimate						
0.00		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Cranes	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Excavators	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Graders	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.45	2	Pavers	0.21	1.28	2.29	0.11	0.11	216.69
0.90	2	Paving Equipment	0.32	2.42	3.65	0.18	0.16	383.56
0.00		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Pumps	0.00	0.00	0.00	0.00	0.00	0.00
0.45	2	Rollers	0.17	0.68	1.50	0.11	0.10	125.80
0.00		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
0.75	1	Signal Boards	0.30	1.05	1.03	0.08	0.07	118.08
0.00		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
0.45	3	Tractors/Loaders/Backhoes	0.17	0.71	1.55	0.12	0.11	151.38
0.00		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
0.00		Welders	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	pounds per day	1.2	6.1	10.0	0.6	0.6	995.5
	Paving	tons per phase	0.0	0.1	0.2	0.0	0.0	14.9
<b>Total Emissions all Phases (tons per construction period) =&gt;</b>			<b>0.4</b>	<b>1.8</b>	<b>3.9</b>	<b>0.2</b>	<b>0.2</b>	<b>345.6</b>

Equipment default values for horsepower and hours/day can be overridden in cells C289 through C322 and E289 through E322.

Equipment	Default Values Horsepower	Default Values Hours/day
Aerial Lifts	63	8
Air Compressors	106	8
Bore/Drill Rigs	206	8
Cement and Mortar Mixers	10	8
Concrete/Industrial Saws	64	8
Cranes	226	8
Crawler Tractors	208	8
Crushing/Proc. Equipment	142	8
Excavators	163	8
Forklifts	89	8
Generator Sets	66	8
Graders	175	8
Off-Highway Tractors	123	8
Off-Highway Trucks	400	8
Other Construction Equipment	172	8
Other General Industrial Equipment	88	8
Other Material Handling Equipment	167	8
Pavers	126	8
Paving Equipment	131	8
Plate Compactors	8	8
Pressure Washers	26	8
Pumps	53	8
Rollers	81	8
Rough Terrain Forklifts	100	8
Rubber Tired Dozers	255	8
Rubber Tired Loaders	200	8
Scrapers	362	8
Signal Boards	20	8
Skid Steer Loaders	65	8
Surfacing Equipment	254	8
Sweepers/Scrubbers	64	8
Tractors/Loaders/Backhoes	98	8
Trenchers	81	8
Welders	45	8

END OF DATA ENTRY SHEET

0

## 9.2 Appendix B- DWR GHG Emission Reduction Plan Consistency Determination Checklist

### DWR GHG Emissions Reduction Plan Consistency Determination Form For Projects Using Contractors or Other Outside Labor

Print Form



California Department of Water Resources  
1416 9th Street  
Sacramento, CA 95814  
[dwrclimatechange.water.ca.gov](http://dwrclimatechange.water.ca.gov)  
[www.water.ca.gov/climatechange](http://www.water.ca.gov/climatechange)

This form is to be used by DWR project managers to document a DWR CEQA project's consistency with the DWR Greenhouse Gas Emissions Reduction Plan. This form is to be used only when DWR is the Lead Agency and when contractors or outside labor and equipment are used to implement the project.

Additional Guidance on filling out this form can be found at: [dwrclimatechange.water.ca.gov/guidance\\_resources.cfm](http://dwrclimatechange.water.ca.gov/guidance_resources.cfm)

The DWR Greenhouse Gas Emissions Reduction Plan can be accessed at: <http://www.water.ca.gov/climatechange/CAP.cfm>

<b>Project Name:</b>	Butte Slough Outfall Gates Rehabilitation
<b>Environmental Document type:</b>	CEQA IS/MND
<b>Manager's Name:</b>	Stephanie Chun
<b>Manager's email:</b>	Stephanie.chun@water.ca.gov
<b>Division:</b>	Flood Management
<b>Office, Branch, or Field Division</b>	Flood Maintenance Office

**Short Project Description:**

The California Department of Water Resources (DWR) Flood Maintenance Office (FMO) proposes to restore and modernize the Butte Slough Outfall Gates (BSOG). This structure was built in 1935 and is important to the flood control system as it enables flood and agricultural water runoff regulation and equilibrium. Project activities include rehabilitation of the structure and outfall gates; establishing an on-site control facility and backup power sources; and implementation of structural and operational measures that will reduce long-term environmental impacts. These modifications will extend the functional life of the structure and provide safer and more reliable outfall gate operations.

**Project GHG Emissions Summary**

Total Construction Emissions	542.3	mtCO <sub>2</sub> e
Maximum Annual Construction Emissions	<del>10.85</del>	mtCO <sub>2</sub> e

*< 542 ok*

All other emissions from the project not accounted for above will occur as ongoing operational, maintenance, or business activity emissions and therefore have already been accounted for and analyzed in the GGERP.

**Extraordinary Construction Project Determination**  
Do total project construction emissions exceed 25,000 mtCO<sub>2</sub>e for the entire construction phase or exceed 12,500 mtCO<sub>2</sub>e in any single year of construction.

Yes - Additional analysis is required, consult with C4  
 No - Additional analysis not required

**Project GHG Reduction Plan Checklist**

All Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project. (Project Level GHG Emissions Reduction Measures)

Or

All feasible Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project and and Measures not incorporated have been listed and determined not be apply to the proposed project (include as an attachment)

Project does not conflict with any of the Specific Action GHG Emissions Reduction Measures (Specific Action GHG Emissions Reduction Measures)

Would implementation of the project result in additional energy demands on the SWP system of 15 GWh/yr or greater?

Yes  No

If you answered Yes, attach a Renewable Power Procurement Plan update approval letter from the DWR SWP Power and Risk Office.

Is there substantial evidence that the effects of the proposed project may be cumulatively considerable notwithstanding the proposed project's compliance with the requirements of the DWR GHG Reduction Plan?

Yes  No

If you answered Yes, the project is not eligible for streamlined analysis of GHG emissions using the DWR GHG Emissions Reduction Plan. (See CEQA Guidelines, section 15183.5, subdivision (b)(2).)

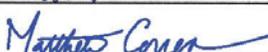
Based on the information provided above and information provided in associated environmental documentation completed pursuant to the above referenced project, the DWR CEQA Climate Change Committee has determined that the proposed project is consistent with the DWR Greenhouse Gas Reduction Plan and the greenhouse gasses emitted by the project are covered by the plan's analysis.

Project Manager  
Signature:



Date: 7/17/14

C4 Approval  
Signature:



Date: 7/23/14

Attachments:

- GHG Emissions Inventory
- List and Explanation of excluded Project Level GHG Emissions Reduction Measures
- Plan to update Renewable Energy Procurement Plan from DWR SWP Power and Risk Office

**BUTTE SLOUGH OUTFALL GATES REHABILITATION - Inventory and Calculation of Greenhouse Gas Emissions**

5/20/2014

Line	Type of Equipment	Maximum Number per Day	Total Operation Days	Total Operation Hours <sup>1</sup>	Fuel Consumption Per Hour <sup>2</sup>	Total Fuel Consumption (gal. diesel)	CO <sub>2</sub> e/gal diesel <sup>3</sup>	Total CO <sub>2</sub> Equivalent Emissions (metric tons)
1	Generator (dewatering)	1	11	176	2	352	0.010391	3.66
2	Generator	1	146	2336	2	4,672	0.010391	48.55
3	Water Truck	1	20	160	3	480	0.010391	4.99
4	Water Pump	4	22	352	2	704	0.010391	7.32
5	Backhoe	2	41	656	3	1,968	0.010391	20.45
6	Bobcats	1	41	656	2	1,312	0.010391	13.63
7	Excavator	2	60	960	8	7,680	0.010391	79.81
8	Bulldozer	1	23	368	13	4,784	0.010391	49.71
9	Compactor	1	35	560	18	10,080	0.010391	104.75
10	Walk-behind Compactor	1	17	272	4	1,088	0.010391	11.31
11	Crane	2	42	672	10	6,720	0.010391	69.83
12	Forklift	1	13	208	3	624	0.010391	6.48
13	Tree Trimming Truck	1	5	40	8	320	0.010391	3.33
14	Concrete Pump	2	15	240	2	480	0.010391	4.99
15	Supervisor Truck	6	180	480	3	1,440	0.010391	14.96
16	Service Truck	4	90	240	3	720	0.010391	7.48
18	<b>TOTAL</b>					<b>43,424</b>		<b>451</b>

<sup>1</sup> An 8-hour work day is assumed.

<sup>2</sup> California Air Resource Board Offroad 2007 Emissions Inventory fuel consumption factors

<sup>3</sup> World Resources Institute-Mobile combustion CO<sub>2</sub> emissions tool, June 2003 Version 1.2

<sup>4</sup> Barge is an option for the contractor to transport equipment & material by water and may not be used.

**23 Emissions from Transportation of Construction Workforce**

	Average Number of Workers per Day	Total Number of Workdays	Average Distance Travelled (round trip)	Total Miles Travelled	Average Passenger Vehicle Fuel Efficiency <sup>4</sup>	Total Fuel Consumption (gal. gasoline)	CO <sub>2</sub> e/gal Gasoline <sup>3</sup>	Total CO <sub>2</sub> Equivalent Emissions (metric tons)
24								
25	7	253	40	70840	20.8	3405.8	0.00901	30.7

<sup>4</sup> United States Environmental Protection Agency. 2008. Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008. [EPA420-R-08-015]

**28 Emissions from Transportation of Construction Materials**

	Trip Type	Total Number of Trips	Average Trip Distance	Total Miles Travelled	Average Semi-truck Fuel Efficiency	Total Fuel Consumption (gal. diesel)	CO <sub>2</sub> e/gal Diesel <sup>3</sup>	Total CO <sub>2</sub> Equivalent Emissions (metric tons)
29								
30	Mobilize Demob	26	60	1560	6	260.00	0.010391	2.70
31	Delivery	575	55	31625	6	5270.83	0.010391	54.77
32	Temporary Structure (Cofferdam)	15	60	900	6	150.00	0.010391	1.56
33	Spoils	20	40	800	6	133.33	0.010391	1.39
34	<b>TOTAL</b>							<b>60.42</b>

**36 Construction Electricity Emissions**

	MWh of electricity	mtCO <sub>2</sub> e/MWh <sup>5</sup>	CO <sub>2</sub> e emissions
37			
38	Electricity Needed	0.310	0

<sup>5</sup> eGRID2010 Version 1.0, February 2011 (Year 2007 data) CAMX-WECC sub-region.

**41 Total Construction Activity Emissions** 542.3 (from lines 17, 24, 39 and 43)

**42 Total Years of Construction**

**43 Expected Start Date of Construction**

**44**

**45 Estimated Project Useful life** 50 Years

**46 Average Annual Total GHG Emissions<sup>7</sup>** 10.85 MT CO<sub>2</sub> equivalents

**47**<sup>7</sup>short-term construction emissions amortized over life of project

### 9.3 Appendix C- Noise Analysis

#### Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 07/16/2014  
 Case Description: BSOG Cofferdams

#### \*\*\*\* Receptor #1 \*\*\*\*

Description	Baselines (dBA)			
	Land Use	Daytime	Evening	Night
Sutter County ME Residence	Residential	50.0	50.0	50.0

Description	Equipment					
	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Vibratory Pile Driver	No	20	100.8	100.8	200.0	0.0
Vibratory Pile Driver	No	20	100.8	100.8	290.0	10.0
Crane	No	16	80.6	80.6	200.0	0.0
Crane	No	16	80.6	80.6	290.0	10.0

#### Results

Equipment	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Vibratory Pile Driver	88.8	81.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vibratory Pile Driver	75.6	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	68.5	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	55.3	47.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	88.8	82.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

#### \*\*\*\* Receptor #2 \*\*\*\*

Description	Baselines (dBA)			
	Land Use	Daytime	Evening	Night
Colusa County ME Residence	Residential	50.0	50.0	50.0

Description	Equipment			
	Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage (%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Vibratory Pile Driver	No	20	20	100.8	200.0	0.0
Vibratory Pile Driver	No	20	20	100.8	440.0	10.0
Crane	No	16	80.6	100.0	0.0	
Crane	No	16	80.6	380.0	10.0	

Results

Equipment Lmax Leq	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Vibratory Pile Driver N/A N/A	88.8	81.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vibratory Pile Driver N/A N/A	71.9	64.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane N/A	74.5	66.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane N/A	52.9	45.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total N/A	88.8	82.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #3 \*\*\*\*

Description	Baselines (dBA)		
	Land Use	Daytime	Evening Night
Colusa Marina Building	Residential	50.0	50.0 50.0

Equipment

Description	Impact Device	Usage (%)	Spec Actual		Receptor Estimated	
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Vibratory Pile Driver	No	20	20	100.8	115.0	0.0
Vibratory Pile Driver	No	20	20	100.8	580.0	10.0
Crane	No	16	80.6	90.0	0.0	
Crane	No	16	80.6	530.0	10.0	

Results

Equipment Lmax Leq	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Vibratory Pile Driver N/A N/A	88.8	81.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vibratory Pile Driver N/A N/A	71.9	64.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane N/A	74.5	66.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane N/A	52.9	45.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total N/A	88.8	82.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Vibratory Pile Driver	93.6	86.6	N/A										
N/A	N/A												
Vibratory Pile Driver	69.5	62.5	N/A										
N/A	N/A												
Crane	75.4	67.5	N/A										
N/A													
Crane	50.0	42.1	N/A										
N/A													
Total	93.6	86.7	N/A										
N/A													

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 07/16/2014  
Case Description: BSOG Demolition and Excavation

\*\*\*\* Receptor #1 \*\*\*\*

Description	Baselines (dBA)			
	Land Use	Daytime	Evening	Night
Sutter County ME Residence	Residential	50.0	50.0	50.0

Description	Equipment					
	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Grader	No	40	85.0	40.0	0.0	
Compactor (ground)	No	20		83.2	40.0	0.0
Generator	No	50		80.6	200.0	5.0
Crane	No	16		80.6	300.0	0.0
Front End Loader	No	40		79.1	40.0	0.0
Excavator	No	40		80.7	95.0	10.0
Grader	No	40	85.0		95.0	10.0
Compactor (ground)	No	20		83.2	95.0	10.0
Generator	No	50		80.6	95.0	10.0
Crane	No	16		80.6	95.0	10.0
Front End Loader	No	40		79.1	95.0	10.0
Excavator	No	40		80.7	250.0	10.0
Grader	No	40	85.0		130.0	10.0
Compactor (ground)	No	20		83.2	250.0	10.0

Equipment Lmax Leq	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader N/A	86.9	83.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground) N/A N/A	85.2	78.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator N/A	63.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane N/A	65.0	57.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader N/A N/A	81.0	77.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A														
Grader	69.4	65.4	N/A											
N/A														
Compactor (ground)	67.7	60.7	N/A											
N/A	N/A													
Generator	65.1	62.0	N/A											
N/A														
Crane	65.0	57.0	N/A											
N/A														
Front End Loader	63.5	59.6	N/A											
N/A	N/A													
Excavator	56.7	52.8	N/A											
N/A														
Grader	66.7	62.7	N/A											
N/A														
Compactor (ground)	59.3	52.3	N/A											
N/A	N/A													
Total	86.9	85.1	N/A											
N/A														

\*\*\*\* Receptor #2 \*\*\*\*

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Colusa County ME Residence	Residential	50.0	50.0	50.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)
Grader	No	40	85.0		130.0	5.0
Compactor (ground)	No	20		83.2	130.0	5.0
Generator	No	50	80.6		130.0	5.0
Crane	No	16	80.6		200.0	0.0
Front End Loader	No	40		79.1	200.0	5.0
Excavator	No	40	80.7		200.0	10.0
Grader	No	40	85.0		200.0	10.0
Compactor (ground)	No	20		83.2	200.0	10.0
Generator	No	50	80.6		200.0	10.0
Crane	No	16	80.6		340.0	10.0
Front End Loader	No	40		79.1	225.0	10.0
Excavator	No	40	80.7		440.0	10.0
Grader	No	40	85.0		440.0	10.0
Compactor (ground)	No	20		83.2	440.0	10.0

Calculated (dBA)	Noise Limits (dBA)			Noise Limit Exceedance (dBA)		
	Day	Evening	Night	Day	Evening	Night

Equipment Lmax Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader N/A	71.7	67.7	N/A	N/A								
Compactor (ground) N/A N/A	69.9	62.9	N/A	N/A								
Generator N/A	67.3	64.3	N/A	N/A								
Crane N/A	68.5	60.6	N/A	N/A								
Front End Loader N/A N/A	62.1	58.1	N/A	N/A								
Excavator N/A	58.7	54.7	N/A	N/A								
Grader N/A	63.0	59.0	N/A	N/A								
Compactor (ground) N/A N/A	61.2	54.2	N/A	N/A								
Generator N/A	58.6	55.6	N/A	N/A								
Crane N/A	53.9	45.9	N/A	N/A								
Front End Loader N/A N/A	56.0	52.1	N/A	N/A								
Excavator N/A	51.8	47.8	N/A	N/A								
Grader N/A	56.1	52.1	N/A	N/A								
Compactor (ground) N/A N/A	54.3	47.4	N/A	N/A								
Total	71.7	71.6	N/A	N/A								

\*\*\*\* Receptor #3 \*\*\*\*

Description	Baselines (dBA)		
	Land Use	Daytime	Evening Night
Colusa Marina Building	Residential	50.0	50.0 50.0

Description	Equipment				
	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Receptor Lmax (dBA)	Estimated Distance Shielding (feet) (dBA)
Grader	No	40	85.0	240.0	0.0
Compactor (ground)	No	20	83.2	240.0	0.0
Generator	No	50	80.6	240.0	0.0
Crane	No	16	80.6	240.0	0.0
Front End Loader	No	40	79.1	240.0	0.0
Excavator	No	40	80.7	375.0	10.0
Grader	No	40	85.0	375.0	10.0

Compactor (ground)	No	20	83.2	375.0	10.0
Generator	No	50	80.6	530.0	10.0
Crane	No	16	80.6	530.0	0.0
Front End Loader	No	40	79.1	375.0	10.0
Excavator	No	40	80.7	480.0	10.0
Grader	No	40	85.0	480.0	10.0
Compactor (ground)	No	20	83.2	480.0	10.0

Results

Equipment	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	71.4	67.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	69.6	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	67.0	64.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	66.9	59.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	53.2	49.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	57.5	53.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	55.7	48.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	50.1	47.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	60.0	52.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	51.6	47.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	51.1	47.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	55.4	51.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	53.6	46.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.4	71.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 07/16/2014  
Case Description: BSOG Foundation Pile Installation

\*\*\*\* Receptor #1 \*\*\*\*

Description	Baselines (dBA)				
	Land Use	Daytime	Evening	Night	
Sutter County ME Residence	Residential		50.0	50.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Crane	No	16	16	80.6	150.0	0.0	
Impact Pile Driver	Yes	20	20	101.3	260.0	0.0	
Crane	No	16	16	80.6	180.0	0.0	

Results

Equipment	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Impact Pile Driver	90.4	83.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	71.0	63.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	86.9	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	69.4	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	90.4	85.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #2 \*\*\*\*

Description	Baselines (dBA)				
	Land Use	Daytime	Evening	Night	
Colusa County ME Residence	Residential		50.0	50.0	50.0

Equipment

Spec Actual Receptor Estimated

Description	Impact Device	Usage (%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Impact Pile Driver	Yes	20	20	101.3	165.0	0.0
Crane	No	16	80.6	185.0	0.0	
Impact Pile Driver	Yes	20	20	101.3	340.0	0.0
Crane	No	16	80.6	315.0	0.0	

Results

Equipment Lmax Leq	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Impact Pile Driver N/A	90.9	83.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane N/A	69.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver N/A	84.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane N/A	64.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total N/A	90.9	84.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #3 \*\*\*\*

Description	Baselines (dBA)		
	Land Use	Daytime	Evening Night
Colusa Marina Building	Residential	50.0	50.0 50.0

Equipment

Description	Impact Device	Usage (%)	Spec Actual		Receptor Estimated	
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Impact Pile Driver	Yes	20	20	101.3	250.0	0.0
Crane	No	16	80.6	300.0	0.0	
Impact Pile Driver	Yes	20	20	101.3	470.0	0.0
Crane	No	16	80.6	530.0	0.0	

Results

Equipment Lmax Leq	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Impact Pile Driver	90.9	83.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	69.2	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	84.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	64.6	56.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	90.9	84.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Impact Pile Driver N/A	87.3	80.3	N/A											
Crane N/A	65.0	57.0	N/A											
Impact Pile Driver N/A	81.8	74.8	N/A											
Crane N/A	60.0	52.1	N/A											
<b>Total</b> N/A	<b>87.3</b>	<b>81.4</b>	N/A											

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 07/16/2014  
 Case Description: B SOG Wing Wlls

\*\*\*\* Receptor #1 \*\*\*\*

Description	Baselines (dBA)		
	Land Use	Daytime	Evening Night
Sutter County ME Residence	Residential	50.0	50.0 50.0

Equipment

Description	Impact Device	Usage (%)	Spec	Actual	Receptor	Estimated	Shielding (dBA)
			Lmax (dBA)	Lmax (dBA)	Distance (feet)		
Vibratory Pile Driver	No	20	100.8	150.0	0.0		
Crane	No	16	80.6	200.0	0.0		

Results

Equipment	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Vibratory Pile Driver	91.3	84.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	68.5	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	91.3	84.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #2 \*\*\*\*

Description	Baselines (dBA)		
	Land Use	Daytime	Evening Night
Colusa County ME Residence	Residential	50.0	50.0 50.0

Equipment

Description	Impact Device	Usage (%)	Spec	Actual	Receptor	Estimated	Shielding (dBA)
			Lmax (dBA)	Lmax (dBA)	Distance (feet)		
Vibratory Pile Driver	No	20	100.8	150.0	0.0		
Crane	No	16	80.6	200.0	0.0		

Results													
-----													
Noise Limits (dBA)													
-----													
Calculated (dBA)		Day			Evening			Night			Noise Limit Exceedance (dBA)		
-----		-----			-----			-----			-----		
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Leq
Lmax	Leq	-----											
Vibratory Pile Driver	91.3	84.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	-----											
Crane	68.5	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	-----											
Total	91.3	84.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	-----											

\*\*\*\* Receptor #3 \*\*\*\*

Baselines (dBA)				
Description	Land Use	Daytime	Evening	Night
-----				
Colusa Marina Building	Residential	50.0	50.0	50.0

Equipment						
-----						
Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Vibratory Pile Driver	No	20	100.8	250.0	0.0	
Crane	No	16	80.6	280.0	0.0	

Results													
-----													
Noise Limits (dBA)													
-----													
Calculated (dBA)		Day			Evening			Night			Noise Limit Exceedance (dBA)		
-----		-----			-----			-----			-----		
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Leq
Lmax	Leq	-----											
Vibratory Pile Driver	86.8	79.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	-----											
Crane	65.6	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	-----											
Total	86.8	79.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	-----											

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 07/16/2014  
Case Description: BSOG Bank Stabilization

\*\*\*\* Receptor #1 \*\*\*\*

Description	Baselines (dBA)				
	Land Use	Daytime	Evening	Night	
Sutter County ME Residence	Residential		50.0	50.0	50.0

Description	Equipment					
	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compactor (ground)	No	20		83.2	150.0	5.0
Excavator	No	40		80.7	150.0	5.0
Grader	No	40		85.0	150.0	5.0

Equipment Lmax Leq	Results						Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night					
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq				
Compactor (ground)	68.7	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Excavator	66.2	62.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Grader	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Total	70.5	68.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				

\*\*\*\* Receptor #2 \*\*\*\*

Description	Baselines (dBA)				
	Land Use	Daytime	Evening	Night	
Colusa County ME Residence	Residential		50.0	50.0	50.0

Description	Equipment					
	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Compactor (ground)	No	20	83.2	130.0	5.0
Excavator	No	40	80.7	130.0	5.0
Grader	No	40	85.0	130.0	5.0

Results

Equipment Lmax Leq	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground) N/A N/A	69.9	62.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator N/A	67.4	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader N/A	71.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total N/A	71.7	70.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

\*\*\*\* Receptor #3 \*\*\*\*

Description	Baselines (dBA)			
	Land Use	Daytime	Evening	Night
Colusa Marina Building	Residential	50.0	50.0	50.0

Description	Equipment					
	Spec Impact Device	Actual Usage (%)	Receptor Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Compactor (ground)	No	20	83.2	130.0	5.0	
Excavator	No	40	80.7	130.0	5.0	
Grader	No	40	85.0	130.0	5.0	

Results

Equipment Lmax Leq	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground) N/A N/A	69.9	62.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator N/A	67.4	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader N/A	71.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A	Total	71.7	70.0	N/A										
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Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 07/16/2014  
 Case Description: BSOG Tisdale Borrow Site

\*\*\*\* Receptor #1 \*\*\*\*

Description	Baselines (dBA)		
	Land Use	Daytime	Evening Night
Sutter County ME Residence	Residential	50.0	50.0 50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Dump Truck	No	40	76.5	400.0	0.0	

Results

Equipment	Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	62.6	58.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck	58.4	54.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	62.6	60.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

## 10 INITIAL STUDY PREPARERS

### LEAD AGENCY

#### Flood Maintenance Office

Stephanie Chun ..... Sr. Environmental Scientist (Specialist), Document Preparation  
Erica Fong ..... Environmental Scientist, Document Preparation  
Jon Erickson ..... Principal Engineer/Office Chief, IS Review  
Scott Deal ..... Sr. Environmental Scientist (Supervisor), IS Review  
Mark List ..... Supervising Engineering Geologist, IS Review  
Melanie Powers ..... Environmental Scientist, Document Preparation Assistance  
Kip Young ..... Sr. Environmental Scientist (Specialist), Document Preparation Assistance  
Joy Nishida ..... Environmental Scientist, Document Preparation Assistance  
Kevin Brown ..... Sr. Engineering Geologist, Document Preparation Assistance  
Jeremy Schaffer ..... Engineer, IS Review  
Fred Gius ..... Sr. Engineering Geologist, Technical Review  
Joel Farias ..... Sutter Yard Assistant Superintendent, IS Review

#### Division of Engineering

Hassan Amin ..... Engineer, Document Preparation  
Dale Brown ..... Senior Engineer, Technical Review  
Chris Erickson ..... Sr. Environmental Scientist (Specialist), Technical Review

#### Office of Chief Counsel

Chris Martin ..... Attorney, IS Review

### IS/MND CONSULTANT

#### ESA

Minta Schaefer ..... Senior Associate, Document Preparation Assistance  
Chris Sanchez ..... Noise Analyst, Document Preparation Assistance