FINAL

SMITH CANAL GATE PROJECT ENVIRONMENTAL IMPACT REPORT

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Introduction and Approach to the Final EIR

Introduction

The Smith Canal Gate Project (project) final environmental impact report (Final EIR) has been prepared by the project's lead agency under the California Environmental Quality Act (CEQA), the San Joaquin Area Flood Control Agency (SJAFCA). A previous draft of this document, the draft environmental impact report (Draft EIR) was also prepared by SJAFCA and circulated for public comment between June 25, 2015 and August 10, 2015, in compliance with CEQA.

Document Organization and Content

The Final EIR contains the substance of the Draft EIR; namely, environmental setting, project description and alternatives, environmental effects analysis, and proposed mitigation measures. While its contents are consistent with the data and analysis presented in the Draft EIR that was circulated for public comment and review as noted above, text modifications have been made to reflect new or changed information or changes in response to public comment. Therefore, the content of the Final EIR replaces that of the Draft EIR in its entirety.

The Final EIR also includes a new chapter, Chapter 9, *Responses to Comments*, which summarizes public involvement in development of the Final EIR and contains a description of the document's approach to public comment response. Following the chapter introduction, each comment received is reproduced and included in body of Chapter 9, organized by State agencies, regional agencies, local agencies, and individuals. SJAFCA considered each agency and public comment provided and responded to comments individually within Chapter 9.

If a comment resulted in a change to the text of the Final EIR or the addition of a new plate, this is indicated within the comment response, and a cross-reference provided. No figures have been altered in response to comments. Public outreach efforts and notice and circulation of the Draft EIR are described in Appendix J, Public Comment Period Summary Report.

Smith Canal Gate Project Executive Summary

The San Joaquin Area Flood Control Agency (SJAFCA), in partnership with Reclamation Districts (RDs) 1614 and 828, is proposing the Smith Canal Gate Project (project) to build, operate, and maintain a fixed wall with a gate structure near the mouth of Smith Canal, in and adjacent to the city of Stockton, county of San Joaquin, primarily within the boundaries of RD 828 and RD 1614 (Figure ES-1). Smith Canal is a backwater slough of the Sacramento–San Joaquin River Delta (Delta), adjacent to the San Joaquin River across from Rough and Ready Island and the Port of Stockton.

Since 2008, when the Federal Emergency Management Agency (FEMA) revoked the accreditation of the levees surrounding Smith Canal, the area surrounding Smith Canal has been mapped as a Special Flood Hazard Area (SFHA). To address flood risk, SJAFCA is proposing to construct the wall and gate structure to remove the area from the 100-year floodplain and meet FEMA's minimum acceptable level of performance of withstanding a 100-year flood, which is the regulatory standard specified by the National Flood Insurance Program (NFIP). A 100-year flood is a flood event with a 1% chance of taking place in any given year. The proposed wall and gate and structure would be built to provide a minimum 200-year level of performance as required in the Central Valley Flood Protection Plan (CVFPP).

ES.1 Document Purpose and Structure

ES.1.1 Document Overview

This document is an Environmental Impact Report (EIR) and is intended to satisfy the requirements of the California Environmental Quality Act (CEQA) for disclosing impacts on the physical environment likely to be caused by a proposed project and its alternatives, as well as recommending mitigation measures to reduce such impacts. SJAFCA will utilize this document and related public comment in making a decision on project approval or disapproval. Specifically, this document analyzes the potential direct, indirect, cumulative, and growth-inducing environmental impacts of constructing and operating the proposed Smith Canal project, alternatives to the project, as well as the impacts of not undertaking the project. These impacts are analyzed at an equal level of detail for the proposed project and two project alternatives. In this EIR, potential impacts are organized and analyzed by environmental resource areas, such as Vegetation and Wetlands, Air Quality, and Cultural Resources. All phases of the proposed project, including construction and operation, are evaluated in the analysis.

ES.1.2 Resource Analysis Structure

Chapter 3 contains the project level analysis for the project. The structure of each resource section is described below.

- **Introduction.** This section introduces the scope of the resource analysis.
- **Existing Conditions.** This section includes two sections, *Regulatory Setting* and *Environmental Setting*.

- **Regulatory Setting.** This section lists and describes laws, regulations, and policies that affect the resource or the assessment of impacts on the resource. Often the regulatory framework is the basis for the conclusion of the level of significance and therefore plays a crucial role in impact assessment. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.
- **Environmental Setting.** This section provides an overview of the physical environmental conditions in the area at the time of, or prior to, the publication of the NOP that could be affected by implementation of the proposed alternatives in accordance with State CEQA Guidelines Section 15125.

- **Environmental Impacts.** This section describes the analysis of impacts relating to each resource area for each of the alternatives in accordance with State CEQA Guidelines Sections 15126, 15126.2, and 15143.
  - **Assessment Methods.** This section describes the methods, models, process, procedures, data sources, and/or assumptions used to conduct the impact analysis. Where possible, impacts are evaluated quantitatively. Where quantification is not possible, impacts are evaluated qualitatively.
  - **Thresholds of Significance.** This section provides the criteria used in this document to define the level at which an impact would be considered significant in accordance with CEQA. Significance criteria (sometimes called thresholds of significance) used in this Draft EIR are based on the checklist presented in Appendix G of the State CEQA Guidelines; factual or scientific information and data; and regulatory standards of Federal, state, and local agencies.
  - **Impacts and Mitigation Measures.** To comply with CEQA, the impacts are considered and evaluated as to whether they are direct, indirect, or cumulative. *Direct* impacts are those that are caused by the action and occur at the same time and place. *Indirect* impacts are reasonably foreseeable consequences to the physical environment that may occur at a later time or at a distance from the project area. *Cumulative* impacts for all resource areas are combined and discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

    The impacts and mitigation measures are listed numerically throughout each section. An impact or mitigation statement precedes the discussion of each impact or measure and provides a summary of the topic. The numbering system provides a mechanism for tracking unique impacts by resource area.

    Each impact is accompanied by a finding or conclusion, as required under CEQA. For the purposes of the analyses in this document, the impact findings are defined more specifically in Section ES.8, *Impacts Summary Table*.

ES.2 Project Location

The project area is located in the city of Stockton and unincorporated San Joaquin County, California, within the Secondary Zone of the Delta, as defined in the Delta Protection Act of 2009 and described in Section 12220 of the California Water Code. The project area includes Atherton Island, Atherton

Cove, Louis Park (including Dad's Point), the Stockton Golf and Country Club, and the portions of the San Joaquin River in the immediate vicinity. The area north of Smith Canal, Atherton Island, Atherton Cove and Stockton Golf and Country Club, is located in unincorporated San Joaquin County. Louis Park, including Dad's Point, is in the city of Stockton.

ES.3 Project Need, Purpose and Objectives

ES.3.1 Project Need

SJAFCA has identified five needs that led to the proposal to implement the Smith Canal project.

- Levee encroachment has prevented necessary patrol and maintenance of the levees.
- Levee encroachment has prevented performance of inspections, surveys, or subsurface investigations necessary to accredit the levees.
- Loss of FEMA accreditation requires mandatory flood insurance for the residents of the affected area carrying Federally-backed mortgages.
- Loss of FEMA accreditation restricts building and improvements in the area.
- As required by the Central Valley Flood Protection Act of 2008, the CVFPB will require 200-year flood protection by 2025 for urban and urbanizing areas, with building limitations taking effect after July 2016 if adequate progress toward achieving this standard is not made.

ES.3.2 Project Purpose

The primary purpose of the proposed project is to reacquire FEMA accreditation that was revoked in 2008 and remove the Special Flood Hazard Area (SFHA) designation from a large portion of central Stockton. Approximately 5,000 properties and approximately 15,000 residents were identified by FEMA as being in the FEMA 100-year floodplain, an area identified by FEMA as having an increased risk of flooding. In addition, based on topographical data recently developed by DWR, FEMA is currently proposing to remap the region to include an additional 3,000 parcels and 9,000 residents in the 100-year floodplain. Further, SJAFCA has a goal consistent with state law to provide a minimum 200-year level of flood risk–reduction performance by 2025. Isolation of Smith Canal from the San Joaquin River would remove the affected area from the 100-year floodplain, thereby improving the FEMA rating, and would contribute toward ultimate 200-year level of performance in combination with other area projects, in compliance with state law.

ES.3.3 Project Objectives

SJAFCA, as the CEQA lead agency, has set forth the following project objectives.

- Improve flood performance to secure FEMA accreditation within the funding capability of SJAFCA
- Reduce flood risk to contribute to minimum 200-year level of performance as mandated by SB 5 within the funding capability of SJAFCA.
- Construct improvements in accordance with DWR's Urban Levee Design Criteria (ULDC).

- Integrate compatibly with regional flood risk–reduction projects, including the LSJRFS and the *Lower San Joaquin and Delta South Regional Flood Management Plan* (RFMP).
- Construct a project that is economically, environmentally, politically, and socially acceptable.
- Construct a project as soon as possible to reduce flood risk, avoid mandatory flood insurance, and avoid building restrictions.
- Construct a project that considers the potential effects of climate change and is resilient to sea level rise while consistent with other project objectives.
- Provide multi-objective benefits where consistent with other project objectives, such as water quality and recreation enhancements.
- Facilitate compatibility with recreation goals for the area, including continued recreational boating access.
- Facilitate compatibility with existing land use in the area.

Avoid the use of eminent domain to obtain the necessary rights-of-way for project construction and maintenance corridors.

ES.4 Community Outreach, CEQA Noticing, and Agency Coordination

ES.4.1 Community Outreach

SJAFCA has implemented a public outreach program in order to communicate with the community about the project. SJAFCA has facilitated meetings to inform the public about the project's purpose, need, and schedule, as well communicated with affected residents and property owners through publication of newsletters describing project progress milestones. Thus far, SJAFCA has conducted the following public outreach activities:

- Held small group meetings adjacent to the project site with Atherton Cove and Atherton Island property owners on April 3, 2014, and May 29, 2014, respectively.
- Held a community meeting for property owners within the assessment district on April 17, 2014 to them of the design and environmental process and timeline, and provide an update on changes to the National Flood Insurance Program (NFIP).

ES.4.2 CEQA Noticing

In addition to general community outreach, SJAFCA has engaged the public through the CEQA noticing process.

- SJAFCA released a notice of preparation (NOP) to solicit input from the public and consult with responsible agencies on the action it is proposing to take as the CEQA lead agency on June 24, 2014, per State CEQA Guidelines Section 15082. The 30-day comment period began on June 25, 2014, and ended on July 25, 2014.
- SJAFCA published a legal notice announcing commencement of the scoping period in the Stockton Record on June 25, 2014.

- SJAFCA mailed postcards to landowners whose properties are located within 100 feet of the project area, as well as individuals who had previously expressed interest in the proposed project, inviting them to the public scoping meeting and informing them of the scoping period and commencement of the EIR preparation.
- SJAFCA posted notice on its website, www.sjafca.com/smith_canal_closure.php, in advance of the scoping meeting to publicize the meeting as well as commencement of the EIR process.
- SJAFCA held a public scoping meeting on July 16, 2014, which was attended by 40 people, to inform the public of the project and seek input on the scope of the EIR.

ES.4.3 Agency Consultation and Coordination

- On March 12, 2014, representatives from U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), California Department of Fish and Wildlife (CDFW) met with SJAFCA staff and representatives to discuss the species of concern in the region and possible impacts of the project. Agency staff also provided input on possible design alternatives to help SJAFCA with development of the proposed project and its alternatives.
- On October 27, 2014, SJAFCA representatives met with Delta Stewardship Council (DSC) staff to discuss the expected steps and timeline for SJAFCA's submittal of a Delta Plan Consistency Certification for public consideration. This meeting focused on a discussion of the project's scope at the conceptual level and introduced the covered action and certification processes to the project team. DSC staff provided feedback on procedural requirements, impact avoidance methods, and areas of likely public concern.

ES.4.4 Responsible and Trustee Agencies

This EIR will be used by Responsible and Trustee Agencies to determine the impacts of the proposed project. Responsible Agencies are those that may have a legal responsibility to approve the project. State and local Responsible Agencies are required to rely on the Lead Agency's environmental document in acting on whatever aspect of the project requires their approval but must prepare and issue their own findings regarding the project (State CEQA Guidelines Section 15096). Trustee Agencies are those that have jurisdiction over certain resources held in trust for the people of California but do not have legal authority over approving or carrying out the project. Responsible and Trustee Agencies for the project are presented in Table ES-1.

Table ES-1. Responsible and Trustee Agencies

Agency	Jurisdiction
Trustee Agency	
California Department of Conservation	Williamson Act lands
Responsible Agencies	
U.S. Army Corps of Engineers	Clean Water Act coordination
U.S. Coast Guard	Bridges
U.S. Environmental Protection Agency	NEPA and Clean Water Act coordination
U.S. Fish and Wildlife Service	Fish and wildlife and Endangered Species Act

Agency	Jurisdiction
National Marine Fisheries Service	Anadromous fish and Endangered Species Act
U.S. Department of Agriculture	Prime farmland conversion
California Department of Fish and Wildlife	Fish and wildlife Native plants designated as rare or endangered Game refuges Ecological reserves
California Department of Parks and Recreation, Division of Boating and Waterways	Boating safety
California Department of Parks and Recreation, Office of Historic Preservation	Historic and cultural resources
California State Lands Commission	State-owned "sovereign" lands
Central Valley Flood Protection Board	Levee modifications
California Air Resources Board	Air quality
Regional Water Quality Control Board (#5)	Water quality and discharges to water bodies
California Department of Water Resources	State water and flood management interests
San Joaquin County	Land use designations
San Joaquin County Air Pollution Control District	Air quality
City of Stockton	Land use designations
Reclamation District #1614	Levee operations and maintenance
Reclamation District #828	Levee operations and maintenance

In addition to the Trustee and Responsible Agencies listed above, DSC oversees the process by which other agencies certify project consistency with the Delta Plan, if the project is located within the legal Delta. The project is located within the secondary zone of the Delta.

ES.5 Issues of Known Controversy

Section 15123 of State CEQA Guidelines states that an EIR shall identify areas of controversy known to the lead agency, including issues raised by the agency as well as the public. Potentially controversial issues that were noted during the public scoping process and that may arise during the development of the project are discussed below.

ES.5.1 Level of Flood Risk and Project Need

During both earlier public outreach efforts and the CEQA scoping process, members of the affected community expressed concern that the flood risk identified by FEMA and addressed by the project had not been correctly assessed and had been overestimated. As there has never been a devastating flood in the area, the many locals are concerned that the project is an unnecessary expense to the community.

ES.5.2 Property Acquisition

Implementation of the project may require acquisition of interests in real estate along Dad's Point, within Smith Canal, along Atherton Cove and Atherton Island, and at the north bank tie-in point near the Stockton Golf and Country Club (described in Chapter 2, *Proposed Project and Alternatives*). Additionally, SJAFCA may need to acquire access easements through the Stockton Golf and Country Club to access the gate structure from the north for construction purposes and for long-term operations and maintenance purposes.

ES.5.3 Construction-Related Impacts

The proposed project would be built close to residential and recreational areas, as well as other developed land uses. Accordingly, activities associated with building the proposed project are likely to result in construction-related impacts related to public safety, recreation, navigation, noise and vibration, traffic, water quality and air quality.

ES.5.4 Operation-Related Impacts

ES.5.5 Impacts on the Local Viewshed

Community opposition to the project has focused on impacts on adjacent residences from project operation, including the potential for impacts to the viewshed caused by a large, fixed structure placed in or near Atherton Cove.

ES.5.6 Impacts on Water Quality

Community opposition to the project has also focused on impacts from project operation on water quality in Smith Canal. The installation and operation of a fixed wall and gate structure in Smith Canal or in adjacent water bodies could change the manner in which water currently flows in and out of Smith Canal. This alteration of existing conditions has the potential to reduce the water's rate of exchange, resulting in increased residence time and potential stagnation. Construction of wall structures may also result in the retention of floating debris, which can cause visual and water quality impacts.

ES.5.7 Impacts on Recreation Access

A fixed wall and gate structure would have the potential to affect the ease and safety of boating in Smith Canal and Atherton Cove and could reduce the ease with which boats can reach the San Joaquin River through these bodies.

ES.6 General Information about Alternatives

ES.6.1 Alternatives Development

Section 15126.6 of the State CEQA Guidelines directs lead agencies to analyze a "reasonable range" of alternatives in an EIR.

An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.

ES.6.2 Alternatives Screening Approach

The project need, purpose, and objectives were considered in developing the proposed project. For the purpose of alternative screening, SJAFCA utilized a two-tier screening method that prioritized the basic project objectives that alternatives must feasibly attain for consideration in the Draft EIR, placing emphasis on Tier 1 objectives. The first tier is essentially a *pass/fail* decision, with a *fail* rating eliminating an alternative from further consideration. The second tier may be rated on a variable scale of degree (i.e., a relative ranking like *high/medium/low*) rather than *pass/fail*. Public feedback through the environmental process is considered for all criteria.

The 10 criteria used for the alternatives screening process are listed below.

ES.6.2.1 Tier 1—Primary Project Objectives

- Improve the level of flood risk–reduction performance to secure FEMA accreditation within the funding capability of SJAFCA. This objective requires that a project alternative provide a 100-year level of performance. Additional requirements include providing access to the levee to perform patrol and maintenance activities, inspections, surveys, and subsurface investigations, if necessary.
- Reduce flood risk to contribute to achievement of minimum 200-year level of performance by 2025 as mandated by the Central Valley Flood Protection Act of 2008 [Senate Bill (SB) 5] within the funding capability of SJAFCA.
- Construct improvements in accordance with current ULDC, which requires that the levee structure have a 20-foot-wide landside access easement and a 15-foot-wide access easement on the waterside of the structure for maintenance and inspection purposes.

ES.6.2.2 Tier 2—Secondary Project Purpose and Objectives

- Integrate compatibility with regional flood risk–reduction projects, including the Lower San Joaquin River Feasibility Study, and the Lower San Joaquin and Delta South Regional Flood Management Plan.
- Construct a project that is economically, environmentally, politically, and socially acceptable.
- Construct a project as soon as possible to reduce flood risk, avoid mandatory flood insurance, and avoid building restrictions.
- Construct a project that considers the potential effects of climate change and is resilient to sea level rise while consistent with other project objectives.
- Provide multi-objective benefits when consistent with other project objectives, such as water quality, habitat, and recreation enhancements.

- Facilitate compatibility with existing recreation uses in the area, including recreational boating access.
- Facilitate compatibility with existing land use in the area.
- Avoid the use of eminent domain to obtain the necessary rights-of-way for project construction and maintenance corridors.

ES.7 Alternatives Carried Forward

Three alternatives were selected to be analyzed further in this Draft EIR based upon their ability to meet the project purpose and objectives as identified through the screening process. All three of these alternatives include variations of a gated fixed wall structure, as well as recreational and habitat improvements to Dad's Point and installation of culverts under Moreing Road to improve water circulation in that area. The estimated costs to construct the three alternatives carried forward are $29 million (Alternative 1), $51 million (Alternative 2), and $42 million (Alternative 3). Implementation of mitigation measures designed to offset the impacts of project construction and implementation as described in Chapter 3, *Environmental Setting and Impacts*, may not be included in these estimated costs.

ES.7.1 Alternative 1—Single Gated Wall to Dad's Point (Proposed Project)

Alternative 1, the proposed project, would reduce flood risk for approximately 8,000 properties behind the existing Smith Canal levees by constructing a gated fixed wall structure to isolate Atherton Cove and Smith Canal from the San Joaquin River during high flow and tide events (Plate 2-2). The gated fixed wall structure would be built with an additional 2.4 feet of elevation to account for both projected sea level rise through 2050 and hydraulic uncertainty, reducing future flood risk for these properties and those on Atherton Island. A fixed dual sheet pile wall filled with granular material would extend approximately 800 feet from the north tip of Dad's Point to the right bank of the San Joaquin River, at the Stockton Golf and Country Club, and would feature a 50-foot-wide gate that would be closed during high flow events forecast to approach or exceed design operating water surface elevations (8.0 feet, NAVD88). The gate would be closed only as needed for flood control, remaining open to allow for recreation, navigation, and tidal movement in Smith Canal. If deemed necessary to aid navigation, U.S. Coast Guard-approved lighting may be installed along the fixed wall structure and at the gate opening.

The opening portion of the gate structure would consist of a miter (double-door) gate structure, opening outwards towards the San Joaquin River. When open, the gate doors would recess into the gate structure, providing a 50-foot-wide opening (Plate 2-7). The structure would be opened and closed by electric motors located above water on top of each gate hinge. The gate panels would be attached to a concrete foundation using stainless steel anchor bolts. The gate panels would be gasket-sealed at their connection to the dual sheet pile wall structure and at the point where two panels come together.

The proposed project would also include construction of a 400-square-foot gate structure control building at the end of Dad's Point. The control building would be a single-story masonry building with a roof peak elevation of 15 feet above ground. If deemed necessary, low-level security lighting

may be installed to facilitate nighttime emergency access. The gate structure would be designed so it could be operated manually, using programmable preset operating controls, or remotely via a Supervisory Control and Data Acquisition (SCADA) system. In addition to allowing for remote operation of the gates, the SCADA system would be used to remotely monitor the water level at both sides of the gate, the gate position, the high water level alarm, and the intrusion alarm at the gate structure control building. The system would be monitored remotely by cameras during opening and closing.

Improvements to Dad's Point would also be implemented. Approximately 700 feet of the grade along Dad's Point would be raised to tie into high ground at Louis Park and to allow Dad's Point to serve as a levee when the gate structure is closed. A concrete retaining wall would be built to avoid changing the grade at the Louis Park boat launch area at the base of Dad's Point to complete the Dad's Point levee without constricting boat traffic. Other Dad's Point improvements would include installation of fishing and wildlife viewing platforms accessible to persons with disabilities, construction of a multi-use interpretive trail suitable for walking, running and bicycling with kiosks and benches, removal of invasive vegetation and planting of native landscaping, and installation of bat boxes, if suitable.

Also, to improve water quality in Atherton Cove through increased circulation, culverts consisting of three 48-inch corrugated metal pipes, each 75 feet in length, would be installed under Moreing Road, between Atherton Cove and Smith Canal, to facilitate movement of water under the roadway and lessen existing stagnation. The installation would be done in phases, starting with the south end of Moreing Road and finishing on the north end of Moreing Road.

ES.7.2 Alternative 2—Atherton Cove Floodwall with Smith Canal Gate

Alternative 2 would reduce flood risk for approximately 8,000 properties behind the existing Smith Canal levee, and attain 100-year level of performance, by constructing a gated fixed wall structure across Smith Canal to isolate Smith Canal from the San Joaquin River during high flow events, extending 225 feet across Smith Canal from Louis Park to Moreing Road (Plate 2-3). As in Alternative 1, the fixed wall would feature a 50-foot-wide gate that could be closed during high flow events. The gate would be closed only as needed for flood control, remaining open to allow for recreation, navigation, and tidal movement in Smith Canal. The gate design would be identical to the gate described in Alternative 1. However, unlike Alternative 1, Alternative 2 would not provide any protection to properties on Atherton Island against future flood risk associated with sea level rise.

Alternative 2 would also provide a 100-year level of performance by constructing a 2,300-foot double sheet pile floodwall along the waterside of the existing levee abutting the north side of Atherton Cove, tying into the existing FEMA-accredited levee at the Stockton Golf and Country Club. Alternative 2 includes the removal and reinstallation of existing boat docks and piers as part of the floodwall construction. During project construction, a SJAFCA representative would work with boat owners east of the gate to provide an alternative storage location for boats.

While the grade of Dad's Point would not be raised with Alternative 2 as it is with Alternative 1, habitat and recreation improvements to Dad's Point would be implemented and would include installation of ADA-accessible fishing and wildlife viewing platforms, construction of an multi-use interpretive trail suitable for walking, running, and bicycling with kiosks and benches, removal of invasive vegetation and planting of native landscaping, and installation of bat boxes, where suitable.

Alternative 2 would also include the installation of three 48-inch corrugated metal pipe culverts under Moreing Road, similar to Alternative 1.

ES.7.3 Alternative 3—Dual Gated Walls to Atherton Cove and Smith Canal

Alternative 3 would reduce flood risk for approximately 8,000 properties behind the existing Smith Canal levees by constructing two gated fixed wall structures across Smith Canal and Atherton Cove to isolate Atherton Cove and Smith Canal from the San Joaquin River (Plate 2-6) during high flow flood events. However, unlike Alternative 1, Alternative 3 would not provide any protection to properties on Atherton Island against future flood risk associated with sea level rise. One gated fixed wall would extend across Smith Canal approximately 250 feet from Louis Park to Atherton Island. A second gated fixed wall would extend approximately 650 feet across Atherton Cove from the northwest side of Atherton Island to the north bank of the San Joaquin River at the Stockton Golf and Country Club, tying in to the existing FEMA-accredited levee. Both fixed walls would feature 50-foot gates that will be closed during high flow and tide events. The gates would be closed only as needed for flood control, remaining open to allow for recreation, navigation, and tidal movement in Smith Canal. The gate design would be identical to the gate described in Alternative 1. In addition, an access road would be constructed along the tip of Atherton Island to provide access to the southern portion of the Atherton Island fixed wall structure.

As with Alternative 2, the grade of Dad's Point would not be raised with Alternative 3 as it is with Alternative 1, but habitat and recreation improvements to Dad's Point would be implemented. These improvements would include installation of ADA-accessible fishing and wildlife viewing platforms, construction of a multi-use interpretive trail suitable for walking, running, and bicycling, with kiosks and benches, removal of invasive vegetation and planting of native landscaping, and installation of bat]boxes, if suitable.

Alternative 3 would also include the installation of three 48-inch corrugated metal pipe culverts under Moreing Road, similar to Alternative 1.

ES.7.4 No Project Alternative

Identification and analysis of a no project alternative is required under CEQA. The purpose of a no project alternative is to serve as a benchmark against which the effects of a project may be evaluated. The No Project Alternative for the Smith Canal project assumes continuation of current conditions and operations/maintenance (O&M) practices that reasonably would be expected to occur in the foreseeable future if the project were not implemented.

Under the No Project Alternative, the FEMA accreditation would not be secured and the project area would continue to remain in the FEMA-designated Special Flood Hazard Area. The flood risks in the area would not be reduced, thereby continuing to expose approximately 5,000 properties and approximately 15,000 residents that were identified by FEMA as being in the 100-year floodplain, to an increased risk of flooding, along with an additional 3,000 parcels and 9,000 residents that FEMA is currently proposing to add to the 100-year floodplain based on topographical data recently developed by DWR. Failure to secure the accreditation from FEMA would require all residents to continue to obtain mandatory flood insurance and adhere to building restrictions.

ES.7.4.1 No Flood Risk–Reduction Measures Implemented under the No Project Alternative

Under the No Project Alternative, SJAFCA would not implement flood risk–reduction measures. The levees surrounding the canal would continue to require risk-reduction measures to meet minimum acceptable level of performance, as well as continue being deficient relative to the state's requirement for urbanized areas. In addition, the associated risk to human health and safety and property and the adverse economic effect that serious flooding could cause would continue, and the risk of a flood would remain high. Again, however, regular O&M of the levee system would continue as currently executed by the local maintaining entities.

Because of uncertainties in local, state, and Federal funding; future state and Federal authorization; and other approvals, it is not reasonable to predict construction of levee repairs in the foreseeable future within a reasonable timeframe (see below for further discussion). Therefore, for the purpose of evaluating effects under the No Project Alternative, this EIR assumes that a project to achieve FEMA recertification would not be implemented, the project objectives would not be met, and the current level of flood risk would continue, and increase as climate change and sea level rise increase.

ES.8 Environmentally Superior Alternative

Pursuant to State CEQA Guidelines Section 15126.6(e)(2), SJAFCA has determined Alternative 1, the proposed project, to be the environmentally superior alternative because, having the shortest construction schedule, it minimizes equipment emissions, temporary habitat effects, and construction-related disturbances to recreation facilities and the visual landscape. Further, it requires the least amount of real estate acquisition and land use change. Additionally, Alternative 1 is also the only alternative expected to be resilient to climate change and associated sea level rise, providing protection to areas presently considered to be outside the 100-year floodplain such as Atherton Island. While it may not have the fewest environmental effects across every resource category, SJAFCA has determined Alternative 1 results in the fewest impacts across all resource categories while maximizing environmental benefits.

ES.9 Impacts Summary Table

Table ES-2 provides a summary of impacts and mitigation measures for the Smith Canal Gate project, which are fully analyzed and discussed in Chapter 3, "Affected Environment and Environmental Consequences." Within each section of Chapter 3, as shown in Table ES-1, the impacts are listed numerically and sequentially throughout each section. An impact statement precedes the discussion of each impact and provides a summary of the impact topic. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each effect discussion. Similar to the impact descriptions, mitigation measures are listed numerically and sequentially throughout each section. The numbering system provides a mechanism for tracking unique effects and mitigation measures by resource area, using an acronym for each resource (e.g., Recreation is shorted to REC). The impacts are identified, for example, as "REC-1", and the mitigation measures as "REC-MM-1", etc.

Each impact is accompanied by a conclusion, as required under CEQA, defined below:

- **Beneficial.** This impact would provide benefit to the environment as defined for that resource.
- **No Impact.** This impact would cause no discernible change in the environment as measured by the applicable significance criterion; therefore, no mitigation would be required.
- **Less than Significant.** This impact would cause no substantial adverse change in the environment as measured by the applicable significance criterion; therefore, no mitigation would be required under CEQA but there may be mitigation per other environmental regulations.
- **Significant.** This impact would cause a substantial adverse change in the physical conditions of the environment. Impacts determined to be significant based on the significance criteria fall into two categories: those for which there is feasible mitigation available that would avoid or reduce the environmental impacts to less-than-significant levels and those for which either there is no feasible mitigation available or for which, even with implementation of feasible mitigation measures, there would remain a significant adverse impact on the environment. Those impacts that cannot be reduced to a less-than-significant level by mitigation are identified as significant and unavoidable, described below.
- **Significant and Unavoidable**. This impact would cause a substantial adverse change in the environment that cannot be avoided or mitigated to a less-than-significant level if the project is implemented. Even if the impact finding still is considered significant with the application of mitigation, the applicant is obligated to incorporate all feasible measures to reduce the severity of the impact.

Table ES-2. Summary of Impacts and Mitigation Measures for the Smith Canal Gate Project

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Flood Risk, Hydrology, and Geomorphology			
1	Impact FC-1: Increased Sedimentation from Reduction in Velocity Due to Channel Restriction	less than significant		
1	Impact FC-2: Increased Flood Risk from Confining Local Stormwater Runoff	no impact		
1	Impact FC-3: Erosion as a Result of Funneling Water through Gate	less than significant		
2	Impact FC-1: Increased Sedimentation from Reduction in Velocity Due to Channel Restriction	less than significant		
2	Impact FC-2: Increased Flood Risk from Confining Local Stormwater Runoff	no impact		
2	Impact FC-3: Erosion as a Result of Funneling Water through Gate	less than significant		
3	Impact FC-1: Increased Sedimentation from Reduction in Velocity Due to Channel Restriction	less than significant		
3	Impact FC-2: Increased Flood Risk from Confining Local Stormwater Runoff	no impact		
3	Impact FC-3: Erosion as a Result of Funneling Water through Gates	less than significant		

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Water Quality and Groundwater Resources			
1	Impact WQ-1: Violation of Water Quality Standards for Turbidity as a Result of Construction Activities	significant	Mitigation Measure WQ-MM-1a: Prepare and Implement a Turbidity Monitoring Program Mitigation Measure WQ-MM-1b: Implement Construction Best Management Practices Mitigation Measure WQ-MM-1c: Prepare and Implement a Stormwater Pollution Prevention Plan	less than significant
1	Impact WQ-2: Release of Contaminants into Adjacent Surface Water Bodies from Construction-Related Activities	significant	Mitigation Measure WQ-MM-1a: Prepare and Implement a Turbidity Monitoring Program Mitigation Measure WQ-MM-1b: Implement Construction Best Management Practices Mitigation Measure WQ-MM-1c: Prepare and Implement a Stormwater Pollution Prevention Plan	less than significant
1	Impact WQ-3: Accumulation of Contaminants, Organic Material, and Nutrients Resulting from a Reduction in Water Circulation in Atherton Cove and Smith Canal	less than significant		
1	Impact WQ-4: Reduction in Water Quality as a Result of Accumulation of Debris behind Fixed Dual Sheet Pile Walls	no impact		
1	Impact WQ-5: Reduction in Water Quality Associated with Increase in Water Hyacinth Resulting from Presence of Fixed Dual Sheet Pile Walls	no impact		
2	Impact WQ-1: Violation of Water Quality Standards for Turbidity as a Result of Construction Activities	significant	Mitigation Measure WQ-MM-1a: Prepare and Implement a Turbidity Monitoring Program Mitigation Measure WQ-MM-1b: Implement Construction Best Management Practices Mitigation Measure WQ-MM-1c: Prepare and Implement a Stormwater Pollution Prevention Plan	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Water Quality and Groundwater Resources (Continued)			
2	Impact WQ-2: Release of Contaminants into Adjacent Surface Water Bodies from Construction-Related Activities	significant	Mitigation Measure WQ-MM-1a: Prepare and Implement a Turbidity Monitoring Program Mitigation Measure WQ-MM-1b: Implement Construction Best Management Practices Mitigation Measure WQ-MM-1c: Prepare and Implement a Stormwater Pollution Prevention Plan	less than significant
2	Impact WQ-3: Accumulation of Contaminants, Organic Material, and Nutrients Resulting from a Reduction in Water Circulation in Smith Canal	beneficial		
2	Impact WQ-4: Reduction in Water Quality as a Result of Accumulation of Debris behind Fixed Dual Sheet Pile Walls	no impact		
2	Impact WQ-5: Reduction in Water Quality Associated with Increase in Water Hyacinth Resulting from Presence of Fixed Dual Sheet Pile Walls	no impact		
3	Impact WQ-1: Violation of Water Quality Standards for Turbidity as a Result of Construction Activities	significant	Mitigation Measure WQ-MM-1a: Prepare and Implement a Turbidity Monitoring Program Mitigation Measure WQ-MM-1b: Implement Construction Best Management Practices Mitigation Measure WQ-MM-1c: Prepare and Implement a Stormwater Pollution Prevention Plan	less than significant
3	Impact WQ-2: Release of Contaminants into Adjacent Surface Water Bodies from Construction-Related Activities	significant	Mitigation Measure WQ-MM-1a: Prepare and Implement a Turbidity Monitoring Program Mitigation Measure WQ-MM-1b: Implement Construction Best Management Practices Mitigation Measure WQ-MM-1c: Prepare and Implement a Stormwater Pollution Prevention Plan	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Water Quality and Groundwater Resources (Continued)			
3	Impact WQ-3: Accumulation of Contaminants, Organic Material, and Nutrients Resulting from a Reduction in Water Circulation in Atherton Cove and Smith Canal	less than significant		
3	Impact WQ-4: Reduction in Water Quality as a Result of Accumulation of Debris behind Fixed Dual Sheet Pile Walls	no impact		
3	Impact WQ-5: Reduction in Water Quality Associated with Increase in Water Hyacinth Resulting from Presence of Fixed Dual Sheet Pile Walls	no impact		
	Transportation and Navigation			
1	Impact TRA-1: Temporary Increase in Traffic Volumes from Construction-Generated Traffic	less than significant		
1	Impact TRA-2: Increase in Safety Hazard Attributable to Construction-Generated Deterioration of Roads	significant	Mitigation Measure TRA-MM-2: Implement Pavement Repairs	less than significant
1	Impact TRA-3: Conflicts between Construction Traffic and Local Traffic, Pedestrians, Bicyclists, and Bus Services	significant	Mitigation Measure TRA-MM-3: Implement a Construction Traffic Management Plan	less than significant
1	Impact TRA-4: Temporary Reduction in Parking Spaces	significant	Mitigation Measure TRA-MM-4a: Provide Satellite Construction Parking Areas Mitigation Measure TRA-MM-4b: Provide Additional Recreational Parking Areas	less than significant
1	Impact TRA-5: Temporary Changes to Navigation	less than significant		
2	Impact TRA-1: Temporary Increase in Traffic Volumes from Construction-Generated Traffic	less than significant		

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Transportation and Navigation (Continued)			
2	Impact TRA-2: Increase in Safety Hazard Attributable to Construction-Generated Deterioration of Roads	significant	Mitigation Measure TRA-MM-2: Implement Pavement Repairs	less than significant
2	Impact TRA-3: Conflicts between Construction Traffic and Local Traffic, Pedestrians, Bicyclists, and Bus Services	significant	Mitigation Measure TRA-MM-3: Implement a Construction Traffic Management Plan	less than significant
2	Impact TRA-4: Temporary Reduction in Parking Spaces	significant	Mitigation Measure TRA-MM-4a: Provide Satellite Construction Parking Areas Mitigation Measure TRA-MM-4b: Provide Recreational Parking Areas	less than significant
2	Impact TRA-5: Temporary Changes to Navigation	less than significant		
3	Impact TRA-1: Temporary Increase in Traffic Volumes from Construction-Generated Traffic	less than significant		
3	Impact TRA-2: Increase in Safety Hazard Attributable to Construction-Generated Deterioration of Roads	significant	Mitigation Measure TRA-MM-2: Implement Pavement Repairs	less than significant
3	Impact TRA-3: Conflicts between Construction Traffic and Local Traffic, Pedestrians, Bicyclists, and Bus Services	significant	Mitigation Measure TRA-MM-3: Implement a Construction Traffic Management Plan	less than significant
3	Impact TRA-4: Temporary Reduction in Parking Spaces	significant	Mitigation Measure TRA-MM-4a: Provide Satellite Construction Parking Areas Mitigation Measure TRA-MM-4b: Provide Recreational Parking Areas	less than significant
3	Impact TRA-5: Temporary Changes to Navigation	less than significant		

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Air Quality			
1	Impact AQ-1: Generation of Construction-Related Criteria Pollutant Emissions in Excess of San Joaquin Valley Air Pollution Control District Thresholds	significant	Mitigation Measure AQ-MM-1a: Prepare and Implement a Dust Control Plan to Reduce Fugitive Dust Emissions	less than significant
1	Impact AQ-2: Generation of Construction Emissions in Excess of San Joaquin Valley Air Pollution Control District Ambient Air Quality Screening-Level Thresholds	less than significant		
1	Impact AQ-3: Exposure of Sensitive Receptors to Substantial Pollutant Concentrations	significant	Mitigation Measure AQ-MM-1a: Prepare and Implement a Dust Control Plan to Reduce Fugitive Dust Emissions	less than significant
2	Impact AQ-1: Generation of Construction-Related Criteria Pollutant Emissions in Excess of San Joaquin Valley Air Pollution Control District Thresholds	significant	Mitigation Measure AQ-MM-1b: Implement SJVAPCD-Recommended Mitigation Measures to Reduce Construction-Related Exhaust Emissions Mitigation Measure AQ-MM-1c: Enter into a Voluntary Emissions Reduction Agreement with the SJVAPCD to Offset Construction-Related Emissions below SJVAPCD Thresholds Mitigation Measure AQ-MM-1a: Prepare and Implement a Dust Control Plan to Reduce Fugitive Dust Emissions	less than significant
2	Impact AQ-2: Generation of Construction Emissions in Excess of San Joaquin Valley Air Pollution Control District Ambient Air Quality Screening-Level Thresholds	significant	Mitigation Measure AQ-MM-1b: Implement SJVAPCD-Recommended Mitigation Measures to Reduce Construction-Related Exhaust Emissions Mitigation Measure AQ-MM-1c: Enter into a Voluntary Emissions Reduction Agreement with the SJVAPCD to Offset Construction-Related Emissions	less than significant
2	Impact AQ-3: Exposure of Sensitive Receptors to Substantial Pollutant Concentrations	significant	Mitigation Measure AQ-MM-1a: Prepare and Implement a Dust Control Plan to Reduce Fugitive Dust Emissions	less than significant
3	Impact AQ-1: Generation of Construction-Related Criteria Pollutant Emissions in Excess of San Joaquin Valley Air Pollution Control District Thresholds	significant	Mitigation Measure AQ-MM-1a: Prepare and Implement a Dust Control Plan to Reduce Fugitive Dust Emissions	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Air Quality (Continued)			
3	Impact AQ-2: Generation of Construction Emissions in Excess of San Joaquin Valley Air Pollution Control District Ambient Air Quality Analysis Screening-Level Thresholds	less than significant		
3	Impact AQ-3: Exposure of Sensitive Receptors to Substantial Pollutant Concentrations	significant	Mitigation Measure AQ-MM-1a: Prepare and Implement a Dust Control Plan to Reduce Fugitive Dust Emissions	less than significant
	Greenhouse Gases and Climate Change			
1	Impact GHG-1: Generate Construction-Related GHG Emissions in Excess of SJVAPCD Thresholds	less than significant		
1	Impact GHG-2: Expose Property and Persons to the Physical Effects of Climate Change, Including Flooding, Public Health, Wildfire Risk, or Other Impacts Resulting from Climate Change	less than significant		
2	Impact GHG-1: Generate Construction-Related GHG Emissions in Excess of SJVAPCD Thresholds	less than significant		
2	Impact GHG-2: Expose Property and Persons to the Physical Effects of Climate Change, Including Flooding, Public Health, Wildfire Risk, or Other Impacts Resulting from Climate Change	less than significant		
3	Impact GHG-1: Generate Construction-Related GHG Emissions in Excess of SJVAPCD Thresholds	less than significant		

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Greenhouse Gases and Climate Change (Continued)			
3	Impact GHG-2: Expose Property and Persons to the Physical Effects of Climate Change, Including Flooding, Public Health, or Wildfire Risk, or Other Impacts Resulting from Climate Change	less than significant		
	Noise			
1	Impact NOI-1: Exposure of Noise-Sensitive Land Uses to Noise during Construction of Wall Structures	significant	Mitigation Measure NOI-MM-1a: Employ Noise-Reducing Construction Practices during Construction Mitigation Measure NOI-MM-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program	significant and unavoidable
1	Impact NOI-2: Exposure of Sensitive Receptors to Groundborne Vibration during Construction	less than significant		
2	Impact NOI-1: Exposure of Noise-Sensitive Land Uses to Noise during Construction of Wall Structures	significant	Mitigation Measure NOI-MM-1a: Employ Noise-Reducing Construction Practices during Construction Mitigation Measure NOI-MM-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program	significant and unavoidable
2	Impact NOI-2: Exposure of Sensitive Receptors to Groundborne Vibration during Construction	significant	Mitigation Measure NOI-MM-2: Employ Vibration-Reducing Construction Practices during Construction of Water Conveyance Facilities	significant and unavoidable
3	Impact NOI-1: Exposure of Noise-Sensitive Land Uses to Noise during Construction of Wall Structures	significant	Mitigation Measure NOI-MM-1a: Employ Noise-Reducing Construction Practices during Construction Mitigation Measure NOI-MM-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program	significant and unavoidable
3	Impact NOI-2: Exposure of Sensitive Receptors to Groundborne Vibration during Construction	significant	Mitigation Measure NOI-MM-2: Employ Vibration-Reducing Construction Practices during Construction of Water Conveyance Facilities	significant and unavoidable

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands			
1	Impact VEG-1: Loss of Special-Status Plants	significant	Mitigation Measure VEG-MM-1a: Conduct Floristic Surveys for Special-Status Plants during Appropriate Identification Periods	less than significant
			Mitigation Measure VEG-MM-1b: Avoid or Compensate for Effects on Special-Status Plants	
			Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
1	Impact VEG-2: Loss of Nonnative Riparian Habitat	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	less than significant
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure VEG -MM-2: Compensate for Loss of Nonnative Riparian Habitat	
1	Impact VEG-3: Loss of Tidal Emergent Wetland	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	less than significant
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure VEG -MM-3: Compensate for Loss of Tidal Emergent Wetland	

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands (Continued)			
1	Impact VEG-4: Loss of Tidal Perennial Drainage	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	less than significant
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure VEG -MM-4: Compensate for Loss of Tidal Perennial Drainage	
1	Impact VEG-5: Potential Loss of Wetlands or Other Waters of the United States	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	less than significant
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-5: Conduct an Assessment of Potential Waters of the United States within Project Staging Area	
1	Impact VEG-6: Loss of Heritage Trees	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	less than significant
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure VEG-6a: Protect Trees to Be Preserved in the Project Area	
			Mitigation Measure VEG -MM-6b: Compensate for Loss of Heritage Trees	

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands (Continued)			
1	Impact VEG-7: Spread of Invasive Plant Species	significant	Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	less than significant
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure VEG -MM-7: Avoid and Minimize Spread or Introduction of Invasive Plant Species	
2	Impact VEG-1: Loss of Special-Status Plants	significant	Mitigation Measure VEG-MM-1a: Conduct Floristic Surveys for Special-Status Plants during Appropriate Identification Periods	less than significant
			Mitigation Measure VEG-MM-1b: Avoid or Compensate for Effects on Special-Status Plants	
			Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
2	Impact VEG-2: Loss of Nonnative Riparian Habitat	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	less than significant
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure VEG -MM-2: Compensate for Loss of Nonnative Riparian Habitat	

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands (Continued)			
2	Impact VEG-3: Loss of Tidal Emergent Wetland	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	less than significant
2	Impact VEG-4: Loss of Tidal Perennial Drainage	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure VEG -MM-4: Compensate for Loss of Tidal Perennial Drainage	less than significant
2	Impact VEG-5: Potential Loss of Wetlands or Other Waters of the United States	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-5: Conduct an Assessment of Potential Waters of the United States within Project Staging Area	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands (Continued)			
2	Impact VEG-6: Loss of Heritage Trees	no impact	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure VEG-6a: Protect Trees to Be Preserved in the Project Area	no impact
2	Impact VEG-7: Spread of Invasive Plant Species	significant	Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure VEG -MM-7: Avoid and Minimize Spread or Introduction of Invasive Plant Species	less than significant
3	Impact VEG-1: Loss of Special-Status Plants	significant	Mitigation Measure VEG-MM-1a: Conduct Floristic Surveys for Special-Status Plants during Appropriate Identification Periods Mitigation Measure VEG-MM-1b: Avoid or Compensate for Effects on Special-Status Plants Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands (Continued)			
3	Impact VEG-2: Loss of Nonnative Riparian Habitat	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	less than significant
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure VEG -MM-2: Compensate for Loss of Nonnative Riparian Habitat	
3	Impact VEG-3: Loss of Tidal Emergent Wetland	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	less than significant
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
3	Impact VEG-4: Loss of Tidal Perennial Drainage	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	less than significant
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure VEG -MM-4: Compensate for Loss of Tidal Perennial Drainage	

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands (Continued)			
3	Impact VEG-5: Potential Loss of Wetlands or Other Waters of the United States	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-5: Conduct an Assessment of Potential Waters of the United States within Project Staging Area	less than significant
3	Impact VEG-6: Loss of Heritage Trees	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure VEG-6a: Protect Trees to Be Preserved in the Project Area Mitigation Measure VEG -MM-6b: Compensate for Loss of Heritage Trees	less than significant
3	Impact VEG-7: Spread of Invasive Plant Species	significant	Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure VEG -MM-7: Avoid and Minimize Spread or Introduction of Invasive Plant Species	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Fish and Aquatic Resources			
1	Impact AQU-1: Temporary Disturbance of Fish and Degradation of Aquatic Habitat during Construction Activities	significant	Mitigation Measure AQU-MM-1: Limit In-Water Construction Activity to Periods of the Year That Minimize Impacts on Fish and Fish Habitat	less than significant
1	Impact AQU-2: Temporary Noise Disturbance to Fish during Construction Activities	significant	Mitigation Measure AQU-MM-1: Limit In-Water Construction Activity to Periods of the Year That Minimize Effects on Fish Mitigation Measure AQU-MM-2a: Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving to Minimize Effects on Fish Mitigation Measure AQU-MM-2b: Develop and Implement a Hydroacoustic Monitoring Plan to Minimize Noise Effects on Fish	less than significant
1	Impact AQU-3: Adverse Effects on Fish Health and Survival Associated with Potential Discharge of Contaminants during Construction Activities	significant	Mitigation Measure HAZ-MM-1: Prepare and Implement a Spill Prevention, Control and Countermeasure Plan	less than significant
1	Impact AQU-4: Adverse Effects on Special-Status Fish Species Associated with Potential Stranding during Dewatering	significant	Mitigation Measure AQU-MM-4: Hire a Qualified Fisheries Biologist during Dewatering Activities to Minimize Fish Mortality	less than significant
2	Impact AQU-1: Temporary Disturbance of Fish and Degradation of Aquatic Habitat during Construction Activities	significant	Mitigation Measure AQU-MM-1: Limit In-Water Construction Activity to Periods of the Year That Minimize Effects on Fish	less than significant
2	Impact AQU-2: Temporary Noise Disturbance to Fish during Construction Activities	significant	Mitigation Measure AQU-MM-1: Limit In-Water Construction Activity to Periods of the Year That Minimize Effects on Fish Mitigation Measure AQU-MM-2a: Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving to Minimize Effects on Fish Mitigation Measure AQU-MM-2b: Develop and Implement a Hydroacoustic Monitoring Plan to Minimize Noise Effects on Fish	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Fish and Aquatic Resources (Continued)			
2	Impact AQU-3: Adverse Effects on Fish Health and Survival Associated with Potential Discharge of Contaminants during Construction Activities	significant	Mitigation Measure HAZ-MM-1: Prepare and Implement a Spill Prevention, Control and Countermeasure Plan	less than significant
2	Impact AQU-4: Adverse Effects on Special-Status Fish Species Associated with Potential Stranding during Dewatering	significant	Mitigation Measure AQU-MM-4: Hire a Qualified Fisheries Biologist during Dewatering Activities to Minimize Fish Mortality	less than significant
3	Impact AQU-1: Temporary Disturbance of Fish and Degradation of Habitat during Construction Activities	significant	Mitigation Measure AQU-MM-1: Limit In-Water Construction Activity to Periods of the Year That Minimize Effects on Fish	less than significant
3	Impact AQU-2: Temporary Noise Disturbance to Fish during Construction Activities	significant	Mitigation Measure AQU-MM-1: Limit In-Water Construction Activity to Periods of the Year That Minimize Effects on Fish Mitigation Measure AQU-MM-2a: Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving to Minimize Effects on Fish Mitigation Measure AQU-MM-2b: Develop and Implement a Hydroacoustic Monitoring Plan to Minimize Noise Effects on Fish	less than significant
3	Impact AQU-3: Adverse Effects on Fish Health and Survival Associated with Potential Discharge of Contaminants during Construction Activities	significant	Mitigation Measure HAZ-MM-1: Prepare and Implement a Spill Prevention, Control and Countermeasure Plan	less than significant
3	Impact AQU-4: Adverse Effects on Special-Status Fish Species Associated with Potential Stranding during Dewatering	significant	Mitigation Measure AQU-MM-4: Hire a Qualified Fisheries Biologist during Dewatering Activities to Minimize Fish Mortality	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Wildlife			
1	Impact WILD-1: Loss or Disturbance of Western Pond Turtles and Their Habitat	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure WILD-MM-1: Conduct a Preconstruction Survey for Western Pond Turtle during Instream Water Work	less than significant
1	Impact WILD-2: Loss of Swainson's Hawk Nesting Habitat	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure VEG-MM-2: Compensate for the Loss of Nonnative Riparian Habitat Mitigation Measure VEG-MM-6b: Compensate for Loss of Heritage Trees Mitigation Measure WILD-MM-2: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Wildlife (Continued)			
1	Impact WILD-3: Loss or Disturbance of Western Burrowing Owls and Their Habitat	significant	Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure WILD-MM-3a: Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the 2012 California Department of Fish and Game Guidelines for Burrowing Owl Mitigation, if Necessary Mitigation Measure WILD-MM-3b: Compensate for Loss of Burrowing Owl Habitat	less than significant
1	Impact WILD-4: Loss or Disturbance of Tree-, Shrub- and Ground-Nesting Special-Status and Non-Special–Status Migratory Birds and Raptors	significant	Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure WILD-MM-2: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys	less than significant
1	Impact WILD-5: Loss or Disturbance of Bats and Bat Roosts	significant	Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure WILD-MM-5: Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures	less than significant
1	Impact WILD-6: Loss or Disturbance of Protected Marine Mammals	significant	Mitigation Measure WILD-MM-6: Ensure Staging Areas are Located away from California Sea Lions	Less than significant
1	Impact WILD-7: Disruption of Wildlife Movement Corridors or Nurseries	less than significant		

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Wildlife (Continued)			
2	Impact WILD-1: Loss or Disturbance of Western Pond Turtles and Their Habitat	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure WILD-MM-1: Conduct a Preconstruction Survey for Western Pond Turtle during Instream Water Work	less than significant
2	Impact WILD-2: Loss of Swainson's Hawk Nesting Habitat	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure VEG-MM-2: Compensate for the Loss of Nonnative Riparian Habitat Mitigation Measure VEG-MM-6b: Compensate for Loss of Heritage Trees Mitigation Measure WILD-MM-2: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Wildlife (Continued)			
2	Impact WILD-3: Loss or Disturbance of Western Burrowing Owls and Their Habitat	significant	Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	less than significant
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure WILD-MM-3a: Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the 2012 California Department of Fish and Game Guidelines for Burrowing Owl Mitigation, if necessary	
			Mitigation Measure WILD-MM-3b: Compensate for Loss of Burrowing Owl Habitat	
2	Impact WILD-4: Loss or Disturbance of Tree-, Shrub- and Ground-Nesting Special-Status and Non-Special–Status Migratory Birds and Raptors	significant	Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	less than significant
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure WILD-MM-2: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys	
2	Impact WILD-5: Loss or Disturbance of Bats and Bat Roosts	significant	Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	less than significant
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure WILD-MM-5: Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures	
2	Impact WILD-6: Loss or Disturbance of Protected Marine Mammals	significant	Mitigation Measure WILD-MM-6: Ensure Staging Areas are Located away from California Sea Lions	less than significant
2	Impact WILD-7: Disruption of Wildlife Movement Corridors or Nurseries	less than significant		

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Wildlife (Continued)			
3	Impact WILD-1: Loss or Disturbance of Western Pond Turtles and Their Habitat	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	less than significant
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure WILD-MM-1: Conduct a Preconstruction Survey for Western Pond Turtle during Instream Water Work	
3	Impact WILD-2: Loss of Swainson's Hawk Nesting Habitat	significant	Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas	less than significant
			Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel	
			Mitigation Measure VEG-MM-1e: Retain a Biological Monitor	
			Mitigation Measure VEG-MM-2: Compensate for the Loss of Nonnative Riparian Habitat	
			Mitigation Measure VEG-MM-6b: Compensate for Loss of Heritage Trees	
			Mitigation Measure WILD-MM-2: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys	

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Wildlife (Continued)			
3	Impact WILD-3: Loss or Disturbance of Western Burrowing Owls and Their Habitat	significant	Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure WILD-MM-3a: Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the 2012 California Department of Fish and Game Guidelines for Burrowing Owl Mitigation, if Necessary Mitigation Measure WILD-MM-3b: Compensate for Loss of Burrowing Owl Habitat	less than significant
3	Impact WILD-4: Loss or Disturbance of Tree-, Shrub- and Ground-Nesting Special-Status and Non-Special–Status Migratory Birds and Raptors	significant	Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure WILD-MM-2: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys	less than significant
3	Impact WILD-5: Loss or Disturbance of Bats and Bat Roosts	significant	Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-1e: Retain a Biological Monitor Mitigation Measure WILD-MM-5: Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures	less than significant
3	Impact WILD-6: Loss or Disturbance of Protected Marine Mammals	significant	Mitigation Measure WILD-MM-6: Ensure Staging Areas are Located away from California Sea Lions	less than significant
3	Impact WILD-7: Disruption of Wildlife Movement Corridors or Nurseries	less than significant		

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Visual Resources			
1	Impact VIS-1: Temporary Visual Impacts Caused by Construction Activities	significant	Mitigation Measure VIS-MM-1a: Limit Activities That Would Require High-Intensity Lighting to Be Used for Illumination to Daylight Hours Mitigation Measure VIS-MM-1b: Limit Traffic Delays at Moreing Road to Off-Peak Commute Hours	significant and unavoidable
1	Impact VIS-2: Substantial Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings	significant	Mitigation Measure VIS-MM-2a: Apply Aesthetic Surface Treatments to Ancillary Project Features Mitigation Measure VIS-MM-2b: Work with Affected Stakeholders to Determine Appropriate Sheet Pile Wall Aesthetic Treatments	significant and unavoidable
1	Impact VIS-3: Creation of a New Source of Substantial Light or Glare That Would Adversely Affect Daytime or Nighttime Views in the Area	significant	Mitigation Measure VIS-MM-2a: Apply Aesthetic Surface Treatments to Ancillary Project Features Mitigation Measure VIS-MM-2b: Work with Affected Stakeholders to Determine Appropriate Sheet Pile Wall Aesthetic Treatments	significant and unavoidable
2	Impact VIS-1: Temporary Visual Impacts Caused by Construction Activities	significant	Mitigation Measure VIS-MM-1a: Limit Activities That Would Require High-Intensity Lighting to Be Used for Illumination to Daylight Hours Mitigation Measure VIS-MM-1b: Limit Traffic Delays at Moreing Road to Off-Peak Commute Hours Mitigation Measure VIS-MM-1c: Install Visual Barriers between Construction Work Areas and Residences	significant and unavoidable

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Visual Resources (Continued)			
2	Impact VIS-2: Substantial Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings	significant	Mitigation Measure VIS-MM-2a: Apply Aesthetic Surface Treatments to Ancillary Project Features Mitigation Measure VIS-MM-2b: Work with Affected Stakeholders to Determine Appropriate Sheet Pile Wall Aesthetic Treatments Mitigation Measure VIS-MM-2c: Replace or Relocate Site Features and Landscaping Affected by Project Mitigation Measure VIS-MM-2d: Implement Project Landscaping around Control Building(s)	significant and unavoidable
2	Impact VIS-3: Creation of a New Source of Substantial Light or Glare That Would Adversely Affect Daytime or Nighttime Views in the Area	significant	Mitigation Measure VIS-MM-2a: Apply Aesthetic Surface Treatments to Ancillary Project Features Mitigation Measure VIS-MM-2b: Work with Affected Stakeholders to Determine Appropriate Sheet Pile Wall Aesthetic Treatments	significant and unavoidable
3	Impact VIS-1: Temporary Visual Impacts Caused by Construction Activities	significant	Mitigation Measure VIS-MM-1a: Limit Activities That Would Require High-Intensity Lighting to Be Used for Illumination to Daylight Hours Mitigation Measure VIS-MM-1b: Limit Traffic Delays at Moreing Road to Off-Peak Commute Hours Mitigation Measure VIS-MM-1c: Install Visual Barriers between Construction Work Areas and Residences	significant and unavoidable
3	Impact VIS-2: Substantial Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings	significant	Mitigation Measure VIS-MM-2a: Apply Aesthetic Surface Treatments to Ancillary Project Features Mitigation Measure VIS-MM-2b: Work with Affected Stakeholders to Determine Appropriate Sheet Pile Wall Aesthetic Treatments Mitigation Measure VIS-MM-2c: Replace or Relocate Site Features and Landscaping Affected by Project Mitigation Measure VIS-MM-2d: Implement Project Landscaping around Control Building(s)	significant and unavoidable

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Visual Resources (Continued)			
3	Impact VIS-3: Creation of a New Source of Substantial Light or Glare That Would Adversely Affect Daytime or Nighttime Views in the Area	significant	Mitigation Measure VIS-MM-2a: Apply Aesthetic Surface Treatments to Ancillary Project Features Mitigation Measure VIS-MM-2b: Work with Affected Stakeholders to Determine Appropriate Sheet Pile Wall Aesthetic Treatments	significant and unavoidable
	Recreation			
1	Impact REC-1: Interference with Access to Public Recreation Facilities as a Result of Project Construction	significant	Mitigation Measure REC-MM-1: Direct Displaced Recreationists to Under-Utilized Recreation Facilities	less than significant
1	Impact REC-2: Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Construction	significant	Mitigation Measure REC-MM-2: Implement Measures to Aid Navigation	less than significant
1	Impact REC-3: Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Operation and Maintenance	significant	Mitigation Measure REC-MM-2: Implement Measures to Aid Navigation	less than significant
1	Impact REC-4: Disruption of Access for Project-Area Residents to Their Private Watercraft during Construction	less than significant		
1	Impact REC-5: Interference with Recreational Boating as a Result of Increased Water Hyacinth Infestation	no impact		
2	Impact REC-1: Interference with Access to Public Recreation Facilities as a Result of Project Construction	less than significant		
2	Impact REC-2: Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Construction	significant		significant and unavoidable

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Recreation (Continued)			
2	Impact REC-3: Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Operation and Maintenance	significant	Mitigation Measure REC-MM-2: Implement Boating Safety Measures	less than significant
2	Impact REC-4: Disruption of Access for Project-Area Residents to Their Private Watercraft during Construction	significant	Mitigation Measure VIS-MM-2c: Replace or Relocate Site Features and Landscaping Affected by Project Mitigation Measure REC-MM-4: Compensate Residents for the Cost of Alternative Docking Facilities	significant and unavoidable
2	Impact REC-5: Interference with Recreational Boating as a Result of Increased Water Hyacinth Infestation	no impact		
3	Impact REC-1: Interference with Access to Public Recreation Facilities as a Result of Project Construction	less than significant		
3	Impact REC-2: Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Construction	significant	Mitigation Measure REC-MM-2: Implement Measures to Aid Navigation	less than significant
3	Impact REC-3: Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Operation and Maintenance	significant	Mitigation Measure REC-MM-2: Implement Measures to Aid Navigation	less than significant
3	Impact REC-4: Disruption of Access for Project-Area Residents to Their Private Watercraft during Construction	significant	Mitigation Measure REC-MM-4: Compensate Residents for the Cost of Alternative Docking Facilities	significant and unavoidable
3	Impact REC-5: Interference with Recreational Boating as a Result of Increased Water Hyacinth Infestation	no impact		

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Utilities and Public Services			
1	Impact UTL-1: Damage of Public Utility and Communication Infrastructure and Disruption of Service as a Result of Project Construction	significant	Mitigation Measure UTL-MM-1: Coordinate with Utility Providers, Prepare a Response Plan, and Conduct Worker Training	less than significant
1	Impact UTL-2: Increase in Solid Waste Generation Due to Project Construction and Maintenance	less than significant		
1	Impact UTL-3: Increase in Emergency Response Times during Project Construction	significant	Mitigation Measure UTL-MM-3: Coordinate with Public Service Providers Mitigation Measure TRA-MM-3: Implement a Construction Traffic Management Plan	less than significant
2	Impact UTL-1: Damage of Public Utility and Communication Infrastructure and Disruption of Service as a Result of Project Construction	significant	Mitigation Measure UTL-MM-1: Coordinate with Utility Providers, Prepare a Response Plan, and Conduct Worker Training	less than significant
2	Impact UTL-2: Increase in Solid Waste Generation Due to Project Construction and Maintenance	less than significant		
2	Impact UTL-3: Increase in Emergency Response Times during Project Construction	significant	Mitigation Measure UTL-MM-3: Coordinate with Public Service Providers Mitigation Measure TRA-MM-3: Implement a Construction Traffic Management Plan	less than significant
3	Impact UTL-1: Damage of Public Utility and Communication Infrastructure and Disruption of Service as a Result of Project Construction	significant	Mitigation Measure UTL-MM-1: Coordinate with Utility Providers, Prepare a Response Plan, and Conduct Worker Training	less than significant
3	Impact UTL-2: Increase in Solid Waste Generation Due to Project Construction and Maintenance	less than significant		

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Utilities and Public Services (Continued)			
3	Impact UTL-3: Increase in Emergency Response Times during Project Construction	significant	Mitigation Measure UTL-MM-3: Coordinate with Public Service Providers Mitigation Measure TRA-MM-3: Implement a Construction Traffic Management Plan	less than significant
	Public Health and Environmental Hazards			
1	Impact HAZ-1: Incidental Release of Hazardous Materials during Construction	significant	Mitigation Measure HAZ-MM-1: Prepare and Implement a Spill Prevention, Control, and Countermeasure Plan	less than significant
1	Impact HAZ-2: Exposure of Hazardous Materials Encountered at Project Site	significant	Mitigation Measure HAZ-MM-2: Implement Measures to Maintain Soil and Groundwater Conditions	less than significant
1	Impact HAZ-3: Access to the Construction Site and Vehicles by the Public	significant	Mitigation Measure HAZ-MM-3: Notify the Public of Construction Area Closure and Secure Staging Areas	less than significant
2	Impact HAZ-1: Incidental Release of Hazardous Materials during Construction	significant	Mitigation Measure HAZ-MM-1: Prepare and Implement a Spill Prevention, Control, and Countermeasure Plan	less than significant
2	Impact HAZ-2: Exposure of Hazardous Materials Encountered at Project Site	significant	Mitigation Measure HAZ-MM-2: Implement Measures to Maintain Soil and Groundwater Conditions	less than significant
2	Impact HAZ-3: Access to the Construction Site and Vehicles by the Public	significant	Mitigation Measure HAZ-MM-3: Notify the Public of Construction Area Closure and Secure Staging Areas	less than significant
3	Impact HAZ-1: Incidental Release of Hazardous Materials during Construction	significant	Mitigation Measure HAZ-MM-1: Prepare and Implement a Spill Prevention, Control, and Countermeasure Plan	less than significant
3	Impact HAZ-2: Exposure of Hazardous Materials Encountered at Project Site	significant	Mitigation Measure HAZ-MM-2: Implement Measures to Maintain Soil and Groundwater Conditions	less than significant
3	Impact HAZ-3: Access to the Construction Site and Vehicles by the Public	significant	Mitigation Measure HAZ-MM-3: Notify the Public of Construction Area Closure and Secure Staging Areas	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Cultural Resources			
1	Impact CUL-1: Substantial Adverse Change in the Significance of a Built Environment Resource that is a Historical Resource Pursuant to State CEQA Guidelines Section 15064.5	less than significant		
1	Impact CUL-2: Substantial Adverse Change in the Significance of an Archaeological Historical Resource Pursuant to State CEQA Guidelines Section 15064.5 or a Unique Archaeological Resource Pursuant to PRC Section 21083.2	significant	Mitigation Measure CUL-MM-2: Halt Work if Previously Unidentified Archaeological Resources are Encountered until a Qualified Archaeologist Assesses the Find and Native American Consultation has been Conducted	less than significant
1	Impact CUL-3: Disturbance of any Human Remains, Including Those Interred Outside of Formal Cemeteries Pursuant to CHSC Section 7050.5	significant	Mitigation Measure CUL-MM-3: Stop Work in Case of Accidental Discovery of Buried Human Remains until Procedures in PRC Section 5097 have been Completed	less than significant
2	Impact CUL-1: Substantial Adverse Change in the Significance of a Built Environment Resource that is a Historical Resource Pursuant to State CEQA Guidelines Section 15064.5	significant	Mitigation Measure VIS-MM-2d: Implement Project Landscaping around Control Building	less than significant
2	Impact CUL-2: Substantial Adverse Change in the Significance of an Archaeological Historical Resource Pursuant to State CEQA Guidelines Section 15064.5 or a Unique Archaeological Resource Pursuant to PRC Section 21083.2	significant	Mitigation Measure CUL-MM-2: Stop Work in Case of Accidental Discovery of Buried Archeological Resources	less than significant
2	Impact CUL-3: Disturbance of any Human Remains, Including Those Interred Outside of Formal Cemeteries Pursuant to CHSC Section 7050.5	significant	Mitigation Measure CUL-MM-3: Stop Work in Case of Accidental Discovery of Buried Human Remains	less than significant
3	Impact CUL-1: Substantial Adverse Change in the Significance of a Built Environment Resource that is a Historical Resource Pursuant to State CEQA Guidelines Section 15064.5	less than significant		

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Cultural Resources (Continued)			
3	Impact CUL-2: Substantial adverse change in the significance of an archaeological historical resource pursuant to Section 15064.5 or a unique archaeological resource pursuant to PRC Section 21083.2	significant	Mitigation Measure CUL-MM-2: Stop Work in Case of Accidental Discovery of Buried Archeological Resources	less than significant
3	Impact CUL-3: Disturbance of any Human Remains, Including Those Interred Outside of Formal Cemeteries Pursuant to CHSC Section 7050.5	significant	Mitigation Measure CUL-MM-3: Stop Work in Case of Accidental Discovery of Buried Human Remains	less than significant

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ICF INTERNATIONAL

Smith Canal Gate Project

Figure ES-1
Regional Location

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Acronyms and Abbreviations

µg/m3	micrograms per cubic meter
µmhos/cm	microsiemens per centimeter
AAQA	ambient air quality analysis
AB	Assembly Bill
AB 939	California Integrated Waste Management Act
AF	acre-feet
AIS	aquatic invasive species
ARB	California Air Resources Board
ASTM	American Society for Testing and Materials
BAAQMD	Bay Area Air Quality Management District
Basin Plan	*Water Quality Control Plan for the Sacramento River and San Joaquin River Basin*
Basin Plan	State of California Water Quality Control Plan
Bay Delta	San Francisco Bay Delta
BDCP	Bay-Delta Conservation Plan
BLM	U.S. Department of the Interior Bureau of Land Management
BMPs	best management practices
BPS	best performance standards
CAA	federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAISMP	California Aquatic Invasive Species Management Plan
CAL FIRE	California Department of Forestry and Fire Prevention
CalEEMod	California Emissions Estimator Model
CALFED	California Bay-Delta Program
CalRecycle	Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
Caltrans Technical Guidance	*Caltrans Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish*
CalWater	California Water Services
CAP	City of Stockton Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CCAA	California Clean Air Act
CCIC	Central California Information Center
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code

CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	methane
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
CHSC	California Health and Safety Code
City	City of Stockton
CLOMR	Conditional Letter of Map Revision
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPPA	California Native Plant Protection Act
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	San Joaquin County
County General Plan	*San Joaquin 2010 County Wide General Plan*
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CVFMP	Central Valley Flood Management Planning Program
CVFPB	Central Valley Flood Protection Board
CVFPP	Central Valley Flood Protection Plan
CVP	Central Valley Project
CWA	Federal Clean Water Act
dB	decibel
dBA	A-weighted decibel
DBH	diameter at breast height
DBPs	disinfection by-products
DBW	California Department of Parks and Recreation, Divison of Boating and Waterways
Delta	Sacramento–San Joaquin River Delta
DO	dissolved oxygen
DOT	Department of Transportation
DPC	Delta Protection Commission
DPM	diesel particulate matter
DPR	California Department of Parks and Recreation
DPSs	distinct population segments
Draft EIR	draft environmental impact report
DSC	Delta Stewardship Council
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
DWSC	Stockton Deep Water Ship Channel
EFH	essential fish habitat
EIR	environmental impact report
EO	Executive Order

EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	environmentally significant unit
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FHWG	Fisheries Hydroacoustic Working Group
FIRMS	Flood Insurance Rate Maps
FPRP	Flood Protection Restoration Project
FR	Federal Register
ft/s	feet per second
FTA	Federal Transit Administration
FWCA	Fish and Wildlife Coordination Act
FWS	U.S. Fish and Wildlife Service
FY	fiscal year
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
GC	Government Code
General Construction Permit	NPDES General Permit for Construction Activities
General Dewatering Permit	General Order for Dewatering and Other Low Threat Discharges to Surface Waters
GHG	greenhouse gases
GIS	geographic information system
GME	Green Mountain Engineering
Guidelines	Revised Guidelines for Implementing Executive Order 11988, Floodplain Management
GWP	global warming potential
HCP	habitat conservation plan
HFCs	hydrofluorocarbons
HI	Hazard Index
HMTA	Hazardous Materials Transportation Act of 1975
Hot Spots Act	Air Toxics Hot Spots Information and Assessment Act of 1987
HSC	California Health and Safety Code
Hz	Hertz
I-5	Interstate 5
ICF	ICF International
ILF	in-lieu fee
IPCC	Intergovernmental Panel on Climate Change
JPA	Joint Powers Authority
KV	Key views
LCFS	Low Carbon Fuel Standard
L_{dn}	day-night sound level
L_{eq}	equivalent sound level

L_{max}	maximum sound level
L_{min}	minimum sound level
LOS	level of service
Lpeak	peak sound pressure level
LSJRFS	Lower San Joaquin River Feasibility Study
LURMP	Land Use and Resource Management Plan
L_{xx}	percentile-exceeded sound levels
m	meter
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
Map Mod	FEMA Flood Map Modernization Program
MBTA	Migratory Bird Treaty Act
MEI	maximum exposed individual
mg/L	milligrams per liter
mgd	million gallons per day
MHHW	mean high high water
MLDs	most likely descendants
MLLW	mean low low water
mm	millimeters
MMPA	Marine Mammal Protection Act of 1972
MOU	memorandum of understanding
MPEM	Multi-Pollutant Evaluation Method
MSDS	material safety data sheets
MUTCD	Manual on Uniform Traffic Control Devices
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAVD 88	North American Vertical Datum of 1988
NCCP	Natural Communities Conservation Plan
NCS	Naval Communications Station
NDAI	No DoD Action Indicated
NFIP	National Flood Insurance Program
NGOs	nongovernmental organizations
NGVD 29	National Geodetic Vertical Datum of 1929
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration Fisheries
NOI	Notice of Intent
NOP	Notice of Preparation
NO_X	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSR	New Source Review
NTU	Nephelometric Turbidity Unit

O&M	operation and maintenance
OEHHA	California Office of Environmental Health Hazard Assessment
OHP	California Office of Historic Preservation
PAL	provisional accredited levee
PCBs	polychlorinated biphenyls
PFCs	perfluorinated carbons
Plan	San Joaquin County Multi-Species Habitat Conservation and Open Space Plan
PM	particulate matter
PM 2.5	particulate matter less than or equal to 2.5 microns in diameter
PM10	particulate matter less than or equal to 10 microns in diameter
Port	Port of Stockton
ppm	parts per million
PPV	peak particle velocity
PRC	California Public Resources Code
proposed project, or project	Smith Canal Gate Project
RCRA	Federal Resource Conservation and Recovery Act
RDs	Reclamation Districts
Recreation Proposal	Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh
Regional Water Board	Central Valley Regional Water Quality Control Board
RFMP	Regional Flood Management Plan
river	Stockton Deepwater Ship Channel/San Joaquin River
RMS	root mean square
ROG	reactive organic gases
SAA	Streambed Alteration Agreement
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
SEL	Sound exposure level
SEWD	Stockton East Water District
SF_6	sulfur hexafluoride
SFD	Stockton Fire Department
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SJAFCA	San Joaquin Area Flood Control Agency
SJCOG	San Joaquin Council of Governments
SJMSCP	San Joaquin Multi Species Habitat Conservation and Open Space Plan
SJRFCP	San Joaquin River Flood Control Project
SJRTD	San Joaquin Regional Transit District
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLF	Sacred Lands File
SO_2	sulfur dioxide

SPCCP	spill prevention, control, and countermeasure plan
SPFC	State Plan of Flood Control
State Water Board	State Water Resources Control Board
SWMP	stormwater management plan
SWP	State Water Project
SWPPP	stormwater pollution prevention plan
TACs	toxic air contaminants
Tanner Act	Toxic Air Contaminant Identification and Control Act
TCMs	traffic control measures
TCR	Transportation Concept Report
TDS	total dissolved solids
TMDL	total maximum daily load
TMP	Traffic Management Plan
TNWs	traditional navigable waters
TSS	total suspended solids
ULDC	Urban Levee Design Criteria
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S Fish and Wildlife Service
USGS	U.S. Geological Survey
V/C	volume-to-capacity
VdB	vibration decibels
VERA	Voluntary Emissions Reduction Agreement

1

Chapter 1
Introduction

The San Joaquin Area Flood Control Agency (SJAFCA), in partnership with Reclamation Districts (RDs) 1614 and 828, is proposing the Smith Canal Gate Project (project) to build, operate, and maintain a fixed wall with a gate structure near the mouth of Smith Canal, in and adjacent to the city of Stockton, county of San Joaquin, primarily within the boundaries of RD 828 and RD 1614 (Plate 1-1). Smith Canal is a backwater slough of the Sacramento–San Joaquin River Delta (Delta), adjacent to the San Joaquin River across from Rough and Ready Island and the Port of Stockton.

Since 2008, when the Federal Emergency Management Agency (FEMA) revoked the accreditation of the levees surrounding Smith Canal, the area surrounding Smith Canal has been mapped as a Special Flood Hazard Area (SFHA). To address flood risk, SJAFCA is proposing to construct the wall and gate structure to remove the area from the 100-year floodplain and meet FEMA's minimum acceptable level of performance of withstanding a 100-year flood, which is the regulatory standard specified by the National Flood Insurance Program (NFIP). A 100-year flood is a flood event with a 1% chance of taking place in any given year. The proposed wall and gate and structure would be built to provide a minimum 200-year level of performance as required in the Central Valley Flood Protection Plan (CVFPP).

Note: In this document, city (lowercase) refers to the geographic area of Stockton, while City (capitalized) refers to the governmental entity of Stockton. Stockton is also used in some instances, typically referring to the geographic area. SJAFCA's planning area is the city of Stockton and surrounding unincorporated county areas to the north and east of the city boundary.

1.1 Document Purpose

1.1.1 Overview

This document is an Environmental Impact Report (EIR) and is intended to satisfy the requirements of the California Environmental Quality Act (CEQA) for disclosing impacts on the physical environment likely to be caused by a proposed project and its alternatives, as well as recommending mitigation measures to reduce such impacts. SJAFCA will utilize this document and related public comment in making a decision on project approval or disapproval. Specifically, this document analyzes the potential direct, indirect, cumulative, and growth-inducing environmental impacts of constructing and operating the proposed Smith Canal project, alternatives to the project, as well as the impacts of not undertaking the project. These impacts are analyzed at an equal level of detail for the proposed project and two project alternatives. In this EIR, potential impacts are organized and analyzed by environmental resource areas, such as Vegetation and Wetlands, Air Quality, and Cultural Resources. All phases of the proposed project, including construction and operation, are evaluated in the analysis.

1.1.2 CEQA Lead Agency

As the public agency with principal responsibility for approving and carrying out the project, SJAFCA is the CEQA lead agency and implementing agency. SJAFCA is a Joint Powers Authority (JPA) that was created in May 1995 between the City of Stockton, San Joaquin County, and the San Joaquin County Flood Control and Water Conservation District for the purpose of addressing flood risk–reduction for the city of Stockton and surrounding county areas. SJAFCA has a four member Board of Directors, comprised of two members from the Stockton City Council and two members from the San Joaquin County Board of Supervisors.

1.2 Project Location

For the purposes of this document, the *planning area* is defined as the area within SJAFCA's planning authority and surrounding areas. The *project area* is defined as the area that encompasses the construction and operation activities of the proposed project and its alternatives. The *study area* is defined as the area analyzed to determine the nature and severity of potential environmental impacts (direct, indirect, and cumulative) of the proposed project and its alternatives. The study area may differ between environmental resources and is defined in each resource section of this EIR, as appropriate. Each section in Chapter 3, *Environmental Setting and Impacts*, provides further detail on the study areas for individual resources.

The project area is located in the city of Stockton and unincorporated San Joaquin County, California, within the Secondary Zone of the Delta, as defined in the Delta Protection Act of 2009 and described in Section 12220 of the California Water Code. The project area includes Atherton Island, Atherton Cove, Louis Park (including Dad's Point), the Stockton Golf and Country Club, and the portions of the San Joaquin River in the immediate vicinity. The area north of Smith Canal, Atherton Island, Atherton Cove and Stockton Golf and Country Club, is located in unincorporated San Joaquin County. Louis Park, including Dad's Point, is in the city of Stockton.

Atherton Island is at the west end of Smith Canal, and Louis Park is southeast of Atherton Island at the mouth of the Canal. Dad's Point, a land bar that is an extension of Louis Park, is southwest of the mouth of Smith Canal and separates the Louis Park boat launch area from the San Joaquin River. Atherton Cove is a dead-end slough of the river that extends north and east around Atherton Island, and the Stockton Golf and Country Club is along the north bank of the river and southwest shore of Atherton Cove, to the northwest of Smith Canal (Plate 1-2).

A navigable urban waterway, Smith Canal is a human-made, backwater slough that conveys stormwater and urban runoff away from adjacent residential neighborhoods. It extends from Yosemite Lake, approximately 2.5 miles downstream to the San Joaquin River. Because Smith Canal drains a limited stormwater drainage area, its border levees primarily serve to protect adjacent residences from back-flooding from the Delta rather than to confine upland riverine flows. These levees are highly encroached upon, primarily by residential structures. RD 1614 maintains and operates the levees on the north of Smith Canal and RD 828 on the south.

The predominant land use in the vicinity of Smith Canal is low-density residential development, with some recreational, commercial, and institutional land uses. There are small areas of medium- and high-density residential land uses in the vicinity of where Interstate 5 (I-5) crosses Smith Canal. The

project area is also comprised of the surrounding residential and open space areas, including the Stockton Golf and Country Club and Louis Park.

1.3 Project Background

In 2005, as part of the FEMA Flood Map Modernization Program (Map Mod), FEMA began requiring levee owners to submit documentation showing that their levees provided a 100-year level of flood protection. Conducted from fiscal year (FY) 2003 to FY 2008, Map Mod was an effort by FEMA to update Flood Insurance Rate Maps (FIRMS) nationwide. As part of the National Flood Insurance Program (NFIP), FEMA develops FIRMS to identify areas at risk of flooding and to determine flood insurance rates. RD 1614 and RD 828 both determined that levees along Smith Canal would not meet FEMA criteria.

Primarily due to extensive encroachments onto the levees that prevented access for maintenance and inspection, Smith Canal levees were not able to meet the levee certification requirements of the Code of Federal Regulations (CFR), Title 44, Section 65.10, which include criteria for design, operation plans, maintenance plans, and certification by a registered civil engineer. As such, the Smith Canal levees lost FEMA accreditation, and in January 2008, FEMA released preliminary FIRMS placing the areas behind the levees in an SFHA. SFHAs are defined as areas that will be inundated by a 100-year flood (Federal Emergency Management Agency 2013). Updated FIRMS for San Joaquin County became effective October 16, 2009.

In partnership with Smith Canal levee owners, RD 1614 (north bank levee) and RD 828 (south bank levee), SJAFCA led a process of evaluating options for restoring FEMA accreditation to the Smith Canal area. Several alternatives were evaluated. In-place rehabilitation of the levees was determined to be economically infeasible, as discussed further in Chapter 2, *Proposed Project and Alternatives*. SJAFCA concluded that the most cost-effective alternative would be constructing a fixed flood wall and gate structure at the mouth of Smith Canal.

SJAFCA has coordinated with FEMA on the use of a gate structure as a method of providing flood risk–reduction for the Smith Canal area. SJAFCA prepared 30% engineering design plans of a proposed structure, represented in this EIR as Alternative 1, and submitted a request to FEMA for a Conditional Letter of Map Revision (CLOMR). FEMA reviewed SJAFCA's CLOMR request and, in 2011, concurred that the gate structure would meet FEMA standards for providing at least 100-year flood risk-reduction and would warrant a revision in the area FIRM. Should SJAFCA select one of the other project alternatives as its project, it would submit a revised CLOMR request to FEMA for concurrence. Following completion of the proposed project, and compliance with CLOMR's requirements, SJAFCA could request that FEMA make a final determination on revising the FIRM. CLOMR's requirements are as follows.

- Compliance with the requirements of Paragraph 65.12(a)(b) of the NFIP regulations.
- Submission of a detailed application and certification forms to request final revisions to the maps.
- Submission of the following forms if the as-built conditions differ from the preliminary plans provided in the detailed application and certification forms.

- Form 2, Riverine Hydrology and Hydraulics Form, including a hydraulic analysis for as-built conditions of the base flood and a topographic map showing the revised floodplain boundaries.
- Form 3, Riverine Structures Form.

- Submission of a fee for reviewing and processing request for condition and final modification to published flood information map.
- Submission of as-built plans, certified by a registered professional engineer, of all proposed project elements.
- Submission of an officially adopted maintenance and operation plan for the Smith Canal Gate Project.

1.3.1 Project Funding

On January 26, 2011, the SJAFCA Board of Directors entered into a partnership and local cost sharing agreement with RD 1614 and RD 828 to facilitate continued collaboration as they work to improve flood risk–reduction for the Smith Canal area. At the same time that the CLOMR request was being processed and the local cost sharing agreement was being formed, SJAFCA applied for funding from the California Department of Water Resources' (DWR's) Early Implementation Program (EIP) on February 15, 2011 in order to obtain partial funding from the state for project design and implementation. SJAFCA received a state grant in September of 2012 to pay 50% of the project design phase and associated environmental analysis, with the remaining half to be funded locally.

As part of the EIP funding process, local communities are required to pay for a portion of the overall costs. To demonstrate their ability to cover these costs, the SJAFCA Board of Directors elected to move forward with the formation of a capital and operation and maintenance (O&M) benefit assessment district to finance the local share of the proposed project's design, capital, and O&M costs. On June 6, 2013, SJAFCA held a board meeting and public hearing on the formation of the assessment district. The property owners in the assessment district recognized the area's flood risks and indicated their willingness to participate in improvements by voting to approve a parcel assessment, which was subsequently adopted by SJAFCA.

SJAFCA is also requesting Urban Flood Risk Reduction (UFRR) Program funding from DWR for the balance of the design, environmental analysis, and construction costs. The UFRR program provides funding to local agencies for repairing, rehabilitating, reconstructing, or replacing levees and facilities that are part of the State Plan of Flood Control, as well as for improving or adding facilities to the State Plan of Flood Control to improve flood risk-reduction for urban areas. The UFRR Program was authorized under the Disaster Preparedness and Flood Prevention Bond Act of 2006 (Proposition 1E). Proposals for UFRR funding must demonstrate the following.

- That the project is consistent with the Central Valley Flood Protection Program (CVFPP), regional priorities and the Basin Plan for the area.
- That the proposed project is ready to proceed, is economically feasible, and that the alternative selected is the one with the most value.
- That the project is necessary and requires state funding and that there is a supporting financial plan for achieving the 200-year level of flood protection.

- That the project will reduce or avoid risk to human life.
- That the proposed improvements comply with all existing laws.

DWR also provides cost-share funding for the construction of selected flood control projects. DWR's process for selecting projects for funding requires an applicant to first submit a concept proposal. DWR reviews a concept proposal for consistency with the relevant Basin Plan and evaluates the benefits the proposal would provide in order to determine whether it warrants further consideration as a recipient of state funds. If DWR decides that a project warrants further consideration, it issues a "Commitment Letter" to the applicant. However, "Commitment Letter" is somewhat of a misnomer, as an applicant that receives a Commitment Letter cannot actually receive any funds unless the applicant submits a full funding application showing that the project meets all eligibility criteria and is consistent with the approved concept. DWR's approval of the full application is necessary in order for the applicant to receive DWR funding, and DWR retains full discretion to approve or not approve the proposed project, as stated in DWR's *Urban Flood Reduction Program Proposal Solicitation Package*: "[the] State will decide whether the application is complete and eligible based on the criterion and application requirements."(Department of Water Resources 2015:7). As noted in the Solicitation Package, "approval is fully discretionary" (DWR 2015:19). If DWR exercises its discretion to award funds to the applicant, then funding is provided in accordance with a Funding Agreement between DWR and the applicant.

SJAFCA submitted a concept proposal for the Smith Canal project to DWR on March 9, 2015. DWR issued its initial conditional funding recommendations in early May 2015 and held a public comment period on the recommendations that closed on May 29, 2015. By letter dated May 15, 2015, DWR notified SJAFCA that it was conditionally committing to provide up to $22,309,666 for the construction phase of the project. The letter makes clear that SJAFCA will not receive these funds unless and until it completes the application process by submitting a full project application and DWR ultimately exercises its discretion to approve the full application.

Because SJAFCA is in the process of completing its environmental analysis, it has not yet approved a project alternative. Once the CEQA process is complete, SJAFCA will consider the EIR and public comments regarding the project, and only then will make a decision regarding whether to approve the proposed project or one of the other alternatives or to approve no project at all. Thus, although SJAFCA has obtained permission from DWR to submit a full application, it is not required to select the proposed project DWR has conditionally approved for a full application.

The amount of DWR's conditional funding commitment is based on a share of the costs associated with the concept reflected in SJAFCA's concept proposal. DWR has informed all applicants that it will cost share in the lowest cost alternative that meets the project objectives. The lowest cost project to address the Smith Canal objectives is set forth as Alternative 1 of this EIR. Alternatives 2 and 3 achieve the same objectives but at higher costs. If SJAFCA selects Alternative 2 or 3 instead of Alternative 1, total costs would be higher, but the amount of funding provided by DWR would not change because DWR funds based on the lowest cost alternative; therefore, SJAFCA would need to fund a larger share of the total costs of the project. In that event, SJAFCA would still pursue the project, but it would likely be necessary for SJAFCA to seek landowner approval of an assessment to cover the additional costs of constructing the selected alternative.

1.3.2 Regional Flood Management History

Originally consisting of tule marshes and riparian forests, the lands in the lower San Joaquin River region had natural levees that lined meandering channels. Once the area was settled, these waterways were modified to accommodate shipping to the Port of Stockton, which was established in 1850. A rapid increase in population in the region led to the draining of adjacent lands and the need to control water for agricultural purposes.

The Reclamation and Swampland Act, passed in 1861, established the Board of Swampland Commissioners, which was responsible for developing a valley-wide flood management plan. The Board of Commissioners divided the region into reclamation drainage districts to manage flood management projects within their districts. The Board of Commissioners later became the Central Valley Flood Protection Board (CVFPB), which now works with USACE to operate and maintain flood management structures in the lower San Joaquin River region, including Federally authorized levees. Federal authorization of the San Joaquin River Flood Control Project (SJRFCP) in 1917 allowed USACE to be involved in flood system management in the San Joaquin River Valley, including the levee systems originally built by local reclamation districts.

The Flood Control Act of 1944 authorized, among many other projects, the Lower San Joaquin River and Tributaries Project, which provides flood risk–reduction to agricultural lands, the city of Stockton, and neighboring communities. The Lower San Joaquin River and Tributaries Project was completed in 1968, with the exception of the west bank levee on the San Joaquin River, which was not completed until 1972. The Lower San Joaquin River and Tributaries Project established flood risk–reduction up to the design water surface elevation from the 1955 flood profiles.

The Federal government maintains oversight but has no ownership of or maintenance responsibilities for the Federal levee system, except for a few select features that continue to be owned and operated by USACE. Considering these exceptions, the great majority of levees, channels, and related flood management structures are owned, operated, and maintained by the State of California, and local levee and reclamation districts (at the county and sub-county level). Most of the levee and reclamation districts existed prior to the SJRFCP authorization in 1917 and have been carrying out maintenance responsibilities. Today, however, many of the levee districts are substantially underfunded and unable to maintain the system to meet current Federal standards.

Devastation to the Gulf Coast caused by Hurricane Katrina brought attention to the need for improved flood management in California. Propositions 1E and 84 were approved in 2006 and authorized the State to spend $5 billion in bond money for improved flood management. With funding assistance in place, DWR has been able to advance flood risk–reduction projects in the region. Significant flood management projects that affect the region include the following,

- USACE Lower San Joaquin River Feasibility Study (LSJRFS).
- RD 17 Levee Seepage Repair Project.
- RD 1614 Wisconsin Pump Station Project.

1.3.3 Local Flood Management History, Programs, and Activities

SJAFCA was created in 1995 as a Joint Powers Authority between the City of Stockton, San Joaquin County, and the San Joaquin County Flood Control and Water Conservation District in order to

address flood risk–reduction for the city of Stockton and the surrounding area. SJAFCA was tasked with addressing the possible re-mapping of the city of Stockton into a 100-year floodplain, the possible loss of accreditation of levees in the Stockton area, and the improvement of project levees to meet FEMA's standards, which led to the construction of the Flood Protection Restoration Project (FPRP). The FPRP constructed flood walls and levee improvements along approximately 52 miles of existing waterways.

An assessment district was formed by SJAFCA to finance flood management projects, which included more than 74,000 parcels. SJAFCA also started an annual operations and maintenance assessment for managing flood structures and improvements that are maintained by the San Joaquin County Flood Control and Water Conservation District. The Water Resources Development Act of 1996 (WRDA) gave SJAFCA authorization to construct flood management projects and receive reimbursement for the Federal share of project development and construction costs through the annual Federal appropriations process.

In 2006, the City of Stockton and San Joaquin County were notified by FEMA that floodplains in the region would be re-evaluated to conform to Physical Map Revision 34, which required documentation to prove that levees were providing 100-year level of performance (San Joaquin Area Flood Control Agency 2014). FEMA offered a provisional accredited levee (PAL) process to allow local agencies time to assemble the appropriate documentation. The City of Stockton and San Joaquin County signed PAL Agreements on behalf of the levee owners in 2008, giving them until 2010 to complete the documentation. The Smith Canal levees were the only system that did not accept the PALs. New FIRMs were issued by FEMA based on the completed PAL Agreements and levees that had been deemed acceptable without PALs. The only new areas designated as A-zones were in RD 1614 and RD 828.

Separate from the Smith Canal Gate Project, RD 1614 is planning to replace the Wisconsin Pump Station with a new station designed to meet current pumping requirements and reduce flood risk. The new station is needed because the old pump station could fail, resulting in stormwater backup onto the streets and properties the pump station drains, which is an area covering 700 acres.

1.4 Project Need, Purpose, and Objectives

1.4.1 Project Need

SJAFCA has identified five needs that led to the proposal to implement the Smith Canal project.

- Levee encroachment has prevented necessary patrol and maintenance of the levees.
- Levee encroachment has prevented performance of inspections, surveys, or subsurface investigations necessary to accredit the levees.
- Loss of FEMA accreditation requires mandatory flood insurance for the residents of the affected area carrying Federally-backed mortgages.
- Loss of FEMA accreditation restricts building and improvements in the area.
- As required by the Central Valley Flood Protection Act of 2008, the CVFPB will require 200-year flood protection by 2025 for urban and urbanizing areas, with building limitations taking effect after July 2016 if adequate progress toward achieving this standard is not made.

1.4.2 Project Purpose

The primary purpose of the proposed project is to reacquire FEMA accreditation that was revoked in 2008 and remove the SFHA designation from a large portion of central Stockton. Approximately 5,000 properties and approximately 15,000 residents were identified by FEMA as being in the FEMA 100-year floodplain, an area identified by FEMA as having an increased risk of flooding. In addition, based on topographical data recently developed by DWR, FEMA is currently proposing to remap the region to include an additional 3,000 parcels and 9,000 residents in the 100-year floodplain. Further, SJAFCA has a goal consistent with state law to provide a minimum 200-year level of flood risk–reduction performance by 2025. Isolation of Smith Canal from the San Joaquin River would remove the affected area from the 100-year floodplain, thereby improving the FEMA rating, and would contribute toward ultimate 200-year level of performance in combination with other area projects, in compliance with state law.

1.4.3 Project Objectives

CEQA Guidelines Section 15124(b) requires that an EIR contain a "statement of the objectives sought by the proposed project." The objectives are intended to help the lead agency develop a reasonable range of alternatives to evaluate in an EIR. The environmental evaluation presented in an EIR, as well as the findings made when approving a project alternative, also must consider and address the overall project objectives, which include the underlying project purpose described above. Objectives also aid decision makers in preparing findings or statements of overriding considerations, if necessary.

SJAFCA, as the CEQA lead agency, has set forth the following project objectives.

- Improve flood performance to secure FEMA accreditation within the funding capability of SJAFCA
- Reduce flood risk to contribute to minimum 200-year level of performance as mandated by SB 5 within the funding capability of SJAFCA.
- Construct improvements in accordance with DWR's Urban Levee Design Criteria (ULDC).
- Integrate compatibly with regional flood risk–reduction projects, including the LSJRFS and the *Lower San Joaquin and Delta South Regional Flood Management Plan* (RFMP).
- Construct a project that is economically, environmentally, politically, and socially acceptable.
- Construct a project as soon as possible to reduce flood risk, avoid mandatory flood insurance, and avoid building restrictions.
- Construct a project that considers the potential effects of climate change and is resilient to sea level rise while consistent with other project objectives.
- Provide multi-objective benefits where consistent with other project objectives, such as water quality and recreation enhancements.
- Facilitate compatibility with recreation goals for the area, including continued recreational boating access.
- Facilitate compatibility with existing land use in the area.

- Avoid the use of eminent domain to obtain the necessary rights-of-way for project construction and maintenance corridors.

1.5 Related Activities, Programs, and Plans

This section provides an overview of other flood risk management and related actions, programs, and plans that compose the regional planning context. Additional related projects are described in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

1.5.1 Lower San Joaquin River Feasibility Study

The LSJRFS was initiated by USACE in 2009 to study deficiencies in the flood control system for the lower San Joaquin River that remained after the completion of the Lower San Joaquin River and Tributaries Project. The LSJRFS is a cooperative effort between USACE, the State Central Valley Flood Protection Board (CVFPB), and SJAFCA.

The LSJRFS study area extends to the southern part of San Joaquin County along the San Joaquin River to and through Stockton, including the Smith Canal area. The study area also includes the eastside tributaries to the lower San Joaquin River and covers nearly 140 miles of levees.

To provide protection to north Stockton and Central Stockton, the LSJRFS considers numerous incremental improvement alternatives to provide protection to these areas while reasonably maximizing net benefits. Specifically, the LSJRFS proposes to improve flood risk management for north and central Stockton by repairing and enhancing the levees that surround the city and by constructing and operating closure structures on Fourteen mile Slough and Smith Canal. USACE's Tentatively Selected Plan (TSP) for the National Economic Development (NED) includes a gated fixed wall structure from Dad's Point across the mouth of Atherton Cove, represented in this EIR as Alternative 1.

Public review of the study's draft Integrated Feasibility Report/Environmental Impact Statement/Environmental Impact Report (FR/EIS/EIR) was completed in April 2015. The LSJRFS is anticipated to be completed by 2017 and will fund selected project features that are found to have a positive net benefit and are in the Federal interest.

1.5.2 Lower San Joaquin and Delta South Regional Flood Management Plan

SJAFCA, in partnership with other local agencies, developed a regional flood management plan for the Lower San Joaquin River Region and Delta South Region, consistent with the 2012 *Central Valley Flood Protection Plan* (CVFPP). These two regions consist of a portion of San Joaquin County, the cities of Stockton and Lathrop, a portion of the cities of Manteca and Tracy, 26 RDs, and Drexler Tract. The cities of Lodi and Ripon and RD 2115, RD 2119, and RD 403 were also invited to participate in the RFMP due to their proximity to the regions.

The RFMP, finalized in November 2014 (San Joaquin Area Flood Control Agency 2014), provides the framework for the long-term vision for managing flood risk within these two regions. The RFMP provides a reconnaissance-level assessment of flood risks and presents a prioritized list of short-term and long-term flood risk–reduction projects for the regions. A planning-level financial plan has

also been prepared to identify funding needs and sources at the local, state, and Federal level for the implementation of these projects.

1.5.3 Central Valley Flood Protection Plan

The Central Valley Flood Protection Act of 2008, also known as Senate Bill (SB) 5, called for DWR to develop the CVFPP. The CVFPP, adopted by the Central Valley Flood Protection Board in June 2012, outlines a comprehensive system-wide approach for flood management in areas currently protected by State Plan of Flood Control (SPFC) facilities. The CVFPP also establishes a new standard of 200-year flood protection for urban and urbanizing areas in the Central Valley and requires this standard to be achieved by 2025. While the CVFPP focuses on the areas protected by SPFC facilities, the flood emergency response and operations and management of facilities in tributary watersheds that influence SPFC-protected areas are also considered. The CVFPP will be updated every 5 years, and it is intended that each update provide support for subsequent policy, program, and project implementation.

The stated primary goal of the CVFPP is to improve flood-risk management. This is intended to be achieved by reducing the chance of flooding, and damages once flooding occurs, and improving public safety, preparedness, and emergency response through the following actions (California Department of Water Resources 2012).

- Identifying, recommending, and implementing structural and nonstructural projects and actions that benefit lands currently receiving protection from facilities of the SPFC.
- Formulating standards, criteria, and guidelines to facilitate implementation of structural and nonstructural actions for protecting urban areas and other lands of the Sacramento and San Joaquin River basins and the Delta.

CVFPP supporting goals are as follows (California Department of Water Resources 2012).

- To improve operations and maintenance of flood management systems.
- To promote ecosystem functions through flood management system improvements.
- To improve institutional support through the development of stable institutional structures, coordination protocols, and financial frameworks that enable effective and adaptive integrated flood management.
- To promote multi-benefit flood management projects and actions that would contribute to broader integrated water management objectives identified through other programs.

1.5.4 The Delta Plan

Required by the 2009 Sacramento–San Joaquin Delta Reform Act, the Delta Stewardship Council's (DSC) Delta Plan is a comprehensive, long-term management plan for the Delta that provides rules and recommendations to help improve statewide water supply reliability and protect and restore a vibrant and healthy Delta ecosystem. The Delta Plan generally covers five topic areas and goals: (1) increased water supply reliability, (2) restoration of the Delta ecosystem, (3) improved water quality, (4) reduced risks of flooding in the Delta, and (5) protection and enhancement of the Delta. The Delta Plan sets forth regulatory policies and recommendations that seek to influence the actions, activities, and projects of cities and counties and state, Federal, regional, and local agencies toward meeting the goals in the five topic areas.

State and local agencies are required to comply with the set of 14 regulatory policies contained within the Delta Plan. Under the Act, it is the state or local agency approving, funding, or carrying out the project in the Delta that must determine if a project is a "covered action" subject to regulations of the Delta Plan, and if so, certify consistency of the project with Delta Plan policies (Water Code section 85225).

1.6 Community Outreach, CEQA Noticing, and Agency Coordination

1.6.1 Community Outreach

SJAFCA has implemented an extensive public outreach program in order to communicate with the community about the project. SJAFCA has facilitated meetings to inform the public about the project's purpose, need, and schedule, as well communicated with affected residents and property owners through publication of newsletters describing project progress milestones.

To date, SJAFCA has held several community meetings to provide updates on the status of efforts to reduce flood risk for properties protected by Smith Canal levees. Small group meetings were held adjacent to the project site with Atherton Cove and Atherton Island property owners on April 3, 2014, and May 29, 2014, respectively. Property owners were informed of these meetings via letters from SJAFCA. The intent was to brief property owners on draft project alternatives that may be incorporated into the environmental documentation process. Informally, property owners provided feedback on design concepts and shared questions and concerns about potential project impacts.

A larger community meeting for property owners within the assessment district was held on April 17, 2014. Property owners were informed of the meeting via a district wide newsletter. SJAFCA's goal, for both the newsletter and meeting, was to inform property owners of the design and environmental process and timeline, and provide an update on changes to the NFIP.

1.6.2 CEQA Noticing

In addition to general community outreach, SJAFCA has engaged the public through the CEQA noticing process. On June 24, 2014, per State CEQA Guidelines Section 15082, SJAFCA released a notice of preparation (NOP) to solicit input from the public and consult with responsible agencies on the action it is proposing to take as the CEQA lead agency. As required, the NOP, included in Appendix A, has a brief description of the project and its probable environmental impacts; the date, time, and place of the public scoping meeting; and lead agency contact information. The 30-day comment period began on June 25, 2014, and ended on July 25, 2014.

To provide additional notice of the EIR's preparation, SJAFCA published a legal notice announcing commencement of the scoping period in the Stockton Record on June 25, 2014. The Record is a "newspaper of general circulation," as defined in Cal. Gov. Code Section 6000, and is the primary source for print news in the Stockton area. SJAFCA also mailed postcards to landowners whose properties are located within 100 feet of the project area, as well as individuals who had previously expressed interest in the proposed project. The postcard invited landowners to the public scoping meeting and informed them of the scoping period and commencement of the EIR preparation.

Lastly, SJAFCA posted notice on its website, www.sjafca.com/smith_canal_closure.php, in advance of the scoping meeting to publicize the meeting as well as commencement of the EIR process.

On July 16, 2014, SJAFCA held a public scoping meeting, which was attended by 40 people, to inform the public of the project and seek input on the scope of the EIR. The meeting was presented in an open house style in which attendees could read and view information about the project and interact with the project staff, including SJAFCA and its environmental and design consultants. Information presented included the purpose of the project, the project area, the CEQA process, the proposed alternatives developed to date, and the manner in which the public could comment during the scoping period. Following the meeting, SJAFCA posted the scoping meeting materials on its website to serve as a public record of the event and provide information to those who were not in attendance.

1.6.3 Agency Consultation and Coordination

On March 12, 2014, representatives from U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), California Department of Fish and Wildlife (CDFW) met with SJAFCA staff and representatives to discuss the species of concern in the region and possible impacts of the project. Agency staff also provided input on possible design alternatives to help SJAFCA with development of the proposed project and its alternatives.

On October 27, 2014, SJAFCA representatives met with DSC staff to discuss the expected steps and timeline for SJAFCA's submittal of a Delta Plan Consistency Certification for public consideration. This meeting focused on a discussion of the project's scope at the conceptual level and introduced the covered action and certification processes to the project team. DSC staff provided feedback on procedural requirements, impact avoidance methods, and areas of likely public concern.

1.6.4 Responsible and Trustee Agencies

This EIR will be used by Responsible and Trustee Agencies to determine the impacts of the proposed project. Responsible Agencies are those that may have a legal responsibility to approve the project. State and local Responsible Agencies are required to rely on the Lead Agency's environmental document in acting on whatever aspect of the project requires their approval but must prepare and issue their own findings regarding the project (State CEQA Guidelines Section 15096). Trustee Agencies are those that have jurisdiction over certain resources held in trust for the people of California but do not have legal authority over approving or carrying out the project. Responsible and Trustee Agencies for the project are presented in Table 1-1.

Table 1-1. Responsible and Trustee Agencies

Agency	Jurisdiction
Trustee Agency	
California Department of Conservation	Williamson Act lands
Responsible Agencies	
U.S. Army Corps of Engineers	Clean Water Act coordination
U.S. Coast Guard	Bridges
U.S. Environmental Protection Agency	NEPA and Clean Water Act coordination

Agency	Jurisdiction
U.S. Fish and Wildlife Service	Fish and wildlife and Endangered Species Act
National Marine Fisheries Service	Anadromous fish and Endangered Species Act
U.S. Department of Agriculture	Prime farmland conversion
California Department of Fish and Wildlife	Fish and wildlife Native plants designated as rare or endangered Game refuges Ecological reserves
California Department of Parks and Recreation, Division of Boating and Waterways	Boating safety
California Department of Parks and Recreation, Office of Historic Preservation	Historic and cultural resources
California State Lands Commission	State-owned "sovereign" lands
Central Valley Flood Protection Board	Levee modifications
California Air Resources Board	Air quality
Regional Water Quality Control Board (#5)	Water quality and discharges to water bodies
California Department of Water Resources	State water and flood management interests
San Joaquin County	Land use designations
San Joaquin County Air Pollution Control District	Air quality
City of Stockton	Land use designations
Reclamation District #1614	Levee operations and maintenance
Reclamation District #828	Levee operations and maintenance

In addition to the Trustee and Responsible Agencies listed above, DSC oversees the process by which other agencies certify project consistency with the Delta Plan, if the project is located within the legal Delta. The project is located within the secondary zone of the Delta.

1.7 Issues of Known Controversy

Section 15123 of State CEQA Guidelines states that an EIR shall identify areas of controversy known to the lead agency, including issues raised by the agency as well as the public. Potentially controversial issues that were noted during the public scoping process and that may arise during the development of the project are discussed below.

1.7.1 Level of Flood Risk and Project Need

During both earlier public outreach efforts and the CEQA scoping process, members of the affected community expressed concern that the flood risk identified by FEMA and addressed by the project had not been correctly assessed and had been overestimated. As there has never been a devastating flood in the area, the many locals are concerned that the project is an unnecessary expense to the community.

1.7.2 Property Acquisition

Implementation of the project may require acquisition of interests in real estate along Dad's Point, within Smith Canal, along Atherton Cove and Atherton Island, and at the north bank tie-in point near the Stockton Golf and Country Club (described in Chapter 2, *Proposed Project and Alternatives*). Additionally, SJAFCA may need to acquire access easements through the Stockton Golf and Country Club to access the gate structure from the north for construction purposes and for long-term operations and maintenance purposes.

1.7.3 Construction-Related Impacts

The proposed Smith Canal project would be built close to residential and recreational areas, as well as other developed land uses. Accordingly, activities associated with building the proposed project are likely to result in construction-related impacts related to public safety, recreation, navigation, noise and vibration, traffic, water quality and air quality.

1.7.4 Operation-Related Impacts

1.7.4.1 Impacts on the Local Viewshed

Community opposition to the project has focused on impacts on adjacent residences from project operation, including the potential for impacts to the viewshed caused by a large, fixed structure placed in or near Atherton Cove.

1.7.4.2 Impacts on Water Quality

Community opposition to the project has also focused on impacts from project operation on water quality in Smith Canal. The installation and operation of a fixed wall and gate structure in Smith Canal or in adjacent water bodies could change the manner in which water currently flows in and out of Smith Canal. This alteration of existing conditions has the potential to reduce the water's rate of exchange, resulting in increased residence time and potential stagnation. Construction of wall structures may also result in the retention of floating debris, which can cause visual and water quality impacts.

1.7.4.3 Impacts on Recreation Access

A fixed wall and gate structure would have the potential to affect the ease and safety of boating in Smith Canal and Atherton Cove and could reduce the ease with which boats can reach the San Joaquin River through these bodies.

1.8 Document Organization

This Draft EIR is organized as follows.

- Executive Summary
- Chapter 1, *Introduction*
- Chapter 2, *Proposed Project and Alternatives*

- Chapter 3, *Environmental Setting and Impacts*
  - Section 3.1, *Flood Risk, Hydrology, and Geomorphology*
  - Section 3.2, *Water Quality and Groundwater Resources*
  - Section 3.3, *Transportation and Navigation*
  - Section 3.4, *Air Quality*
  - Section 3.5, *Greenhouse Gases and Climate Change*
  - Section 3.6, *Noise*
  - Section 3.7, *Vegetation and Wetlands*
  - Section 3.8, *Fish and Aquatic Resources*
  - Section 3.9, *Wildlife*
  - Section 3.10, *Visual Resources*
  - Section 3.11, *Recreation*
  - Section 3.12, *Utilities and Public Services*
  - Section 3.13, *Public Health and Environmental Hazards*
  - Section 3.14, *Cultural Resources*
  - Section 3.15, *Minimally Affected Resources*
- Chapter 4, *Growth-Inducing and Cumulative Impacts*
- Chapter 5, *Regulatory Framework and Compliance*
- Chapter 6, *References*
- Chapter 7, *List of Preparers*
- Chapter 8, *List of Recipients*
- Appendix A, *Environmental Impact Report Scoping Summary and Notice of Preparation*
- Appendix B, *Smith Canal Gate Hydrodynamic Modeling Alignment and Gate Evaluation Final Report Appendix*
- Appendix C, *Transportation and Navigation Technical Appendix*
- Appendix D, *Air Quality and GHG Analysis Data*
- Appendix E, *Vegetation and Wetlands Technical Appendix*
- Appendix F, *Fish and Aquatic Resources Technical Appendix*
- Appendix G, *Wildlife Technical Appendix*
- Appendix H, *Visual Resources Technical Appendix*
- Appendix I, *Cultural Resources Technical Appendix*

Chapter 2
Proposed Project and Alternatives

As introduced in Chapter 1, *Introduction*, the San Joaquin Area Flood Control Agency (SJAFCA) is proposing the Smith Canal Gate Project (project) to implement flood risk–reduction measures in the vicinity of Smith Canal and the San Joaquin River in and adjacent to the city of Stockton, county of San Joaquin. The existing levees along Smith Canal are heavily encroached upon and cannot be certified as meeting Federal Emergency Management Agency (FEMA) standards or the state's Urban Levee Design Criteria (ULDC). The proposed project would consist primarily of a gated fixed wall structure. During high flow and tide events, the gate structure would isolate Smith Canal from the San Joaquin River and allow existing levees to function as a secondary flood risk–reduction measure.

This chapter explains the alternatives development and screening process; describes the alternatives considered but rejected; summarizes the alternatives being analyzed in this Draft EIR, including the proposed project and the No Project Alternative; outlines common elements of all the alternatives; and identifies the environmentally superior alternative.

Elevations used in this document are referenced to the North American Vertical Datum of 1988 (NAVD 88) to the greatest extent feasible.

2.1 Alternatives Development and Screening

2.1.1 CEQA Alternatives Guidelines

Section 15126.6 of the State CEQA Guidelines directs lead agencies to analyze a "reasonable range" of alternatives in an EIR.

> An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.

2.1.2 Alternatives Screening Approach

The project need, purpose, and objectives are discussed with specificity in Chapter 1, *Introduction*; each was considered in developing the proposed project. For the purpose of alternative screening, SJAFCA utilized a two-tier screening method that prioritized the basic project objectives that alternatives must feasibly attain for consideration in the Draft EIR, placing emphasis on Tier 1 objectives. The first tier is essentially a *pass/fail* decision, with a *fail* rating eliminating an alternative from further consideration. The second tier may be rated on a variable scale of degree (i.e., a relative ranking like *high/medium/low*) rather than *pass/fail*. Public feedback through the environmental process is considered for all criteria.

The 10 criteria used for the alternatives screening process are listed below.

Tier 1—Primary Project Objectives

- Improve the level of flood risk–reduction performance to secure FEMA accreditation within the funding capability of SJAFCA. This objective requires that a project alternative provide a 100-year level of performance. Additional requirements include providing access to the levee to perform patrol and maintenance activities, inspections, surveys, and subsurface investigations, if necessary.
- Reduce flood risk to contribute to achievement of minimum 200-year level of performance by 2025 as mandated by the Central Valley Flood Protection Act of 2008 [Senate Bill (SB) 5] within the funding capability of SJAFCA.
- Construct improvements in accordance with current ULDC, which requires that the levee structure have a 20-foot-wide landside access easement and a 15-foot-wide access easement on the waterside of the structure for maintenance and inspection purposes.

To meet the Tier 1 objectives, the project must be designed to a height sufficient to meet the FEMA accreditation standards, providing flood protection from the 100-year San Joaquin River stage for the area currently protected by the de-accredited Smith Canal levees. In addition, because the project is receiving funding from state grants, the project design must also contribute to the 200-year level of flood protection mandated by SB 5 and construct improvements in accordance with DWR's ULDC. Lastly, because the local and state agencies would seek federal funding, as well, the project must meet federal design standards set by USACE.

The height of the project improvements was developed using the state and federal agency height criteria listed below, which require a total project height of 14.9 feet.

- 200-Year Protection: 9.5' (ULDC [FEMA 100-year protection 9.4'])
- Freeboard: 3.0' (FEMA/ULDC)
- Sea Level Rise: 1.4' (ULDC/USACE)
- Hydraulic Uncertainty: 1.0' (ULDC/USACE)

In addition to meeting the above height requirements, an all-weather patrol road is necessary to meet ULDC levee geometry requirements (Section 7.8 of ULDC) for patrol and inspection during a design flood event and for periodic maintenance, as well as to meet FEMA O&M requirements for inspection and maintenance. Associated easements are required to be under public agency ownership.

Tier 2—Secondary Project Purpose and Objectives

- Integrate compatibility with regional flood risk–reduction projects, including the Lower San Joaquin River Feasibility Study, and the Lower San Joaquin and Delta South Regional Flood Management Plan.
- Construct a project that is economically, environmentally, politically, and socially acceptable.
- Construct a project as soon as possible to reduce flood risk, avoid mandatory flood insurance, and avoid building restrictions.
- Construct a project that considers the potential effects of climate change and is resilient to sea level rise while consistent with other project objectives.

- Provide multi-objective benefits when consistent with other project objectives, such as water quality, habitat, and recreation enhancements.
- Facilitate compatibility with existing recreation uses in the area, including recreational boating access.
- Facilitate compatibility with existing land use in the area.
- Avoid the use of eminent domain to obtain the necessary rights-of-way for project construction and maintenance corridors.

2.2 Alternatives Not Carried Forward

Several measures and alternatives for the Smith Canal Gate project were considered but not carried forward in this EIR based on the Tier 1 and Tier 2 screening criteria presented in Section 2.1.2, *Alternatives Screening Approach*. These alternatives are described briefly in Sections 2.2.1 through 2.2.3. In addition to alternatives developed by SJAFCA, Green Mountain Engineering (GME) provided four potential alternatives during project scoping. Section 2.2.3 presents a summary and screening analysis of the GME alternatives. Further descriptions and evaluations of the GME alternatives are contained in the Public Scoping Report (Appendix A, Attachment H).

2.2.1 Levee Encroachment Removal Alternative

The Levee Encroachment Removal Alternative would fix the existing levees in place instead of building a gated fixed wall structure. This would involve removing all existing encroachments, such as houses, garages, and other buildings from the landside of the levee, and stairs, docks, planters, boat houses, and boat slips from the waterside of the levee; constructing an all-weather levee maintenance access road; and obtaining sufficient right-of-way to allow for ongoing operations and maintenance along the length of Smith Canal. The portion of the southern levee consisting of Shimizu Drive contains no encroachments and is readily accessible, so it was assumed that this portion would not require additional work to meet levee-certification requirements.

The Levee Encroachment Removal Alternative would meet the 100-year level of performance and provide patrol, maintenance, and inspection access, and would contribute to 200-year level of performance. The alternative would also be in accordance with the ULDC and would be compatible with the regional flood risk–reduction plan. However, the alternative would require extensive property acquisition in order to implement the project. The associated property purchase, severance damage for partial property purchase, relocation and legal expenses, and demolition expenses would contribute to an estimated project cost exceeding $106 million, which far exceeds SJAFCA's funding capability and makes this alternative infeasible. The associated property acquisition would also create a project that is unacceptable to local residents due to extensive loss of property or forced relocation, loss of boat docks, and loss of recreation access. Accordance with the ULDC would also require extensive removal of vegetation. Legal proceedings associated with property acquisition would also likely result in extensive delays in project implementation, and would require exercise of eminent domain by SJAFCA to obtain sufficient right-of-way. Finally, the alternative would not have multi-objective benefits, as it does not allow for recreation, habitat, or water quality improvements. Based on the screening criteria, the Levee Encroachment Removal Alternative does not meet the Tier 1 criteria of meeting 100-year level of performance while providing patrol,

maintenance, and inspection access within the funding capability of SJAFCA, and is highly unfavorable on most Tier 2 criteria. The alternative has therefore not been carried forward as part of the Smith Canal project.

2.2.2 Sheet Pile Wall Alternative

The Sheet Pile Wall Alternative would install a single sheet pile wall with anchor piles or a dual sheet pile wall along the entire waterside of the existing Smith Canal levees from the San Joaquin River to Yosemite Lake, allowing the existing 185 encroachments to remain. Plate 2-0a presents the sheet pile wall configuration that would be necessary to meet FEMA and ULDC requirements. Plate 2-0a shows the area between the outer sheet pile and the anchor pile or landward sheet pile that would have fill material installed to extend the levee into the canal to create the required all-weather patrol and maintenance road on the new levee top. Plate 2-0a also shows that waterward placement of the sheet pile wall provides the required access to the landside of the sheet pile wall and its anchor system without having to permanently remove existing encroachments. The sheet pile wall would be constructed from the waterside, minimizing disruptions to adjacent properties. It was assumed that backyard improvements and boat docks would need to be temporarily removed during construction, and boat docks would be replaced after the sheet pile wall was installed. However, the new 20-foot crown and 20-foot landside easement would remain clear zones. The portion of the southern levee where Shimizu Drive runs along the levee top contains only a few encroachments and is readily accessible, so it was assumed that this portion could be restored without the need for a sheet pile wall.

Similar to the Levee Encroachment Removal Alternative, the Sheet Pile Wall Alternative would meet the 100-year level of performance and provide patrol, maintenance, and inspection access, and would contribute to 200-year level of performance for the region. The alternative would also be in accordance with the ULDC and would be compatible with the regional flood risk–reduction plan. The Sheet Pile Wall Alternative would require extensive sheet pile installation and backfill to implement the project. The estimated project cost exceeds $116 million for the single sheet pile wall with anchor piles, which also far exceeds SJAFCA's funding capability and makes this alternative infeasible. The associated property acquisition would also create a project that is unacceptable to local residents due to extensive loss of property or forced relocation. And while boat docks could be replaced under this alternative, construction of the alternative would shift boat docks towards the middle of the canal and would severely restrict boating and recreation along the waterway. Accordance with the ULDC would also require extensive removal of vegetation. Legal proceedings associated with property acquisition would also likely result in extensive delays in project implementation, and would require eminent domain to obtain sufficient right-of-way. It should be noted that the estimated project cost of $116 million was for a single sheet pile wall with anchor pile tie-backs that meets FEMA and interim ULDC requirements. In 2012, the ULDC requirements were finalized and required replacement of the anchor pile tie-backs with a second sheet pile. Due to the high cost of the single sheet pile wall, further analysis of the dual sheet pile wall was not performed.

Finally, the alternative would not have multi-objective benefits, as it does not allow for recreation, habitat, or water quality improvements. Because this alternative is not within the funding capability of SJAFCA, the Sheet Pile Wall Alternative does not meet the Tier 1 criteria of meeting 100-year level of performance while providing patrol, maintenance, and inspection access within the funding capability of SJAFCA. The Sheet Pile Wall Alternative is also highly unfavorable on most Tier 2 criteria. The alternative has therefore not been carried forward as part of the Smith Canal project.

2.2.3 Green Mountain Engineering Alternatives

The GME proposal for the Smith Canal project submitted to SJAFCA on October 2, 2013, included the following alternatives.

- Atherton Cove Gate
- Dual Vinyl Sheet Piling Wall
- Timber Bulkhead Wall
- Single Vinyl Sheet Pile Wall

The *Summary and Evaluation of Alternatives presented by Green Mountain Engineering* (Appendix A, Attachment H) presents a description of each alternative. In addition, the attachment evaluates the four GME alternatives for improvements to the Smith Canal levee system compared to the three primary Tier 1 project objectives listed in Section 2.1.2., *Alternatives Screening Approach.* The evaluation concluded that none of the GME alternatives meet any of the three Tier 1 project objectives, and that these alternatives, therefore, would be infeasible. For example, all of the GME alternatives would have an elevation at the top of the flood control structure of 8.0 to 10.0 feet, which does not provide the 3 feet of freeboard that the 100-year level of performance required at the 100-year flood stage (9.4 + 3.0 = 12.4 feet). The GME alternatives also fail to meet ULDC top-of-levee access road requirements and do not allow for inspection access on the landside of the flood structure, which is necessary to obtain FEMA accreditation and ULDC compliance for the levee.

For example, Plate 2-0b presents the GME Single Vinyl Sheet Pile Wall Alternative, which shows that this alternative does not meet the following FEMA and ULDC requirements.

1. Deficient levee height: The proposed elevation of 8 feet means that the levee relies on elevation of existing FEMA de-accredited levees to provide necessary flood protection..
2. Deficient existing levee height: The top of the existing Smith Canal levee ranges from elevation 12 to 15 feet; because this alternative does not address the existing levee height, those areas where the levee is below 12.4 feet (FEMA 100– year WSE of 9.4 feet plus 3 feet for freeboard) would not be in compliance with FEMA levee criteria.
3. Deficient patrol and maintenance access: The proposed access road at an elevation of 8 feet is below the 100-year elevation and could not be patrolled during a flood event.
4. Deficient inspection access: The proposed improvements rely on an existing levee that has encroachments that limit inspection access to the landside of the levee.

This alternative is reliant on the existing de-accredited levees for flood protection. However, the existing levees do not meet the FEMA criteria of having 3 feet of freeboard above the 100-year flood stage in several locations. Also, this alternative would not provide any protection to properties on Atherton Island against future flood risk associated with sea level rise. In addition, the Single Vinyl Sheet Pile Wall Alternative does not propose improvements east of Pershing Avenue. The area east of Pershing Avenue would remain non-accredited and would be assumed to be deficient for FEMA floodplain mapping purposes.

Similar to the Single Sheet Pile Wall Alternative presented in Section 2.2.2, boat docks could be replaced under this alternative, but construction of the alternative would shift boat docks to the waterside of the new walls towards the middle of the canal, which would severely restrict boating

and recreation along the waterway. Plates 2-0c and 2-0d show examples of the extent of this restriction. In addition, this alternative would also require extensive removal of vegetation to be compliant with the ULDC.

Based on the project's screening criteria, none of the GME alternatives, including the Single Vinyl Sheet Pile Wall Alternative, meet any of the Tier 1 criteria of providing 100-year and contributing to 200-year level of performance while providing patrol, maintenance, and inspection access along the flood control structure. These alternatives have therefore not been carried forward as part of the Smith Canal project.

2.3 Alternatives Carried Forward

Three alternatives were selected to be analyzed further in this Draft EIR based upon their ability to meet the project purpose and objectives as identified through the screening process. All three of these alternatives include variations of a gated fixed wall structure, as well as recreational and habitat improvements to Dad's Point and installation of culverts under Moreing Road to improve water circulation in that area. The estimated costs to construct the three alternatives carried forward are $29 million (Alternative 1), $51 million (Alternative 2), and $42 million (Alternative 3). Implementation of mitigation measures designed to offset the impacts of project construction and implementation as described in Chapter 3, *Environmental Setting and Impacts*, may not be included in these estimated costs. The features of each alternative carried forward are summarized in Table 2-1 and described in detail in Sections 2.3.1 through 2.3.3. The project construction activity and staging areas for all alternatives, shown in Plate 2-1, would include Dad's Point, Louis Park, Atherton Cove and Island, Stockton Golf and Country Club, as well as the mouth of Smith Canal. Staging areas to house construction equipment and mobilize construction activities for the project could include the Louis Park parking area near the boat launch at the base of Dad's Point, a parcel south of Monte Diablo Avenue and west of Interstate 5, and the Port of Stockton.

Table 2-1. Summary of Alternatives Carried Forward

	Alternative 1	Alternative 2	Alternative 3
Title	Single Gated Wall to Dad's Point (Proposed Project)	Atherton Cove floodwall with Smith Canal Gate	Dual Gated Walls to Atherton Cove and Smith Canal
General Description	One fixed wall with single gate from Dad's Point to right bank of San Joaquin River at the Stockton Golf and Country Club. Grade raise at Dad's Point.	One fixed wall with single gate across Smith Canal. 2,300-foot floodwall along Atherton Cove.	Two fixed walls with single gates. Smith Canal wall: Louis Park to Atherton Island. Atherton Cove wall: Atherton Island to the Stockton Golf and Country Club.
Fixed Wall	Dual sheet pile wall, 800 feet long.	Dual sheet pile wall, 225 feet long.	Dual sheet pile wall. Smith Canal wall: 250 feet. Atherton Cove wall: 400 feet.

	Alternative 1	Alternative 2	Alternative 3
Tie-In to Existing Levee	Integrated from Dad's Point into the existing FEMA-accredited levee near the Stockton Golf and Country Club.	Integrated from Louis Park across Smith Canal and along Atherton Cove to the existing FEMA-accredited levee near the Stockton Golf and Country Club.	For Atherton Cove wall: Integrated from Atherton Island into the existing FEMA-accredited levee near the Stockton Golf and Country Club. For Smith Canal wall: Integrated from Louis Park across Smith Canal.
Gate Structure	Single gate, 50 feet wide	Single gate, 50 feet wide	Two single gates, each 50 feet wide
Control Building	Single building, 400 square feet, located at the end of Dad's Point.	Single building, 400 square feet, located at left bank of Smith Canal, in Louis Park.	Two buildings, both 400 square feet. Smith Canal building located at left bank of Smith Canal, in Louis Park. Atherton Cove building located adjacent to Stockton Golf and Country Club.
Floodwall	NA	Atherton Cove –2,300 feet, dual sheet pile floodwall. Constructed on waterside of existing levee abutting north side of Atherton Cove.	NA
Dad's Point Improvements	Raise grade to tie in to high ground at Louis Park. Remove noncompliant woody vegetation Install fishing platforms. Remove invasive species. Build multi-use interpretive trail with kiosks and benches. Install bat boxes, if suitable.	Install fishing platforms. Remove invasive species. Build multi-use interpretive trail with kiosks and benches. Install bat boxes, if suitable.	Install fishing platforms. Remove invasive species. Build multi-use interpretive trail with kiosks and benches. Install bat a boxes, if suitable.
Atherton Island Improvements	NA	NA	Install 200-foot-long access road on Atherton Island at southern portion of Atherton Cove fixed wall structure

2.3.1 Alternative 1—Single Gated Wall to Dad's Point (Proposed Project)

Alternative 1, the proposed project, would reduce flood risk for approximately 8,000 properties behind the existing Smith Canal levees by constructing a gated fixed wall structure to isolate Atherton Cove and Smith Canal from the San Joaquin River during high flow and tide events (Plate 2-2). The gated fixed wall structure would be built with an additional 2.4 feet of elevation to account for both projected sea level rise through 2050 and hydraulic uncertainty, reducing future flood risk for these properties and those on Atherton Island. A fixed dual sheet pile wall filled with granular material would extend approximately 800 feet from the north tip of Dad's Point to the right bank of the San Joaquin River, at the Stockton Golf and Country Club, and would feature a 50-foot-wide gate

that would be closed during high flow events forecast to approach or exceed design operating water surface elevations (8.0 feet, NAVD88). The gate would be closed only as needed for flood control, remaining open to allow for recreation, navigation, and tidal movement in Smith Canal. If deemed necessary to aid navigation, U.S. Coast Guard-approved lighting may be installed along the fixed wall structure and at the gate opening.

The opening portion of the gate structure would consist of a miter (double-door) gate structure, opening outwards towards the San Joaquin River. When open, the gate doors would recess into the gate structure, providing a 50-foot-wide opening (Plate 2-7). The structure would be opened and closed by electric motors located above water on top of each gate hinge. The gate panels would be attached to a concrete foundation using stainless steel anchor bolts. The gate panels would be gasket-sealed at their connection to the dual sheet pile wall structure and at the point where two panels come together.

The proposed project would also include construction of a 400-square-foot gate structure control building at the end of Dad's Point. The control building would be a single-story masonry building with a roof peak elevation of 15 feet above ground. If deemed necessary, low-level security lighting may be installed to facilitate nighttime emergency access. The gate structure would be designed so it could be operated manually, using programmable preset operating controls, or remotely via a Supervisory Control and Data Acquisition (SCADA) system. In addition to allowing for remote operation of the gates, the SCADA system would be used to remotely monitor the water level at both sides of the gate, the gate position, the high water level alarm, and the intrusion alarm at the gate structure control building. The system would be monitored remotely by cameras during opening and closing.

Improvements to Dad's Point would also be implemented. Approximately 700 feet of the grade along Dad's Point would be raised to tie into high ground at Louis Park and to allow Dad's Point to serve as a levee when the gate structure is closed. A concrete retaining wall would be built to avoid changing the grade at the Louis Park boat launch area at the base of Dad's Point to complete the Dad's Point levee without constricting boat traffic. Other Dad's Point improvements would include installation of fishing and wildlife viewing platforms accessible to persons with disabilities, construction of a multi-use interpretive trail suitable for walking, running and bicycling with kiosks and benches, removal of invasive vegetation and planting of native landscaping, and installation of bat boxes, if suitable.

Also, to improve water quality in Atherton Cove through increased circulation, culverts consisting of three 48-inch corrugated metal pipes, each 75 feet in length, would be installed under Moreing Road, between Atherton Cove and Smith Canal, to facilitate movement of water under the roadway and lessen existing stagnation. The installation would be done in phases, starting with the south end of Moreing Road and finishing on the north end of Moreing Road.

2.3.1.1 Project Construction

Mobilization and Staging

The contractor would designate appropriate staging areas to house construction equipment and mobilize construction activities for the project. For the purpose of analysis in this document, potential contractor staging areas are assumed to include the Louis Park parking area near the boat launch at the base of Dad's Point and a parcel south of Monte Diablo Avenue and west of Interstate 5, as depicted in Plate 2-1. It is also assumed in this analysis that the contractor may utilize the Port of Stockton, across the river from the project area, as a staging area, though a specific location within

the Port is not identified in this EIR. Should the Port of Stockton be used as a staging area, it is assumed the contractor may move materials and equipment by truck or via a barge across the river to the project area.

Material Importation and Disposal

Materials to be used in significant quantities for Alternative 1 construction are steel sheet pilings for the fixed wall, concrete for the gate openings, and granular fill material for the fixed wall. Other materials imported to the site could include incidental construction support materials, aggregate base rock, asphalt, concrete, hydro seed, and riprap.

Materials would be brought to the project site via truck or barge, depending on the location of the project staging area or the size or amount of the material being brought to the site.

Debris from clearing and grubbing between the connection of the gate structure and the shoreline would be hauled to one of two permitted disposal sites: the Lovelace Materials Recovery Facility in Manteca, approximately 12.5 miles from the project site, or the North County Recycling Center and Sanitary Landfill in Lodi, approximately 22 miles from the project site.

Haul Routes and Site Access

The project area can be accessed by three routes.

- County Club Boulevard north of Smith Canal.
- Monte Diablo Avenue south of Smith Canal.
- Boat or barge along the San Joaquin River.

Gate Structure

Cofferdam Installation

Construction and installation of the gate structure would begin by installing a metal sheet pile cofferdam, necessary to dewater the work area and allow dry work on the foundation and walls for the gate structure. To form the cofferdam, sheet piles would be driven using a barge-mounted crane equipped with a vibratory hammer. The cofferdam sheet piles would be sized to form the foundation of the gate structure, approximately 70 by 70 feet, and would be the same height as the gate structure (elevation 14.9 feet), extending 10 feet above the mean water level at the entrance to Smith Canal.

The cofferdam would be constructed over a 1-month period during the approved in-water work window. Construction of the cofferdam would limit access for boat traffic from both Smith Canal and Atherton Cove to an opening north of the cofferdam. The access would be limited until the gate structure would be operational, estimated to be 11 months after construction of the cofferdam.

Dewatering Procedures

Dewatering of the cofferdam area would begin upon completion of the cofferdam installation and would continue during the entire installation of the gate structure. The cofferdam would need to be continuously dewatered. Initial dewatering would take place prior to placement of the foundation. Procedures would be put into place to manage the silt that would likely be removed during the initial dewatering activities. The silt would be allowed to settle within the coffer dam to limit silt

discharged during dewatering. It would be stored onsite and would settle on the channel floor. The cofferdam is assumed to have a low continuous inflow, resulting in a work area that is not water tight, and a sump pump and generator would be used to remove excess water if it reaches a predetermined level. Should continuous dewatering be needed, bag filters would be used to contain and dispose of silt.

Gate Structure Construction and Installation

Construction and installation of the gate structure would commence once construction of the cofferdam is complete. Construction of the gate structure would take approximately 6 months. Concrete cylinder piles, approximately 24 inches in diameter, would be driven along the inside edge of the cofferdam to provide support for the concrete floor and walls. The concrete cylinder piles would be installed by using a barge-mounted crane equipped with a pile driving impact hammer.

Following installation of the concrete cylinder piles, reinforced concrete floor and walls would be formed and poured for the side walls of the gate structure. Two sides of the cofferdam would be used as forms. The concrete floor would be 70 feet wide, 60 feet long, and 3 feet thick, while the concrete walls would be 60 feet long, 20 feet high, and 4 feet thick. The metal gate would be attached to the concrete floor and walls by a barge-mounted crane. Next, the cofferdam sheet pile along the inlet and outlet sides of the gate would be cut down by a diver using a torch to the level of the gate structure floor. The remaining portion of the sheet pile would be kept in place to prevent seepage under the gate structure.

The gate would be tested and put into service after construction of the gate structure control building and southern side of the fixed wall is completed. Construction of the northern side of the fixed wall would not take place until after the gate structure has been tested to confirm operability.

Gate Structure Control Building

The building that would house the gate structure controls would be located at the tip of Dad's Point. The structure would be a single-story masonry building, approximately 400 square feet, with a roof peak elevation of 15 feet above ground.

Construction of the gate structure control building would take approximately 6 months. The building would be constructed using standard building methods consisting of a concrete slab foundation, masonry block walls, and metal roof. Following construction of the building, power and control panels would be installed.

To enable operation of the gate as well as provide lighting in and around the gate structure and control building, electrical power and control wiring in conduits would be constructed between the gate structure and the control building. Open-trench construction would be used to install the power and control conduit on Dad's Point and through the granular material inside the fixed wall. The trench would be 3 feet deep, 3 feet wide, and 100 feet long along Dad's Point, and 500 feet long inside the fixed wall.

Fixed Wall

Following installation of the gate structure coffer dam, work would begin on the fixed wall portion of the project. The fixed wall would extend 800 feet from the north tip of Dad's Point Levee to the right bank of the San Joaquin River, at the Stockton Golf and Country Club (Plate 2-2). The fixed wall would be a dual sheet pile wall, consisting of two metal walls driven into the river bed by a vibratory

hammer. The walls would be constructed approximately 25 feet apart and would have a top elevation of 14.9 feet (NAVD88) extending 10 feet above the mean water level at the entrance to Smith Canal (Plate 2-8). The silt in the water between the sheet walls would be allowed to settle before being dewatered.

The north end of the fixed wall would be integrated into the existing FEMA-accredited levee near the Stockton Golf and Country Club. This integration would be designed so that it would not affect the integrity of the existing levee system. The sheet pile at the north end of the fixed wall would be driven perpendicular to the existing levee, up until the point the sheet pile intersects the existing levee crown. At that point, an additional sheet pile would be driven parallel to the existing crown to eliminate the potential for seepage around the fixed wall sheet piles. Future geotechnical investigation would be conducted to identify the length and depth of this additional sheet pile so that it would not affect the integrity of the existing levee system.

To improve water quality within the vicinity of the wall and reduce operational velocities through the gate, six 36-inch culverts with slide gate closures would be placed through the fixed wall approximately every 100 feet, positioned 1 foot from the floor in Atherton Cove. Openings would be cut in the sheet piles at both ends to accommodate the ends of the culvert. The culverts would then be welded to the sheet piles and slide gates attached to the sheet pile on the side of the wall nearest to Smith Canal. The slide gates would allow water to pass through the fixed wall but would be closed when the main gate structure is closed.

Next, granular material would be installed between the walls to the level of the culverts using a front end loader. The granular material would be approximately 1 inch size and consist of a sand and gravel mixture. Steel cable cross-ties and gated culverts would be manually installed next as the granular material is raised to an elevation within 3 feet of the top of the sheet pile.

As described in the previous section, *Gate Structure Control Building*, a trench would be excavated between the two sheet piles from the gate structure to the control building to accommodate a conduit that would supply electrical power and controls to the gate structure. The trench would be 3 feet deep, 3 feet wide, and 500 feet long inside the fixed wall and would be excavated and backfilled using a backhoe.

Upon completion of construction, a locked security gate would be installed at the south end of the fixed wall on Dad's Point and at the north end of the fixed wall at the Stockton Golf and Country Club. The gate would prevent public access to the fixed wall and gate structure, and would be 6 feet high with barbed wire along the top. Access to the gate structure through the security gate would be limited to SJAFCA and authorized maintenance representatives.

Construction of the fixed wall would be staggered over 2 years in order to comply with the allowable in-water work period from mid-July to mid-October each year. The southern portion of the fixed wall would be installed during the first year of construction and the northern portion during the second year. Construction of the northern side of the fixed wall would not take place until after the gate structure has been tested to confirm operability.

Similar to the construction of the gate structure, work to construct the fixed wall would be done using barge-mounted equipment. The granular material would be delivered to the construction site via truck or barge using a crane equipped with a clamshell bucket.

Moreing Road Culverts

Three culverts would be installed under Moreing Road to improve water quality at the end of Atherton Cove. The culverts would be 48-inch corrugated metal pipes, each 75 feet in length. To construct the culverts under Moreing Road, a 40- by 10-foot cofferdam would be installed on each side of Moreing Road to allow for a dry work area. The installation of the cofferdam for the culverts would be identical to that of the cofferdam constructed for the gate structure but would have a top elevation matching the elevation of the road. Silt fences would be constructed on both sides of the road. Using trench box shoring and a crane-mounted backhoe, piping would then be installed between Atherton Cove and Smith Canal by open-trench construction. The trenches would be 5 feet wide and 10 feet deep. Once the culverts are installed, the trench would be backfilled and the road paved. The cofferdam would be removed upon completion of construction using a barge-mounted crane.

Single-lane traffic would be maintained during the installation of the culverts, with delays of up to 15 minutes. The road would be replaced at the end of construction and restored to its original condition.

Construction of the culverts would take approximately 2 months. The installation would be done in phases, starting on the Smith Canal side of Moreing Road and being completed on the Atherton Cove side of Moreing Road.

Dad's Point Improvements

Grade Raise

Under Alternative 1, Phase 1 of improvements to Dad's Point would consist of raising the grade of Dad's Point to match that of Louis Park. Previous land surveys have shown that the existing grade along Dad's Point is lower than the top of the fixed wall that would be installed under Alternative 1, thereby undermining the proposed project's flood risk–reduction efforts. Approximately 700 feet of Dad's Point grade would be raised to allow it to function as a levee when the gate is closed, eliminating a low area that currently extends from Louis Park onto Dad's Point, and constructed in compliance with the state's ULDC. The elevation of Dad's Point would be raised to a minimum elevation of 14.9 feet. The grade would be raised by first installing engineered fill materials along the 700-foot-long low stretch at the crown of Dad's Point. The fill material would be delivered using dump trucks and graders. The engineered fill would then be covered with a top layer consisting of a soil type suitable for planting and recreation. Vegetated riprap material would be placed on the slopes of Dad's Point as needed, which are anticipated to be outside the theoretical levee prism and thus suitable for planting. This material would be delivered by truck and installed using a backhoe. Once the grade raise is complete, a 20-foot-wide all-weather road made of Turf-Block would be constructed at the crown of Dad's Point along its length to provide access to the gate structure control building. The Turf-Block, an interlocking concrete paver, would allow grass to grow along the road.

In addition, to obtain the same minimum elevation of 14.9 feet at the Louis Park boat launch area at the base of Dad's Point, a 100-foot long and approximately 5-foot high reinforced concrete retaining wall would be constructed along the river behind the boat launch, with a varying base elevation of approximately 10 to 13 feet. Lastly, an abandoned 30-inch cast-iron sewer outfall pipe that passes through Dad's Point about 500 feet from the tip of Dad's Point would be cut on the Smith Canal side and the end plugged with concrete. The approximately 120-foot long remainder of the pipe that

traverses Dad's Point would be removed by excavating a trench down to the elevation of the pipe with a backhoe. The trench would be backfilled using a backhoe and roller compactor with material suitable for a levee to match the existing grade once the pipe is removed.

Existing vegetation of Dad's Point would be analyzed for compliance with applicable levee vegetation policies. Such policies include USACE's levee vegetation policy, as detailed in Engineering Technical Letter 1110-2-583, Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures (ETL), which generally prohibits woody vegetation within the levee prism or within 15 feet of the landside or waterside levee toes (U.S. Army Corps of Engineers 2014). In addition, addition or retention of vegetation along Dad's Point would comply with the ULDC vegetation policy, requiring all existing trees be evaluated in future geotechnical investigations to determine if they present an unacceptable threat to levee integrity (California Department of Water Resources 2012). While it is likely that some existing trees would be removed from Dad's Point to meet ETL and ULDC requirements, the width of Dad's Point may allow for retention of existing trees, where feasible.

Construction of Dad's Point grade and levee would take approximately 4 months.

Habitat and Recreation Improvements

As part of the proposed project, Phase 2 of improvements on Dad's Point would be made to increase the recreation opportunities, habitat value, and overall experience for visitors. Recreation facilities developed on Dad's Point would be selected based on current uses of the space including fishing, wildlife viewing, walking, biking, and running. As part of recreation facility implementation, other improvements would be made, such as invasive species removal, restoration of banks with native riparian species, and replacement of lawn areas with low water use plants. Habitat value would also be enhanced through the installation of bat boxes on Dad's Point to increase suitable habitat for native species, where appropriate.

Fishing Access/Wildlife Viewing Platforms

Fishing and wildlife viewing from Dad's Point are popular recreation activities. Two fishing and wildlife viewing platforms would be constructed on the river side of the peninsula, spaced approximately 400 feet apart, to provide optimum spaces for engaging in these opportunities. The platforms would be constructed by driving wooden piles with an impact hammer into the bank that would extend out from the peninsula, and the area would be backfilled with granular material to match the grade of Dad's Point. The platforms would be 25 feet wide, and the outer edge would extend to the shoreline at mean low tide elevation, which is at approximately 2 feet. Wildlife viewing platforms would be Americans with Disabilities Act (ADA) accessible, have railings for safety, and benches for sitting.. The platforms would help organize and direct use of the shoreline for recreation activities, and signage placed along the remainder of the shoreline would prohibit use, where necessary, to help prevent erosion and keep wildlife habitat undisturbed.

Invasive Species Removal and Landscaping

Because invasive plants displace native plants and wildlife, increase wildfire and flood danger, consume valuable water, and degrade recreational opportunities (California Invasive Pest Plants Council 2015), invasive plants would be removed along the levee and replaced with native grasses or shrubs. Removal of invasive trees, shrubs, and herbaceous vegetation from the banks of Dad's Point would remove the source of seeds and additional invasive plants. Areas where invasive plants

are removed would be candidate locations for fishing and wildlife viewing platforms and native riparian restoration sites. Planting these areas with native riparian plants would increase habitat value, decrease wildfire and flood danger, increase recreation opportunities, and reduce maintenance costs. In addition, replacement of the current vegetation (lawn) with low water use vegetation along the crown of Dad's Point adjacent to the levee crown road would reduce water consumption and maintenance costs, provide more wildlife habitat and recreation opportunities, and provide the public with ideas on how to reduce water consumption at home.

Bat Boxes

In consultation with a qualified biologist, up to five bat boxes would be installed along Dad's Point, if suitable locations are found.

Multi-use Interpretive Trail

A multi-use interpretive trail suitable for walking, running, and bicycling with kiosks and benches would be constructed on Dad's Point after the grade adjustment and levee construction are complete. Interpretive signs would help educate the public on a variety of topics including local wildlife and plants, the San Joaquin River watershed, the history of the Port of Stockton, the Sacramento–San Joaquin River Delta, or information about the proposed low water use demonstration plantings at Dad's Point. The signs would be developed with multiple languages presented to reach the widest audience possible.

The trail presently on Dad's Point provides access for fishing and wildlife viewing, but is also used for walking, biking, and running. The replacement trail would be constructed as a Class I multiuse trail facility with a minimum 8-foot-wide paved surface and 2-foot-wide decomposed granite shoulders.

Demobilization and Closeout Procedures

Upon the completion of project construction, the contractor would return staging areas to their original, or better, condition. Areas disturbed by construction would be hydro seeded, as required by the project's Storm Water Pollution Prevention Plan (SWPPP).

2.3.1.2 Project Implementation

Construction Schedule and Sequence

Construction of Alternative 1 would last approximately 2 years. The construction sequence and approximate construction timeframes are shown in Table 2-2.

Table 2-2. Construction Sequence for Alternative 1

Activity	Month	Construction Year
Mobilize equipment and staging	April–June	Year 1
Construct gate structure • Construct cofferdam • Construct gate structure and install gates	July–March	Year 1

Activity	Month	Construction Year
Construct southern portion of fixed wall • Install sheet pile for fixed sheet pile wall south of the gate structure • Place granular material and install culverts to construct sheet pile fixed wall on south side of gate structure	August–March	Year 1
Construct gate structure control building	October–March	Year 1
Construct Dad's Point Improvements—Phase 1 • Raise grade along Dad's Point • Remove noncompliant woody vegetation • Install concrete retaining wall on southwest side of the boat launch area • Install access road on top of Dad's Point	April–June	Year 2
Construct northern portion of fixed wall • Install sheet pile for fixed sheet pile wall north of the gate structure • Place granular material and install culverts to construct sheet pile fixed wall on north side of gate structure	July–October	Year 2
Construct culverts under Moreing Road • Construct cofferdam • Install 48-inch culverts	August–September	Year 2
Construct Dad's Point Improvements—Phase 2 • Construct fishing access/wildlife viewing platforms • Remove invasive plant species and landscape • Install bat boxes • Install multi-use interpretive trail	September–October	Year 2

Construction Seasons and Hours

Alternative 1 would have two primary periods for construction, depending on the type of work being done.

- **In-Water Work.** All work in water would be conducted during an approximately 12-week period from mid-July to mid-October each year. This timeframe is the only time when work that may disturb aquatic habitat can be completed. During that time, work activities would be conducted 10 hours a day, from 7:00 a.m. to 5:00 p.m., up to 7 days per week.
- **Dry Land Work.** Work on dry land, including dewatered portions of Smith Canal, would be conducted year-round, depending on weather. Work hours would be 9 hours per day, from 7:00 a.m. to 4:00 p.m., Monday through Friday.

2.3.1.3 Operations and Maintenance

Gate Operation

Under Alternative 1, the gate would remain open to allow for recreation, navigation, and tidal movement. It would be closed only as needed for flood control purposes, testing, inspection, and maintenance. For flood control purposes, the gate would be closed only during high flow and tide

events forecasted to approach or exceed the design operating water surface elevation (8.0 feet NAVD88), events that typically occur between November and April. The gate would be operated as needed during these times to prevent high flows from entering Smith Canal. If a high flow event were anticipated, the gate would be closed at the lowest tide prior to the forecasted high tide. The gate would remain closed until the water level in Smith Canal is higher than the San Joaquin River, at which point the head differential would force the gate open, equalizing the water surface elevation. Currently, an urban area of approximately 3,430 acres drains into Smith Canal via nine storm drain pump stations. Should a local area rainfall event occur simultaneously with a high flow or high tide event in the San Joaquin River, the one-way design of the gate structure would operate passively to prevent stormwater runoff from accumulating in Smith Canal. When the water level behind the gate is higher than that of the water in front of it, the gate would automatically open, allowing accumulated interior drainage behind the gate structure to flow out through Smith Canal between high tides.

Table 2-3 presents the number of gate closures that would have occurred between 1983 and 2013 based on stage data from the Burns Cutoff Gage Station. The number of closures over this 30-year period would have ranged from 0 to 19 times per year, with no closures occurring in 23 of those years.

Table 2-3. Number of Days with Stage greater than 8.0 Feet NAVD88

Year	No. Days with Stage ≥ 8.0 Feet NAVD88	Year	No. Days with Stage ≥ 8.0 Feet NAVD88
1983	19	1998	13
1984	2	1999	0
1985	0	2000	0
1986	4	2001	0
1987	0	2002	0
1988	0	2003	0
1989	0	2004	0
1990	0	2005	0
1991	0	2006	8
1992	0	2007	0
1993	0	2008	0
1994	0	2009	0
1995	0	2010	0
1996	0	2011	1
1997	12	2013	0

Based on the information presented in Table 2-3, it is assumed that there would be two closures per year on average for flood control purposes. In general, the gate would not need to be closed at a precise point in the tidal cycle. However, if a significant local rain event was predicted to occur at the same time as flood stage on the San Joaquin River near Stockton, timing of gate closure would need to be more precise to maximize storage space for local runoff behind the fixed wall. To be prepared for such an event, SJAFCA or its contractor would develop a gate operation plan. The plan would include procedures for predicting when river stage would be high and when local rain events might

be significant. For example, each year, prior to November 1, SJAFCA would obtain tide prediction tables to determine the timing of peak tides. These high tides would be used to develop an "alert" table to help plan activities during the winter months. In addition, because rainfall and runoff affect water surface elevation, the daily stage predictions generated by DWR would be monitored. This information would help determine when the gate and culverts would be closed for flood control purposes. The gate operation plan would consider that gate closure should occur earlier (at low tide potentially days before the flood flows are expected to arrive) rather than later (at low tide immediately before peak flows are expected) if new storms were predicted for the region in order to maximize available storage space behind the gate structure for local runoff. The operation plan would consider some "what if" scenarios of combined high stage on the San Joaquin River and significant local storm runoff. Section 3.1, *Flood Risk Management and Geomorphic Conditions*, includes a discussion of what might happen in the unlikely event that the 100-year flood stage was reached on the San Joaquin River at the same time as the 100-year 24-hour local rainfall event.

Equipment Testing

The gate structure and the slide gates would be tested as needed, and testing would be scheduled to avoid times when boat traffic is expected to be heavy. During this testing, (1) the gate would be closed and then reopened, and (2) the slide gates on the culverts through the fixed wall would be closed and opened at the same time as the main gate.

Inspection and Maintenance

Structure and Systems Inspection and Maintenance

Routine inspection and maintenance of the gate structure and associated equipment would be conducted on an annual basis to ensure that flood risk–reduction would be provided by the operation of the gate structure. This inspection and maintenance would be conducted on the gate's abutment seals, motors, hinges, and panels.

Maintenance of the dual sheet pile structure corrosion protection system would take place every 2 years. The fill material in the fixed wall dual sheet pile structures would be inspected annually, and additional fill material would be added as required. Likewise, graffiti removal from the gate structure and the Dad's Point retaining wall (Alternative 1 only) would be conducted as needed to avoid creating a visual nuisance.

Water Quality Maintenance

Floating debris that has accumulated behind the dual sheet pile wall would be regularly removed. The frequency of debris removal would depend on the rate of accumulation, to be determined by regular visual monitoring of the site and collection of information from adjacent residents. Based on the information gathered, SJAFCA would schedule and implement a regular debris removal program, removing debris from the project site as frequently as needed to comply with the Basin Plan's direction that "[w]ater shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses" (Central Valley Regional Water Quality Control Board 2011:III-5).

Water hyacinth (*Eichhornia crassipes*) also would be regularly removed from around the dual sheet pile wall through development and implementation of a water hyacinth control program to ensure that the cover of water hyacinth in the project area does not increase beyond existing conditions. The frequency of water hyacinth removal would depend on the rate of vegetation growth and

accumulation, to be determined by regular visual monitoring of the site. Based on the information gathered, SJAFCA would schedule and implement a regular removal program, removing hyacinth from the project site during the growing season, which is generally from March to early December.

During the growing season, mechanical harvesting would be conducted using an aquatic weed harvester whenever cover of water hyacinth reaches 20% in the most impacted areas behind the sheet pile wall. The percent cover would be visually estimated from the shoreline behind the sheet pile wall.

2.3.2 Alternative 2—Atherton Cove Floodwall with Smith Canal Gate

Alternative 2 would reduce flood risk for approximately 8,000 properties behind the existing Smith Canal levee, and attain 100-year level of performance, by constructing a gated fixed wall structure across Smith Canal to isolate Smith Canal from the San Joaquin River during high flow events, extending 225 feet across Smith Canal from Louis Park to Moreing Road (Plate 2-3). As in Alternative 1, the fixed wall would feature a 50-foot-wide gate that could be closed during high flow events. The gate would be closed only as needed for flood control, remaining open to allow for recreation, navigation, and tidal movement in Smith Canal. The gate design would be identical to the gate described in Alternative 1. However, unlike Alternative 1, Alternative 2 would not provide any protection to properties on Atherton Island against future flood risk associated with sea level rise.

Alternative 2 would also provide a 100-year level of performance by constructing a 2,300-foot double sheet pile floodwall along the waterside of the existing levee abutting the north side of Atherton Cove, tying into the existing FEMA-accredited levee at the Stockton Golf and Country Club. Alternative 2 includes the removal and reinstallation of existing boat docks and piers as part of the floodwall construction. During project construction, a SJAFCA representative would work with boat owners east of the gate to provide an alternative storage location for boats.

While the grade of Dad's Point would not be raised with Alternative 2 as it is with Alternative 1, habitat and recreation improvements to Dad's Point would be implemented and would include installation of ADA-accessible fishing and wildlife viewing platforms, construction of an multi-use interpretive trail suitable for walking, running, and bicycling with kiosks and benches, removal of invasive vegetation and planting of native landscaping, and installation of bat boxes, where suitable.

Alternative 2 would also include the installation of three 48-inch corrugated metal pipe culverts under Moreing Road, similar to Alternative 1.

2.3.2.1 Project Construction

Mobilization and Staging

Mobilization and staging under Alternative 2 would be the same as described for Alternative 1.

Material Importation and Disposal

Material importation and disposal under Alternative 2 would be the same as described for Alternative 1.

Haul Route and Site Access

Haul routes and site access under Alternative 2 would be the same as described for Alternative 1.

Gate Structure

Cofferdam Installation

Construction methods for the cofferdam along Smith Canal would be the same as those described for Alternative 1; however, boat traffic would not be allowed along Smith Canal during Year 1 of construction. Boat traffic would resume once the gate structure is operational, which is estimated to be 11 months after installation of the remaining cofferdam begins. A SJAFCA representative would work with the boat owners east of the gate to provide an alternative storage location during construction of the cofferdam.

Dewatering Procedures

Dewatering procedures for the gate construction would be the same as described for Alternative 1.

Gate Structure Construction and Installation

Construction methods for the gate structure along Smith Canal would be the same as those described for Alternative 1 for the structure between Dad's Point and the right bank of the San Joaquin River at the Stockton Golf and Country Club.

Gate Structure Control Building

Construction of the gate structure control building under Alternative 2 would be the same as described for Alternative 1, but the building would be located on the left (south) bank of Smith Canal in Louis Park as shown in Plate 2-3.

Fixed Wall

The fixed wall would extend 225 feet across Smith Canal from Louis Park to Moreing Road. Construction of the fixed wall under Alternative 2 would be the same as described for Alternative 1, but the wall would be located at the entrance to Smith Canal and would only have two culverts with slide gates installed as opposed to six. Once the fixed wall is complete, security gates would be installed as described for Alternative 1.

Moreing Road Culverts

Construction of the culverts under Moreing Road would be the same as those described under Alternative 1.

Atherton Cove Floodwall

The Atherton Cove floodwall would be constructed along the waterside of the existing levee abutting the north side of Atherton Cove. The dual sheet pile floodwall would be 2,300 feet long. The top of the outer sheet pile wall would be at elevation 14.9 feet, roughly equal to the height of the existing levee (Plate 2-4). A decorative concrete cap and railing would be added to the top of the outer sheet pile wall for pedestrian safety. The top of the inner sheet pile wall would be at an elevation of

approximately 13 feet, buried beneath the backfill added between the outer sheet pile wall and the existing levee crown.

To construct the floodwall, sheet piles would be driven using barge-mounted vibratory equipment. Backfill material would be placed between the wall and the shore of Atherton Cove using a barge as there is no access road on top of the existing levee. The backfill material would consist of the same granular material used between the fixed wall, a 0.75- to 1- inch sand and gravel mixture, and would be installed using a front-loader. Steel cable cross-ties would then be installed between the inner and outer sheet pile walls to provide structural strength. Granular material would continue to be added as needed to structurally support the floodwall, up to an elevation of 14.9 feet.

The top portion of the floodwall would consist of a 20-foot-wide all-weather road that would be installed using Turf-Block so it could be accessible via vehicle for maintenance and access (Plate 2-5).

A security gate would also be installed at the western and eastern entrance of the floodwall. The gate would be 20 feet wide and constructed using two steel pipe gates. The gates would only be opened during routine monthly inspections and for monitoring during flood events, and access would be limited to SJAFCA and authorized maintenance representatives.

The decorative concrete cap and railing at the top of the outer sheet pile wall would be installed manually. The railing would be 36-inches high and made of tubular steel, with posts set into the concrete every 8 feet against the edge of the outer sheet pile.

Construction of the western half of the Atherton Cove floodwall would be conducted during Years 1 and 2, and the eastern half would be constructed during Years 2 and 3.

Dock and Pier Removal and Replacement

Alternative 2 includes the removal and reinstallation of existing boat docks and piers along Atherton Cove to allow for construction of the floodwall. Approximately 10 boat docks and piers would be removed and/or temporarily relocated. Removal of the boat docks and piers would be staged to maintain access until the portion of the floodwall construction requires removal. The boat and piers docks would not be removed in Year 1 of construction, but would be out of service for up to 2 years, during Years 2 and 3. Upon completion of construction of sections of the floodwall, boat docks and piers that had been relocated would be reinstalled to their new, adjusted locations, while those that had been completely removed would be replaced. All removal and replacement of existing permitted encroachments would conform to Title 23 of the California Code of Regulations, Division 1.

Existing boat docks and piers would be removed by barge-mounted cranes. Based on each boat dock's permit with the Central Valley Flood Protection Board and State Lands Commission, the dock will either be salvaged for reinstallation or demolished and disposed of at a local landfill. Docks to be salvaged would be relocated to the contractor’s staging area during construction. After construction of sections of the floodwall, a barge-mounted crane with a pile driving hammer would be used to install new wooden or concrete piers and reinstall the salvaged docks.

Dad’s Point Improvements

Alternative 2 would include the habitat and recreation improvements at Dad’s Point described in Alternative 1 as Phase 2: landscaping and invasive species removal, ADA-accessible fishing and wildlife viewing platforms, installation of bat boxes, if suitable, and installation of a multi-use

interpretive trail suitable for walking, running, and bicycling with kiosks and benches. The installation of the improvements under Alternative 2 would be similar to those described for Alternative 1. However, unlike for Alternative 1, Dad's Point would not be altered to serve a flood risk–reduction function. Therefore, there would be no grade raise along Dad's Point prior to constructing the habitat and recreation improvements under Alternative 2, and there would be no access road along the crown of Dad's Point. Similarly, since compliance with ULDC guidelines would not be required, more vegetation would be retained, and habitat improvement efforts would include the planting of larger shrubs and native trees.

Demobilization and Closeout Procedures

Demobilization and closeout procedures would be the same as described for Alternative 1.

2.3.2.2 Project Implementation

Construction Schedule and Sequence

Construction of Alternative 2 would last approximately 3 years. The construction sequence and approximate construction timeframes are shown in Table 2-4.

Table 2-4. Construction Sequence for Alternative 2

Activity	Month	Construction Year
Mobilize equipment	April–June	Year 1
Construct gate structure • Construct cofferdam • Construct gate structure and install gate	July–February	Year 1
Construct northern portion of fixed wall • Install sheet pile for fixed sheet pile wall north of the gate structure • Place granular material and install culverts to construct sheet pile fixed wall on north side of gate structure	August–November	Year 1
Construct Dad's Point Improvements • Construct fishing access/wildlife viewing platforms • Remove invasive plant species and landscape • Install bat boxes, if suitable • Install multi-use interpretive trail	September–March	Year 1
Construct culverts under Moreing Road • Construct cofferdam • Install 48-inch culverts	September–October	Year 1
Construct gate structure control building	October–March	Year 1
Construct west side of Atherton Cove floodwall • Remove docks and piers for west portion of floodwall • Install sheet pile for west portion of floodwall • Construct floodwall • Reinstall docks and piers	July–June	Years 1 and 2

Activity	Month	Construction Year
Construct southern portion of fixed wall • Install sheet pile for fixed sheet pile wall south of the gate structure • Place granular material and install culverts to construct sheet pile fixed wall on south side of gate structure	July–September	Year 2
Construct east side of Atherton Cove floodwall • Remove docks for east portion of floodwall • Install sheet pile for east portion of floodwall • Construct wall • Reinstall docks and piers	July–June	Years 2 and 3

Construction Seasons and Hours

Construction seasons and hours would be the same as described for Alternative 1.

2.3.2.3 Operations and Maintenance

Gate Operation

Under Alternative 2, the gate would be operated as described for Alternative 1.

Equipment Testing

Under Alternative 2, the gate would be tested as described for Alternative 1.

Inspection and Maintenance

Under Alternative 2, routine inspection and maintenance of the gate structure, dual sheet pile structure corrosion protection system, and associated equipment would be conducted as described for Alternative 1. Routine inspection and maintenance of the floodwall structure and associated equipment would take place annually. The fill material behind the floodwall would be inspected annually, and additional fill material would be added as required. Graffiti removal from the gate structure would be conducted as needed.

Debris and water hyacinth removal at the gate structure would be conducted periodically as described for Alternative 1.

2.3.3 Alternative 3—Dual Gated Walls to Atherton Cove and Smith Canal

Alternative 3 would reduce flood risk for approximately 8,000 properties behind the existing Smith Canal levees by constructing two gated fixed wall structures across Smith Canal and Atherton Cove to isolate Atherton Cove and Smith Canal from the San Joaquin River (Plate 2-6) during high flow flood events. However, unlike Alternative 1, Alternative 3 would not provide any protection to properties on Atherton Island against future flood risk associated with sea level rise. One gated fixed wall would extend across Smith Canal approximately 250 feet from Louis Park to Atherton Island. A second gated fixed wall would extend approximately 650 feet across Atherton Cove from the

northwest side of Atherton Island to the north bank of the San Joaquin River at the Stockton Golf and Country Club, tying in to the existing FEMA-accredited levee. Both fixed walls would feature 50-foot gates that will be closed during high flow and tide events. The gates would be closed only as needed for flood control, remaining open to allow for recreation, navigation, and tidal movement in Smith Canal. The gate design would be identical to the gate described in Alternative 1. In addition, an access road would be constructed along the tip of Atherton Island to provide access to the southern portion of the Atherton Island fixed wall structure.

As with Alternative 2, the grade of Dad's Point would not be raised with Alternative 3 as it is with Alternative 1, but habitat and recreation improvements to Dad's Point would be implemented. These improvements would include installation of ADA-accessible fishing and wildlife viewing platforms, construction of a multi-use interpretive trail suitable for walking, running, and bicycling, with kiosks and benches, removal of invasive vegetation and planting of native landscaping, and installation of bat]boxes, if suitable.

Alternative 3 would also include the installation of three 48-inch corrugated metal pipe culverts under Moreing Road, similar to Alternative 1.

2.3.3.1 Project Construction

Mobilization and Staging

Mobilization and staging under Alternative 3 would be the same as described for Alternative 1.

Material Importation and Disposal

Material importation and disposal would be the same as described for Alternative 1, with the exception that material imported for the northern gate structure control building would have a longer delivery route.

Haul Route and Site Access

Haul routes and site access would be the same as described for Alternative 1.

Gate Structure

Cofferdam Installation

Construction of the cofferdams for the gated fixed wall structures under Alternative 3 would be the same as described for Alternative 1; however, two cofferdams would be constructed under Alternative 3 instead of one. One cofferdam would be installed on Atherton Cove and the other on Smith Canal.

Boat traffic would not be allowed along Smith Canal during construction of the cofferdam. Boat traffic would resume once the gate structure is operational, estimated to be 11 months after installation of the remaining cofferdam begins. A SJAFCA representative would work with the boat owners east of the gate to provide an alternative storage location during construction of the cofferdam. There would be no boating restrictions on Atherton Cove during construction of the cofferdam.

Dewatering Procedures

Dewatering procedures for construction of the two gates would be the same as described for Alternative 1.

Gate Structure Construction and Installation

Construction of the gated fixed wall structures under Alternative 3 would be the same as described under Alternative 1; however, two gate structures would be installed under Alternative 3 instead of one.

Gate Structure Control Building

Construction of the gate structure control buildings under Alternative 3 would be the same as described for Alternative 1, but two buildings would be constructed under Alternative 3. The control building for the gate structure along Smith Canal would be located along the left (south) bank of Smith Canal, and the control building for the Atherton Cove gate structure would be located along the right bank of the San Joaquin River near the Stockton Golf and Country Club.

Fixed Walls

Two gated fixed walls would be constructed under Alternative 3. A 250-foot dual sheet pile wall would extend across Smith Canal, and a 650-foot wall would extend across Atherton Cove. Construction of the fixed walls would be the same as described for Alternative 1 but there would be two culverts with slide gates in each fixed wall, for a total of four culverts.

At the north end of the Atherton Cove fixed wall, the wall would be integrated into the existing FEMA-accredited levee near the Stockton Golf and Country Club. This integration would be designed so that it would not affect the integrity of the existing levee system. The sheet pile at the north end of the fixed wall would be driven perpendicular to the existing levee up until the point the sheet pile intersects the existing levee crown. At this point, additional sheet pile would be driven parallel to the existing crown to eliminate the potential for seepage around the fixed wall sheet piles. Future geotechnical investigation would identify the length and depth of this additional sheet pile so that it would not affect the integrity of the existing levee system.

Atherton Island Access Road

To provide maintenance and inspection access to the southern portion of the Atherton Cove gated fixed wall structure, an all-weather access road would be constructed along the western tip of Atherton Island. Construction methodology would be identical to the installation of the Atherton Cove floodwall, with the dual sheet pile walls being installed 25 feet apart. The road would be 20 feet wide and 200 feet long, constructed using Turf-Block, and access would be limited to SJAFCA and authorized maintenance representatives.

Moreing Road Culverts

Construction of the culverts under Moreing Road would be the same as those described for Alternative 1.

Dad's Point Improvements

Alternative 3 would include the habitat and recreation improvements at Dad's Point described in Alternative 1 as Phase 2: landscaping and invasive species removal, ADA-accessible fishing and wildlife viewing platforms, installation of bat boxes, if suitable, and installation of a multi-use interpretive trail suitable for walking, running, and bicycling with kiosks and benches. The installation of the improvements under Alternative 3 would be the same as described for Alternative 2; there would be no grade raise along Dad's Point prior to constructing the habitat and recreation improvements under Alternative 3, and there would be no access road along the crown of Dad's Point. Like Alternative 2, Dad's Point would not be altered to serve a flood risk–reduction function. Therefore, there would be no grade raise along Dad's Point prior to constructing the habitat and recreation improvements under Alternative 2, and there would be no access road along the crown of Dad's Point. Similarly, since compliance with ULDC guidelines would not be required, more vegetation would be retained, and habitat improvement efforts would include the planting of larger shrubs and native trees.

Demobilization and Closeout Procedures

Demobilization and closeout procedures would be the same as described for Alternative 1.

2.3.3.2 Project Implementation

Construction Schedule and Sequence

Construction of Alternative 3 would last approximately 2 years. The construction sequence and approximate construction timeframes are shown in Table 2-5.

Table 2-5. Construction Sequence for Alternative 3

Activity	Month	Construction Year
Mobilize Equipment	April–June	Year 1
Construct Smith Canal gate structure • Construct cofferdam • Construct gate structure and install gates	June–March	Year 1
Construct Atherton Cove gate structure • Construct cofferdam • Construct gate structure and install gates	August–April	Years 1 and 2
Construct northern portion of fixed wall on Smith Canal • Install sheet pile for fixed sheet pile wall north of the gate • Construct sheet pile fixed wall on north side of gate structure	August–November	Year 1
Construct northern portion of fixed wall on Atherton Cove • Install sheet pile for fixed sheet pile wall north of the gate • Place granular material and install culverts to construct sheet pile fixed wall on north side of gate structure	September–January	Year 1
Construct Atherton Island access road • Install sheet pile for Atherton Island access road • Install material and lock gate	September–November	Year 1
Construct Smith Canal gate structure control building	October–March	Year 1

Activity	Month	Construction Year
Construct Atherton Cove gate structure control building	November–April	Year 1
Construct southern portion of fixed wall on Smith Canal • Install sheet pile for fixed sheet pile wall south of the gate • Construct sheet pile fixed wall on south side of gate structure	July–November	Year 2
Construct southern portion of fixed wall on Atherton Cove • Install sheet pile for fixed sheet pile wall south of the gate • Place granular material and install culverts to construct sheet pile fixed wall on south side of gate structure	August–November	Year 2
Construct Dad's Point Improvements • Construct fishing access/wildlife viewing platforms • Remove invasive plant species and landscape • Install bat boxes, if suitable • Install multi-use interpretive trail	August–October	Year 2
Construct culverts under Moreing Road • Construct cofferdam • Install 48-inch culverts	August – September	Year 2

Construction Seasons and Hours

Construction seasons and hours would be the same as described for Alternative 1.

2.3.3.3 Operations and Maintenance

Gate Operation

Under Alternative 3, the two gates would be operated as described for Alternative 1.

Equipment Testing

Under Alternative 3, the two gates would be tested as described for Alternative 1.

Inspection and Maintenance

Under Alternative 3, routine inspection and maintenance of the gate structures, dual sheet pile structure corrosion protection system, and associated equipment would be conducted as described for Alternative 1. Graffiti removal from the gate structure would be conducted as needed.

Debris and water hyacinth removal at the gate structures would be conducted periodically as described for Alternative 1.

2.4 No Project Alternative

Identification and analysis of a no project alternative is required under CEQA. The purpose of a no project alternative is to serve as a benchmark against which the effects of a project may be evaluated. The No Project Alternative for the Smith Canal project assumes continuation of current

conditions and O&M practices that reasonably would be expected to occur in the foreseeable future if the project were not implemented.

Under the No Project Alternative, the FEMA accreditation would not be secured and the project area would continue to remain in the FEMA-designated Special Flood Hazard Area. The flood risks in the area would not be reduced, thereby continuing to expose approximately 5,000 properties and approximately 15,000 residents that were identified by FEMA as being in the 100-year floodplain, to an increased risk of flooding, along with an additional 3,000 parcels and 9,000 residents that FEMA is currently proposing to add to the 100-year floodplain based on topographical data recently developed by DWR. Failure to secure the accreditation from FEMA would require all residents to continue to obtain mandatory flood insurance and adhere to building restrictions.

2.4.1 No Flood Risk–Reduction Measures Implemented under the No Project Alternative

Under the No Project Alternative, SJAFCA would not implement flood risk–reduction measures. The levees surrounding the canal would continue to require risk-reduction measures to meet minimum acceptable level of performance, as well as continue being deficient relative to the state's requirement for urbanized areas. In addition, the associated risk to human health and safety and property and the adverse economic effect that serious flooding could cause would continue, and the risk of a flood would remain high. Again, however, regular O&M of the levee system would continue as currently executed by the local maintaining entities.

Because of uncertainties in local, state, and Federal funding; future state and Federal authorization; and other approvals, it is not reasonable to predict construction of levee accreditation repairs in the foreseeable future within a reasonable timeframe (see below for further discussion). Therefore, for the purpose of evaluating effects under the No Project Alternative, this EIR assumes that a project to achieve FEMA recertification would not be implemented, the project objectives would not be met, and the current level of flood risk would continue, and increase as climate change and sea level rise increase.

2.4.2 Consequences of Levee Failure

Assuming that no levee repair or alternate flood risk–reduction project would occur under the No Project Alternative means that the Smith Canal levees could become increasingly vulnerable to failure as a result of identified deficiencies. These conditions could lead to levee failure and inundation of surrounding urban areas, resulting in extensive damage to the residential and commercial structures, displacement of residents, and potential loss of life and property. Extensive damage to utilities, roadways, and other infrastructure systems likely would occur. The magnitude of the flood damage would depend on the location of the levee breach, severity of the storm, and river flows at the time of levee failure. To avoid and minimize these consequences, relevant agencies including RD 828, RD 1614, the City of Stockton, or San Joaquin County would initiate emergency operation protocols.

A flood event could cause severe public health hazards as well. Flooding could upset and spread stored hazardous materials and contaminants released from inundated vehicles, homes, industrial facilities, businesses, and equipment, creating hazardous conditions for the public and the environment. The water supply and sewage facilities could fail, resulting in floodwaters contaminated by waste and bacteria. Flood damage to homes and other structures could render

them dangerous because of structural damage and contamination. The likelihood of a significant amount of mold production is high after a flood event, not only threatening the physical integrity of structures but also posing its own health risks. Mold can cause lung infections, skin irritations, and other health dangers, especially for those with asthma, allergies, or suppressed immune systems. Additionally, the floodwaters and ponds left behind could provide a wide breeding ground for mosquitoes and other disease vectors.

Effects on the water supply system could be particularly severe in a flood event and could leave residents and businesses without a reliable water supply for a significant amount of time, as a single break in a water delivery pipe or main could contaminate the city's water system. Electrical systems could be damaged by flooding, which could increase the potential for fires, and natural gas leaks could result in poisoning through fume inhalation or could cause a sudden explosion if sparked.

A major flood event could result in substantial stress on or disruption of the region's emergency response capacity, hospital services, and other critical lifelines of Stockton. Varying levels of damage could be done to public service structures as well, causing delays in fire protection, police protection, or emergency medical assistance. A major flood event could stress the region's emergency response and hospital services, as the likelihood of injury resulting from the flood event is high, and evacuees may not have access to their regular medications.

In addition, emergency flood-fighting and clean-up actions would require the use of a considerable amount of heavy construction equipment. Timing and duration of equipment use would correlate directly with flood-fighting needs, but it is likely that air pollutants emitted would violate air quality standards (including those for which the area is already considered to be in nonattainment) and expose sensitive receptors to toxic air emissions. Depending on the magnitude of the flood, flood-fighting could last for weeks or even months. Furthermore, because of the unpredictable nature of an emergency response, there would be no best management practices (BMPs) to manage emissions. Criteria pollutants and GHG emissions could result from mobile and off-road vehicle emissions during emergency response activities. Emergency construction and repair activities would also be implemented without the use of water quality BMPs and could result in release of contaminants into the soil (groundwater) and adjacent surface water, as well as increased erosion, which could raise total suspended sediment (TSS) and turbidity in adjacent water bodies.

A flood event could also cause damage to natural resources. Fish and aquatic resources could be harmed by water-quality effects related to upset and spread of stored hazardous materials during flooding, emergency construction and repair activities, spills of hazardous materials, erosion, and increased TSS and turbidity. Hydraulic forces of the flood itself, as well as the clean-up efforts, could cause significant loss of vegetation and habitat quality, which would in turn affect wildlife species.

During the recovery period after a flood event, affected residents would require temporary housing, and displacement of many or all occupants would occur while levees, buildings, and other infrastructure were repaired, if repair or replacement was economically feasible. To rebuild a property after a flood event, property owners would need to elevate parcels above the base flood elevation plus 2 additional feet, a cost typically not covered by insurance. Building owners may find rebuilding out of the base floodplain to be cost-prohibitive and decline to rebuild at all. Businesses, social services, and other employers occupying affected structures would be forced to relocate, potentially exceeding the available supply of vacant buildings surrounding the Stockton area. Thus, many displaced residents and businesses may be forced to relocate to areas a considerable distance from Stockton, resulting in substantial intermediate-term and long-term economic effects on the

Stockton area and its people. These effects include changes in employment numbers and patterns, business and personal incomes, tax revenues, and regional economic activity.

Similarly, levee failure could significantly change the land uses in urban areas, both temporarily and permanently, and result in the physical division of established communities. A period of months or years could be required for cleanup and repair after a large flood event, during which time the affected parcels would be temporarily unable to support their designated land uses. Damages sustained by residential, commercial, civic, and industrial areas inundated by flooding could be so great as to render the properties permanently unusable. Additionally, the cost of cleanup and repair after flooding could be too great to make restoring the current land use worthwhile, resulting in permanent changes to land use in the area and potential division of established communities.

Finally, a flood event could change the visual character of and recreation opportunities in the Smith Canal area. Such an event would cause a change in the existing visual character and potentially could lay waste to acres of land. Scenic vistas would be significantly altered for an extended period of time, or irreparably damaged, because views across this landscape would be so changed. Given the amount of people potentially affected, barren or destroyed landscape would reduce the visual enjoyment of areas that were once well regarded, which could invoke deep emotional responses in viewers. In addition, a flood event could render formal and informal recreation facilities unusable until cleanup and restoration activities could be undertaken. It is possible that after a catastrophic flood event, recreation facilities may never be fully restored to their former condition, permanently reducing the quality and/or quantity of recreation opportunities in the area. In addition, scenic vistas for existing and future recreation activities and facilities could be damaged irreparably or for an extended period of time, which would reduce the enjoyment derived by recreationists.

2.5 Significant Irreversible Environmental Changes

Pursuant to State CEQA Guidelines Section 15126.2(c), SJAFCA has determined that the project would not result in the commitment of such a considerably large volume of nonrenewable resources that such use would cause the project to be irreversible.

2.6 Environmentally Superior Alternative

Pursuant to State CEQA Guidelines Section 15126.6(e)(2), SJAFCA has determined Alternative 1, the proposed project, to be the environmentally superior alternative because, having the shortest construction schedule, it minimizes equipment emissions, temporary habitat effects, and construction-related disturbances to recreation facilities and the visual landscape. Further, it requires the least amount of real estate acquisition and land use change. Additionally, Alternative 1 is also the only alternative expected to be resilient to climate change and associated sea level rise, providing protection to areas presently considered to be outside the 100-year floodplain such as Atherton Island. While it may not have the fewest environmental effects across every resource category, SJAFCA has determined Alternative 1 results in the fewest impacts across all resource categories while maximizing environmental benefits.

Chapter 3
Environmental Setting and Impacts

This chapter describes the environmental setting and impacts of the Smith Canal Gate Project (project) and its alternatives.

The baseline environmental settings assumed in the preparation of this chapter consist of the existing physical environment as of June 19, 2014, when SJAFCA published the Notice of Preparation (NOP) to prepare an environmental impact report (EIR) with the State Clearinghouse.

In order to determine which environmental resources should be analyzed in depth, the lead agencies conducted a preliminary review of the project alternatives and objectives. Where an environmental impact on a resource could possibly result from project alternative implementation, an extensive analysis of the range of potential environmental impacts on the resource was conducted and included in this document.

The structure of each resource section is described below.

- **Introduction.** This section introduces the scope of the resource analysis.
- **Existing Conditions.** This section includes two sections, *Regulatory Setting* and *Environmental Setting*.
    - **Regulatory Setting.** This section lists and describes laws, regulations, and policies that affect the resource or the assessment of impacts on the resource. Often the regulatory framework is the basis for the conclusion of the level of significance and therefore plays a crucial role in impact assessment. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.
    - **Environmental Setting.** This section provides an overview of the physical environmental conditions in the area at the time of, or prior to, the publication of the NOP that could be affected by implementation of the proposed alternatives in accordance with State CEQA Guidelines Section 15125.
- **Environmental Impacts.** This section describes the analysis of impacts relating to each resource area for each of the alternatives in accordance with State CEQA Guidelines Sections 15126, 15126.2, and 15143.
    - **Assessment Methods.** This section describes the methods, models, process, procedures, data sources, and/or assumptions used to conduct the impact analysis. Where possible, impacts are evaluated quantitatively. Where quantification is not possible, impacts are evaluated qualitatively.
    - **Thresholds of Significance.** This section provides the criteria used in this document to define the level at which an impact would be considered significant in accordance with CEQA. Significance criteria (sometimes called thresholds of significance) used in this Draft EIR are based on the checklist presented in Appendix G of the State CEQA Guidelines; factual or scientific information and data; and regulatory standards of Federal, state, and local agencies.

- **Impacts and Mitigation Measures.** To comply with CEQA, the impacts are considered and evaluated as to whether they are direct, indirect, or cumulative. *Direct* impacts are those that are caused by the action and occur at the same time and place. *Indirect* impacts are reasonably foreseeable consequences to the physical environment that may occur at a later time or at a distance from the project area. *Cumulative* impacts for all resource areas are combined and discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

  The impacts and mitigation measures are listed numerically throughout each section. An impact or mitigation statement precedes the discussion of each impact or measure and provides a summary of the topic. The numbering system provides a mechanism for tracking unique impacts by resource area.

  Each impact is accompanied by a finding or conclusion, as required under CEQA. Table 3-1 provides a key for relating the impact findings by relative severity (increasing in degree of significance to the environment).

Table 3-1. Key to Impact Findings (by Increasing Significance)

Finding
Beneficial
No Impact
Less than Significant
Significant
Significant and Unavoidable

  For the purposes of the analyses in this document, the impact findings are defined more specifically below.

  - **Beneficial.** This impact would provide benefit to the environment as defined for that resource.
  - **No Impact.** This impact would cause no discernible change in the environment as measured by the applicable significance criterion; therefore, no mitigation would be required.
  - **Less than Significant.** This impact would cause no substantial adverse change in the environment as measured by the applicable significance criterion; therefore, no mitigation would be required under CEQA, but there may be mitigation per other environmental regulations.
  - **Significant.** This impact would cause a substantial adverse change in the physical conditions of the environment. Impacts determined to be significant based on the significance criteria fall into two categories: those for which there is feasible mitigation available that would avoid or reduce the environmental impacts to less-than-significant levels and those for which either there is no feasible mitigation available or for which, even with implementation of feasible mitigation measures, there would remain a significant adverse impact on the environment. Those impacts that cannot be reduced to a less-than-significant level by mitigation are identified as significant and unavoidable.

- **Significant and Unavoidable**. This impact would cause a substantial adverse change in the environment that cannot be avoided or mitigated to a less-than-significant level if the project is implemented. Even if the impact finding still is considered significant with the application of mitigation, the applicant is obligated to incorporate all feasible measures to reduce the severity of the impact.

3.1 Flood Risk, Hydrology, and Geomorphology

This section describes the regulatory and environmental setting for flood risk management and geomorphic conditions in the study area. It also analyzes environmental impacts on flood risk and geomorphic conditions that could result from implementing the proposed project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.1.1 Existing Conditions

3.1.1.1 Regulatory Setting

The following Federal, state, and local regulations and technical guidelines related to hydrologic, hydraulic, geomorphic, and flood risk management conditions may apply to implementation of the proposed project. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

National Flood Insurance Program

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 were intended to reduce the need for large, publicly funded flood risk–management structures and disaster relief by restricting development on floodplains. The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to subsidize flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA issues Flood Insurance Rate Maps (FIRMs) for communities participating in the NFIP. These maps delineate flood hazard zones in the community. These maps are designed for flood insurance purposes only and do not necessarily show all areas subject to flooding. The maps designate lands likely to be inundated during a 100-year flood event and elevations of this flooding. They also depict areas between the limits affected by 100-year and 500-year flood events and areas of minimal flooding.

U.S. Army Corps of Engineers Levee Design Criteria

Some of the structures included in the project area are Federally authorized and fall within the jurisdiction of the U.S. Army Corps of Engineers (USACE). The evaluation for the project area conforms to the engineering criteria established by USACE for the assessment and repair of flood risk–reduction structures. USACE guidance publications containing design criteria are listed in Chapter 5, *Regulatory Framework and Compliance*.

State

Central Valley Flood Protection Plan

The Central Valley Flood Protection Plan (CVFPP) is one of the two primary projects of the Central Valley Flood Management Planning Program (CVFMP), the purpose of which is to develop a sustainable, integrated flood risk management plan for areas protected by facilities of the state-

Federal flood risk management system in the Central Valley of California. The program is one of several the Department of Water Resources (DWR) is implementing within FloodSAFE California to accomplish the goals of Propositions 1E and 84.

The CVFPP was adopted in 2012. According to California Government Code Sections 65302.9 and 65860.1, every jurisdiction located in the Sacramento–San Joaquin Valley is required to update its general plan and zoning ordinance in a manner consistent with the CVFPP within 24 months after the CVFPP's adoption. The locations of the state and local flood risk–management facilities, locations of flood hazard zones, and the properties located in these areas must be mapped and be consistent with the CVFPP. In addition, the CVFPP requires 200-year level of flood protection for urbanized or urbanizing areas (defined by a population of 10,000 or more) protected by facilities of the state-Federal flood risk management system in the Central Valley of California by the year 2025.

California Department of Water Resources Urban Level of Flood Protection Criteria

In response to the enactment of Senate Bill 5 (SB 5) [Government Code (GC) §65007(l)], the Urban Level of Flood Protection Criteria was developed by DWR to strengthen the link between flood management and land use. DWR published the Criteria in November 2013 through a collaborative effort of cities, counties, professional organizations, and other state and Federal agencies. The Urban Level of Protection (ULOP) is the level of flood protection that is necessary to withstand flooding that has a 1-in-200 chance of occurring in any given year using criteria consistent with, or developed by, DWR.

As a part of SB 5, DWR was tasked with developing criteria that cities and counties could use to make findings related to ULOP. Cities and counties could also develop their own criteria as long as they are consistent with the criteria developed by DWR. DWR's criteria are not intended to interfere with local land use authority, but do promote prudent floodplain management in accordance with other state law provisions related to smart growth and climate change adaptation strategies.

California Department of Water Resources Urban Levee Design Criteria

DWR's Urban Levee Design Criteria (ULDC) were developed through a collaborative process with stakeholders from local government (including representatives from the Central Valley, San Francisco Bay Area, and Los Angeles region), state government, and the Federal government. The ULDC provide guidance for design, construction, operation, and maintenance of levees and floodwalls in urban and urbanizing areas. While the ULDC can help inform engineering and local land use decisions for areas at risk of flooding anywhere in California, cities and counties located in the Sacramento–San Joaquin Valley are required to make findings specifically related to ULOP, as described above.

Regional and Local

Lower San Joaquin River and Delta South Regional Flood Management Plan

In 2014, SJAFCA developed the Lower San Joaquin River and Delta South Regional Flood Management Plan in order to evaluate flood risk and potential future flood control measures in the region (San Joaquin Area Flood Control Agency 2014). The development of this plan, along with five other regional plans, was funded by DWR in accordance with the CVFPP. Stakeholder input was used to evaluate desired level of flood protection, timing of implementation, and sources of funding for potential future flood control measures. The plan also includes actions to minimize damage in the

event of flooding. The Smith Canal project was already in environmental review prior to the completion of this plan.

San Joaquin County General Plan

The Public Health and Safety chapter of the *San Joaquin 2010 County Wide General Plan* (1992) contains objectives and policies related to flood control that could apply to the proposed project. These objectives and policies aim to protect people and property from flood hazards and ensure that flood management programs avoid alteration of waterways and adjacent areas whenever possible.

City of Stockton General Plan

The Health and Safety section of the *2035 Stockton General Plan* (2007:II-3) contains goals that could apply to the proposed project and are aimed at minimizing risk to the community from flooding.

3.1.1.2 Environmental Setting

The study area for flood risk management and geomorphic conditions is the same as the project area described in Chapter 1, *Introduction,* and shown in Plate 1-2.

Flood Risk Management

Flood risk takes into account the following five factors (California Department of Water Resources and U.S. Army Corps of Engineers 2013).

1. Hazard: The cause of the harm, including its probability, extent, depth, and other characteristics (i.e., flooding and how often).
2. Performance: How well the flood risk management system responds to the hazard (i.e., flood risk management system inadequacy or failure).
3. Exposure: Who and what might be harmed by the hazard (i.e., who and what is flooded).
4. Vulnerability: The susceptibility of people and property to harm from the hazard (i.e., how flooding adversely affects people and property).
5. Consequence: The loss or damage incurred as a result of the hazard (i.e., what is the cost of the flooding in terms of lives and dollars).

The probability of flooding is expressed in terms of the chance of flooding in any one given year. This may be expressed as a chance (i.e., a 1 in 100 chance of flooding in any one year) or a probability (i.e., a 1% annual probability of flooding).

The consequence of a flood can be expressed in terms of the following events.

- Loss of life.
- Long-term health effects and anxiety.
- Damage to properties and possessions.
- Mud and sewage in homes and businesses.
- Living in temporary accommodation.
- Increased insurance premiums.

- Devaluation of property.
- Loss of customers and customer data.
- Closed schools and businesses.

Levee and Flood Analysis

Smith Canal has levees on both banks to prevent back-flooding from the San Joaquin River. However, these levees have not been certified to meet the FEMA minimum acceptable level of performance (commonly referred to as 100-year flood risk–reduction) primarily because private property encroachment on the levees prevents access for inspection and maintenance (Federal Emergency Management Agency 2013). The western portion of the project area is located within the Zone A designation according to the FEMA FIRM (Kjeldsen, Sinnock & Neudeck, Inc. 2010a:1). (The Zone A designation indicates that an area may be inundated by a 100-year flood, but no base flood elevations are available because detailed hydraulic analyses have not been performed.) This map lists the 100-year flood event elevation for Smith Canal at 10 feet NAVD 88 (North American Vertical Datum 1988). The FIRM for the eastern portion of the project area shows that the area is mostly within the Zone X designation (outside of the 100-year inundation zone), with small areas in a Zone A designation (Kjeldsen, Sinnock & Neudeck, Inc. 2010a:1). Based on topographical data recently developed by DWR, FEMA is currently proposing to remap the region to add additional area to the Zone A designation.

Flooding is most likely to occur when there is a combination of high flow in the San Joaquin River due to storms and high tide. In the event of a 100-year flood event, large portions of the surrounding area could be inundated, with some areas west of Interstate 5 (I-5) being inundated to a depth of up to 12 feet (Plate 3.1-1). Atherton Island and Louis Park would overall experience minimal inundation because of their generally high elevation (Appendix B, *Smith Canal Gate Hydrodynamic Modeling Alignment and Gate Evaluation Final Report*: 4).

Climate

Stockton has a mild, Mediterranean-type climate, characterized by a cool, wet season lasting usually from November through April, and a dry, hot summer. Flooding in the Stockton area typically results from a combination of severe winter storms and runoff from the Sierra Nevada to the east. Runoff reaches the Stockton area from several creeks and rivers that drain into the San Joaquin River, which runs through the city of Stockton. Average annual precipitation is about 18 inches, with approximately 80% of the total rainfall occurring between November and March (The Weather Channel 2014). Cloud-free skies generally prevail throughout the summer months and in much of the spring and fall. Thunderstorms are relatively infrequent, although occasionally occur in the late summer and other times of the year when unstable air masses are situated over the region. The highest rainfall generally occurs in January, when the average precipitation is about 3.4 inches. The driest month is July, during which rainfall is rare.

Hydrology

Regional Hydrology

The project area is located in the San Joaquin River Hydrologic Region, which includes the northern portion of the San Joaquin Valley and spans between the Coast Ranges to the west and the Sierra Nevada to the east. The San Joaquin River Hydrologic Region contains approximately 70% of the

land in the Sacramento–San Joaquin River Delta (Delta), into which the San Joaquin River drains from south to north (California Department of Water Resources and U.S. Army Corps of Engineers 2013:C-121). The San Joaquin River, California's second longest river, is approximately 330 miles long and drains approximately 15,200 square miles of land. Tributaries to the San Joaquin River generally flow down from the Sierra Nevada, and the flatter portions of the San Joaquin Valley are subject to occasional flooding from a combination of spring snowmelt runoff and stormwater. Major tributaries include the Fresno, Chowchilla, Merced, Tuolumne, Stanislaus, Calaveras, Mokelumne, and Cosumnes Rivers. Major lakes and reservoirs within the system include Millerton Lake, Hensley Lake, Eastman Lake, Lake McClure, New Don Pedro Reservoir, New Melones Reservoir, New Hogan Lake, Camanche Reservoir, and Jenkinson Lake. The San Joaquin River has a mean annual runoff of 3,308,000 acre-feet (AF), as measured near Vernalis (California Department of Water Resources and U.S. Army Corps of Engineers 2013:C-127).

Due to the potential for flooding, the San Joaquin River Hydrologic Region has a large network of levees, lakes, reservoirs, channel improvements, and diversion dams that provide flood management infrastructure and water supply for agriculture and municipal purposes. The region includes approximately 4,750 miles of levees and more than 260 dams and reservoirs (California Department of Water Resources and U.S. Army Corps of Engineers 2013:C-133).

Project Area Hydrology

The project area includes portions of the San Joaquin River, Smith Canal, and Atherton Cove. The San Joaquin River watershed, as discussed above, drains the southern part of the Central Valley and flows in a generally northward direction into the Delta, which discharges into the San Francisco Bay. Smith Canal extends approximately 3 miles east from the San Joaquin River. Starting at its eastern limit at Yosemite Lake, the canal receives stormwater from the surrounding urban area that then drains to the west into the San Joaquin River. In addition, there are nine pump stations that discharge into Smith Canal and four gravity discharge pipes.

Smith Canal receives tidal waters from the San Joaquin River; however the tidal exchange is relatively small at the upstream end of the canal. The Delta has a mixed semidiurnal tide cycle, which means there are two high tides and two low tides of differing levels each lunar day (approximately 24.8 hours). A previous study showed that after 20 days of tidal exchange, the fraction of water from the San Joaquin River that had mixed 2 miles upstream was about 60%, and about 50% river water had mixed at the upstream end at Yosemite Lake (Jones & Stokes 2005:23). Atherton Cove is tidally influenced by the San Joaquin River, with much greater tidal interchange than Smith Canal.

The closest monitoring station for measuring tide stages near the project area is the Rough and Ready Island gage, which is located approximately three-quarters of a mile downstream from the entrance to Smith Canal and is most representative of project area tidal conditions. Tide elevations for Rough and Ready Island are summarized in Table 3.1-1 and are based on gage data from October 1, 2006 to January 1, 2014. *Mean higher high water* refers to the average of the highest daily tides and does not reflect the peak tide levels. *Mean lower low water* level is an average of the lowest daily tides and does not reflect the lowest tide levels.

Table 3.1-1. Tide Elevations at Rough and Ready Island Gage

Datum	Elevation (feet, NAVD88)
Highest Observed Water Level (March 23, 2011)	+8.21
Mean Higher High Water	+6.11
Mean High Water	+5.64
Mean Tide Level	+4.25
Mean Low Water	+2.87
Mean Lower Low Water	+2.37
Lowest Observed Water Level (10/22/2007)	+1.28
North American Vertical Datum of 1988 (NAVD88)	0.00

Source: Appendix B: 11 Statistics based on data from October 2006–January 2014.
NAVD88 = North American Vertical Datum 1988.

The San Joaquin River has a typical tidal flow of approximately ±8,000 cubic feet per second (cfs) (Appendix B: 12). Because of tidal influence in the project area, outflow becomes negative on a daily basis as tides force water up the San Joaquin River, which interchanges with water in Smith Canal and Atherton Cove.

The Smith Canal drainage area is approximately 3,420 acres. During storms, runoff from most of the drainage area is moved into Smith Canal at nine pump stations. The southwest portion of the drainage area drains by gravity (Kjeldsen, Sinnock & Neudeck 2010a:3). During large storms, the nine pumping stations may be unable to keep up with runoff and street flooding can result. The estimated amount of storage that could be accommodated on surface streets without causing inundation of property was estimated to be 334 AF (due to streets being lower than homes). Under existing conditions, an estimated 273 AF of street storage would be needed during a 24-hour 100-year rainfall event as a result of limited pumping capacity (Kjeldsen, Sinnock & Neudeck 2010a:10).

Geomorphic Conditions

Regional Geomorphic Conditions

Present geomorphic conditions of the San Joaquin River basin are a function of the intensity of water management in each of the tributary rivers, local farming practices, water transfers, and a human-made levee system. Today, the channel alignment is largely fixed by artificial levees and erosion control measures. Flooding, except when artificial levees break, no longer occurs under most flows. Instead, flow and sediment remain confined to the existing channel network. Upstream water diversions for municipalities and agriculture reduce the amount of flow entering the project area and the amount of sediment transported through it. Historical changes in the San Joaquin River basin that have affected channel morphology in the project reach include land reclamation, levee construction, dredging, impoundment of water and sediment by upstream dams and other diversions, and the construction of water diversion facilities and consequent alteration of flow and sedimentation patterns.

Project Area Geomorphic Conditions

Bathymetric surveying conducted for the proposed project indicated that the water depths in Atherton Cove and the portion of Smith Canal east of I-5 are lower than in past times, and that

depths in the portion of Smith Canal that lies west of I-5 are higher than historical measurements (Appendix B: 64). In general, the depths have decreased because of silt accumulation. The Smith Canal depths west of I-5 may have increased due to dredging. The survey data showed that east of I-5, Smith Canal has become slightly wider but that the middle portion of the channel has risen because of silt accumulation. It is estimated that Smith Canal has a siltation rate of approximately 0.2 to 0.3 inches per year and that Atherton Cove has a siltation rate of approximately 0.3 inches per year (Appendix B: 65).

3.1.2 Environmental Impacts

This section describes the environmental impacts of the proposed project on flood risk management and geomorphic conditions. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, where appropriate.

3.1.2.1 Assessment Methods

This evaluation of flood risk management and geomorphic conditions is based on professional standards and information cited throughout the section. The key effects were identified and evaluated based on the environmental characteristics of the project area and the magnitude, intensity, and duration of activities related to the construction and operation of the proposed project.

Construction of the proposed project or its alternatives could change the hydrodynamics within Smith Canal and Atherton Cove. To investigate these changes, MIKE-21 software was used to develop a model of Smith Canal, Atherton Cove, and the nearby section of the San Joaquin River (Appendix B). The model was used to simulate velocity, stage, transport, and residence time for each alternative. The effect of Moreing Road culverts and the culverts in the gated fixed wall structure were investigated separately by comparing model results for Alternative 1 with and without these culverts.

The model results indicate that introduction of the gated fixed wall structure would have very little impact on tidal range and tidal prism of both Atherton Cove and Smith Canal for all three alternatives. Large-scale flow patterns within Smith Canal and Atherton Cove in areas away from the closure structures would be largely unaffected. However, the alternatives could lead to localized changes to the flow velocity and pattern within the vicinity of the gates. There is an increase in flow velocity on both ebb and flood tides, but this effect is largely decreased with distance away from the gates. Water velocity determines whether sediment becomes suspended in the water column (erosion) or settles out of the water column (deposition). The simulated changes in velocity were used to evaluate project effects on sedimentation and erosion. Model results show regions of increased and decreased peak tidal velocities, which indicate a potential for areas of deposition and erosion.

The purpose of the proposed project is to reduce likelihood of flooding resulting from a combination of high flows and high tides on the San Joaquin River. However, there was some concern about the potential for the gated fixed wall structures to block local runoff from flowing downstream. This possibility was investigated in two documents by Kjeldsen, Sinnock & Neudeck, Inc. (2010a and 2010b). The interior drainage analysis (2010a) provides an estimate of the runoff that would be associated with a 24-hour 100-year rainfall event, as well as the ability of local pumps to remove

runoff from each drainage subarea for discharge to Smith Canal. The *Smith Canal and Tributary Area Storage Capacity* memo (2010b) provides information about the volume of water that could be stored behind the gated fixed wall structure proposed for Alternative 1, the proposed project.

3.1.2.2 Thresholds of Significance

The thresholds listed below are based on standard professional practice, common NEPA standards, and on the criteria provided in State CEQA Guidelines Appendix G (14 California Code of Regulations 15000 et seq.). The proposed project would have a significant impact on flood risk management and geomorphic conditions if it would result in any of the following consequences.

- 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 that would result in substantial erosion or siltation on- or offsite.
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam. This could include actions that would significantly raise flood stage elevations or increase the frequency or duration of inundation of lands.

3.1.2.3 Impacts and Mitigation Measures

No Project Alternative

The No Project Alternative represents the continuation of existing deficiencies in the project area's flood control structures. No flood risk–reduction measures would be implemented, and no construction-related impacts would occur. Under the No Project Alternative, sedimentation and erosion processes in Smith Canal and Atherton Cove would remain unchanged from baseline conditions. In addition, local stormwater runoff would continue to pass unobstructed through Smith Canal and Atherton Cove into the San Joaquin River. However, the baseline risk of flooding from the combination of high tide and high flows in the San Joaquin River would persist. The consequences of levee failure and flooding are described under the No Project Alternative description in Chapter 2, *Proposed Project and Alternatives*, Section 2.4, including a summary of possible environmental effects.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact FC-1: Increased Sedimentation from Reduction in Velocity Due to Channel Restriction (less than significant)

Obstruction of channel flow by the presence of the gated fixed sheet pile wall structure has the potential to reduce velocity and cause sedimentation in some areas. Hydrodynamic model results (Appendix B) indicate that the existence of the fixed wall structure could lead to localized changes in the flow field within the vicinity of the gate. However, changes in sedimentation would be limited to the vicinity of the fixed wall structure and to the entrance area to Atherton Cove and Smith Canal. No siltation is expected in inner Atherton Cove or Smith Canal away from the fixed wall structure because modeling results show that Alternative 1 would have no significant effect on water movement in those areas.

For Alternative 1, on the flood tide, the gate is expected to create a localized counter-clockwise eddy at the entrance to Atherton Cove and a clockwise eddy in Smith Canal. The Smith Canal eddy could result in some shoaling (deposition of sediments). Siltation may occur on both sides of the northern fixed wall structure away from the gate opening.

However, model results indicate that velocities would only be reduced in limited areas. Due to the limited nature of these changes in velocity, increases in sedimentation would not cause large geomorphic effects, and this direct impact would be less than significant. No mitigation is necessary.

Impact FC-2: Increased Flood Risk from Confining Local Stormwater Runoff (no impact)

Work by Kjeldsen, Sinnock & Neudeck (2010a and 2010b) indicates that if a 24-hour 100-year rainfall event were to co-occur with the 100-year flood event in the San Joaquin River, adherence to detailed operation and maintenance procedures would prevent local flooding as a result of local runoff accumulating behind the closed gate.

The study of the 24-hour 100-year rainfall event (Kjeldsen, Sinnock & Neudeck 2010a) indicates that the Smith Canal drainage area volume would be 765 AF. Almost all of this volume would enter Smith Canal between 5 and 40 hours after the initiation of the storm, with the highest inflows (greater than about 300 cfs) occurring during a 20-hour period, between 10 and 30 hours after the initiation of the storm (Kjeldsen, Sinnock & Neudeck 2010a:12). The estimated amount of storage that could be accommodated on surface streets without causing inundation of property was estimated to be 334 AF (due to streets being lower than homes). Under existing conditions (i.e., assuming no gate closure), an estimated 273 AF of street storage would be needed during the 100-year rainfall event as a result of limited pumping capacity (Kjeldsen, Sinnock & Neudeck 2010a:10). However, additional water might need to be stored on local streets if a 24-hour 100-year rainfall event were to co-occur with the 100-year flood event. If the entire street-storage capacity of 334 AF was utilized, 431 AF (765 AF – 334 AF) would still need to be pumped or flow into Smith Canal during the 24-hour 100-year rainfall event.

The Smith Canal and tributary area storage capacity memo (Kjeldsen, Sinnock & Neudeck 2010b) provides an estimate of how much water could be stored behind the Alternative 1 gated fixed wall structure assuming particular water surface elevations at the time of gate closure and assuming that water could be stored up to an elevation of 10 feet NAVD 88 (Table 3.1-2). Ten feet NAVD 88 is slightly higher than the 100-year water surface elevation of 9.4 feet, so the amount of storage space available would be slightly less than what is shown in Table 3.1-2 if the interior water surface elevation were maintained below 9.4 feet NAVD 88.

Table 3.1-2. Interior Storage Capacity of Smith Canal between Specified Gate Closure Elevation and 10 Feet NAVD 88

Gate Closure Elevation (feet, NAVD 88)	Volume between Gate Closure Elevation and 10 Feet NAVD 88 (acre-feet)
3	347
4	303
5	257
6	209
7	159
8	108

Source: Kjeldsen, Sinnock & Neudeck 2010b:1, 2.

In order to successfully and simultaneously control a 100-year flood event in the San Joaquin River and a 24-hour 100-year rainfall event, the estimated 431 AF of local runoff would need to be managed according to operation and maintenance procedures. Specifically, the gate would only be closed during part of the tidal cycle to prevent flooding from the San Joaquin River, whereas the local runoff would enter the canal over a longer period. The flood-control gate would need to be closed at a relatively low tidal stage. When the water on the Smith Canal side of the gate rises above the San Joaquin River side, the gate would open automatically to release the local runoff (with the miter gate, as the head on the Smith Canal side is higher than the San Joaquin River side, the head differential would push the gate open, reducing the head on the Smith Canal side). As soon as low tide was reached, the gate would be closed again if there was still a risk of flooding from the San Joaquin River and substantial local runoff. It may be necessary for the gate to close and open more than once to alternate between controlling accumulated local stormwater runoff and the risk of flooding from the San Joaquin River.

The ease with which local runoff can be managed will depend on the tidal fluctuation in water surface elevation as well as the timing of the local runoff. Even at high river flows, water surface elevation still varies significantly with the tide. Tidal elevations during the high flows of 2011 provide an example of tidal variability during high flows (Plate 3.1-2). Although flows during 2011 were not at the 100-year flood level, peak tidal elevation in the San Joaquin River at Smith Canal was above 8 feet NAVD 88. This tidal variability allows some flexibility in how local stormwater runoff could be retained and released. The exact operations would depend on the magnitude of the tidal fluctuation and whether the tidal cycle is in spring phase (when the two daily high and low tides are at similar elevations) or in neap phase (when one of the daily high tides is substantially higher than the other and one of the daily low tides is substantially lower than the other).

Fortunately, it is unlikely that a 24-hour 100-year rainfall event would co-occur with a 100-year flood. Conditions for a 100-year flood at Smith Canal are created by a long series of rain events that would cause large amounts of runoff from the entire San Joaquin River basin and would necessitate upstream reservoir releases. There would be a lag between the time the storm events begin and the time that the high flows would reach Smith Canal. In contrast, the local runoff from a 24-hour 100-year rainfall event would reach Smith Canal almost immediately (less than half a day) (Kjeldsen, Sinnock & Neudeck 2010a:12).

In order to prepare for optimal operation of the gate, especially in the unlikely event of simultaneous high water surface elevation in the San Joaquin River and a significant local rainfall

event, SJAFCA or its contractor would develop a gate operation plan as described in Chapter 2, *Proposed Project and Alternatives*. Construction of the Alternative 1 gated fixed wall structure would not increase the likelihood of flooding as a result of local runoff. Because the gate would automatically open when the water on the Smith Canal side of the gate rises above the San Joaquin River side, local runoff would not back up behind the gate to a level greater than the river stage. The presence of the fixed wall structure and gate would not cause the water level in Atherton Cove and Smith Canal to be any higher than it would be in the absence of the fixed wall structure and gate, so Alternative 1 would have no impact.

Impact FC-3: Erosion as a Result of Funneling Water through Gate (less than significant)

Model results show regions of increased and decreased peak tidal velocities, which indicate a potential for areas of deposition and erosion. The largest increases in velocity are expected to occur through the gate. For Alternative 1, velocities would increase at the immediate vicinity of the gate structure, the west corner of Atherton Island, north bank of the entrance to Atherton Cove, and the Smith Canal side of the proposed southern fixed wall structure (Appendix B). Without the addition of culverts to the fixed wall structure, the peak spring tidal velocities through the gate were estimated to reach approximately 2.4 feet per second (ft/s). However, the spring tide high velocity only occurs a few times a year and the duration of high tidal velocity is relatively short. In addition, with the addition of culverts, the estimated peak spring tidal velocity was less than 2.0 ft/s.

With the heightened flow velocities through the gate, there is a low potential for mobilization of bottom sediments. However, this would be limited by the addition of culverts (which would reduce velocities through the gate). The addition of fixed wall structure culverts will also help to reduce the increases in velocity expected at other locations such that significant bank erosion would not result. Increases in erosion associated with Alternative 1 have been addressed through alterations in project design and this direct impact would be less than significant. No mitigation is necessary.

Alternative 2: Atherton Cove Floodwall with Smith Canal Gate

Impact FC-1: Increased Sedimentation from Reduction in Velocity Due to Channel Restriction (less than significant)

Obstruction of channel flow by the presence of the gated fixed sheet pile wall structure has the potential to reduce velocity and cause sedimentation in some areas. Hydrodynamic model results (Appendix B) indicate that the existence of the fixed wall structure could lead to localized changes in the flow field within the vicinity of the gate. However, changes in sedimentation would be limited to the vicinity of the fixed wall structure. For Alternative 2, siltation may occur on both sides of the new fixed wall structures away from the gate opening.

However, velocities would only be reduced in limited areas. Due to the limited nature of these changes in velocity, increases in sedimentation would not cause large geomorphic effects, and this direct impact would be less than significant. No mitigation is necessary.

Potential sedimentation effects are further discussed in Section 3.11, *Recreation*.

Impact FC-2: Increased Flood Risk from Confining Local Stormwater Runoff (no impact)

This impact under Alternative 2 is similar to that under Alternative 1. A minor difference is that the storage volume behind the gated fixed wall structure under Alternative 2 would be somewhat less

than the volume behind the gated fixed wall structure under Alternative 1 due to the more inland placement of the structure under this alternative (Kjeldsen, Sinnock & Neudeck 2010a:5).

In order to prepare for optimal operation of the gate, especially in the event of simultaneous high water surface elevation in the San Joaquin River and a significant local rainfall event, SJAFCA or its contractor would develop a gate operation plan as described in Chapter 2, *Proposed Project and Alternatives*. Although a major local runoff event could be a concern, the construction of the Alternative 2 gated fixed wall structure would not increase the likelihood of flooding as a result of local runoff. Because the gate would automatically open when the water on the Smith Canal side of the gate rises above the San Joaquin River side, local runoff would not back up behind the gate to a level greater than the river stage. The presence of the fixed wall structure and gate would not cause the water level in Smith Canal to be any higher than it would be in the absence of the fixed wall structure and gate, so Alternative 2 would have no impact.

Impact FC-3: Erosion as a Result of Funneling Water through Gate (less than significant)

Model results show regions of increased and decreased peak tidal velocities, which indicate a potential for areas of deposition and erosion. The largest increases in velocity are expected to occur through the gate. For Alternative 2, these increases would be less than for Alternative 1 (Appendix B). Without the addition of culverts to the fixed wall structure, the peak spring tidal velocities through the gate were estimated to reach approximately 1.3 ft/s (compared to 2.4 ft/s for Alternative 1).

With the heightened flow velocities through the gate, there is a low potential for mobilization of bottom sediments. However, due to the addition of culverts to the sheet pile wall and because the gate opening for Alternative 2 would not face a bank, velocities would be low enough that there would not be significant erosion. Increases in erosion, a potential direct impact associated with Alternative 2, would be less than significant. No mitigation is necessary.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact FC-1: Increased Sedimentation from Reduction in Velocity Due to Channel Restriction (less than significant)

Obstruction of channel flow by the presence of the gated fixed sheet pile wall structures has the potential to reduce velocity and cause sedimentation in some areas. Hydrodynamic model results (Appendix B) indicate that the existence of the fixed wall structures could lead to localized changes in the flow field within the vicinity of the gate.

However, changes in sedimentation would be limited; For Alternative 3, siltation may occur on both sides of the new fixed wall structures away from the gate opening and a flood shoal may form in the entrance of Smith Canal. Due to the limited nature of these changes in velocity, increases in sedimentation would not cause large geomorphic effects, and this direct impact would be less than significant. No mitigation is necessary.

Potential sedimentation effects are further discussed in Section 3.11, *Recreation*.

Impact FC-2: Increased Flood Risk from Confining Local Stormwater Runoff (no impact)

This impact under Alternative 3 is similar to that under Alternative 1. A minor difference is that the storage volume behind the Alternative 3 gated fixed wall structures would be somewhat less than

the volume behind the Alternative 1 gated fixed wall structure due to the more inland placement of the structures under this alternative (Kjeldsen, Sinnock & Neudeck 2010a:5).

In order to prepare for optimal operation of the gate, especially in the event of simultaneous high water surface elevation in the San Joaquin River and a significant local rainfall event, SJAFCA or its contractor would develop a gate operation plan as described in Chapter 2, *Proposed Project and Alternatives*. Although a major local runoff event could be a concern, the construction of the Alternative 3 gated fixed wall structures would not increase the likelihood of flooding as a result of local runoff. Because the gates would automatically open when the water on the Smith Canal sides of the gates rises above the San Joaquin River sides, local runoff would not back up behind the gate to a level greater than the river stage. The presence of the fixed wall structures and gates would not cause the water level in Atherton Cove and Smith Canal to be any higher than it would be in the absence of the fixed wall structures and gates, so Alternative 3 would have no impact.

Impact FC-3: Erosion as a Result of Funneling Water through Gates (less than significant)

Model results show regions of increased and decreased peak tidal velocities, which indicate a potential for areas of deposition and erosion.

For Alternative 3, the largest increases in velocity are expected to occur near the gates. The potential for erosion would be greatest in the vicinity of the gate structures along the center of the channel and the southern edge of Atherton Island.

For Alternative 3, the increases in velocity through the gates would be less than for Alternative 1 (Appendix B). Without the addition of culverts to the fixed wall structure, the peak spring tidal velocities through the gates were estimated to reach approximately 1.3 ft/s (compared to 2.4 ft/s for Alternative 1).

With the heightened flow velocities through the gate, there is a low potential for mobilization of bottom sediments. However, due to the addition of culverts to the sheet pile wall and because the gate openings for Alternative 3 would not face a bank, velocities will be low enough such that significant bank erosion would not result. Increases in erosion, a potential direct impact associated with Alternative 3, would be less than significant. No mitigation is necessary.

3.2 Water Quality and Groundwater Resources

This section describes the regulatory and environmental setting for water quality and groundwater resources in the study area. It also analyzes environmental impacts on water quality and groundwater resources that could result from implementing the proposed project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.2.1 Existing Conditions

3.2.1.1 Regulatory Setting

The following Federal, state, and regional and local regulations and technical guidelines related to water quality and groundwater resources may apply to implementation of the proposed project. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

Clean Water Act

The State Water Resources Control Board (State Water Board) is the state agency with primary responsibility for implementing the Federal Clean Water Act (CWA) in California, which establishes regulations relating to water resource issues.

Section 404: Permits for Fill Placement in Waters and Wetlands

Section 404 of the CWA requires that a permit be obtained from the U.S. Army Corps of Engineers (USACE) for the discharge of dredged or fill material into "waters of the United States, including wetlands."

Section 402: Permits for Discharge to Surface Waters

CWA Section 402 regulates discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, administered by the U.S. Environmental Protection Agency (EPA).

Construction Activities

Most construction activities that disturb 1 acre of land or more are required to obtain coverage under the NPDES General Permit for Construction Activities (General Construction Permit) (Order No. 2009-0009-DWQ), which requires the applicant to file an Notice of Intent (NOI) to discharge stormwater and to prepare and implement a stormwater pollution prevention plan (SWPPP).

Dewatering Activities

While small amounts of construction-related dewatering are covered under the General Construction Permit, the Regional Water Board also has adopted a General Order for Dewatering

and Other Low Threat Discharges to Surface Waters (General Dewatering Permit) (General Permit Order No. R5-2008-0081).

Section 401: Water Quality Certification

Under CWA Section 401, applicants for a Federal license or permit to conduct activities that might result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate.

Section 303: Impaired Waters

Section 303 requires states to develop lists of water quality–limited segments of waters that do not meet water quality standards, and EPA approves each state's impaired waters list (which, in California, is developed by the State Water Board). Section 303(d) also establishes the total maximum daily load (TMDL) process to improve water quality in listed waterways.

State

Water Quality Control Plan for the Sacramento River and San Joaquin River Basin

Each Regional Water Board in California is responsible for implementing its water quality control plan. The Central Valley Regional Water Quality Control Board's (Regional Water Board) *Water Quality Control Plan for the Sacramento River and San Joaquin River Basin* (Basin Plan) (Central Valley Regional Water Quality Control Board 2011) covers the entire Sacramento and San Joaquin River Basins, including the Sacramento–San Joaquin River Delta (Delta). The Basin Plan identifies beneficial uses of the river and its tributaries and water quality objectives to protect those uses. Numerical and narrative criteria are contained in the Basin Plan for several key water quality constituents, including dissolved oxygen (DO), water temperature, trace metals, turbidity, suspended material, pesticides, salinity, and radioactivity.

Regional and Local

San Joaquin County General Plan

The Water Resources and Quality subsection of the *San Joaquin 2010 Countywide General Plan* (1992) contains objectives and policies related to water quality that could apply to the proposed project. These objectives and policies aim to ensure adequate quantity and quality of water resources for municipal and industrial uses, agriculture, recreation, and fish and wildlife; prevent and eliminate contamination of surface water and groundwater supplies; and protect the environmental and scenic values of the county's surface waters as a state and national resource.

City of Stockton General Plan

The Public Facilities and Services section of the *2035 Stockton General Plan* (2007) contains goals and policies related to water quality that could apply to the proposed project. These goals and policies aim to manage stormwater in a manner that is safe and environmentally sensitive to protect people and property and to maintain the quality of receiving waters, including implementing best management practices (BMPs) to reduce pollutants to the maximum extent practicable as part of the City's watershed drainage plan.

3.2.1.2 Environmental Setting

The study area for water quality and groundwater resources consists of the project area, described in Chapter 1, *Introduction,* and as shown in Plate 1-2, as well as the portion of the San Joaquin River upstream and downstream of Smith Canal.

Surface Water Hydrology

The San Joaquin River is California's second longest river at approximately 330 miles long, and it drains approximately 15,200 square miles of land in the southern part of the Central Valley. The river flows in a generally northward direction into the Delta, which discharges into the San Francisco Bay. Predominant land uses in the San Joaquin River watershed are similar to those in the Sacramento River watershed and consist of agriculture, natural (undeveloped) areas, and urban areas.

The study area also includes Smith Canal, which extends approximately 3 miles east from the San Joaquin River. Starting at its eastern limit at Yosemite Lake, the canal receives stormwater from the surrounding urban area along its entire extent and then drains into the San Joaquin River. Smith Canal receives tidal waters from the San Joaquin River; however, the tidal exchange is relatively small at the upstream end of the canal. A previous study showed that after 20 days of tidal exchange, the fraction of water from the San Joaquin River that had mixed 2 miles upstream was about 60%, and at the upstream end at Yosemite Lake, the fraction of water from the river was about 50% (Jones & Stokes 2005:23).

The study area is located within the Delta. The Regional Water Board designated beneficial uses for Delta waterways include: municipal and domestic supply, agriculture (irrigation and stock watering), industrial (process and service supply), recreation (contact and other noncontact), freshwater habitat (warm and cold), migration (warm and cold), spawning (warm), wildlife habitat, and navigation. However, not all portions of the Delta support all these beneficial uses (Central Valley Regional Water Quality Control Board 2011:II-8). For example, Smith Canal water is not used for municipal, industrial, or agricultural supply.

Surface Water Quality

Contaminant Sources

Primary factors affecting water quality in the study area include flow and patterns of land use in the upstream watersheds of the San Joaquin River, as well as in-Delta activities and sources of pollutants. Point and nonpoint pollutant sources include historical and recent industrial and municipal wastewater treatment plant discharges, agricultural drainage, urban stormwater runoff, recreational uses, and metabolic waste (e.g., pathogens) from wildlife. Natural erosion and instream sediments also affect water quality in the area. The magnitude of the effect of each of these sources is correlated with the relative contribution from each source and can differ with study area conditions (e.g., hydrologic and climatic) during different times of a given year. Water quality can vary seasonally in response to winter–spring runoff and summer–fall lower-flow periods or seasonal agricultural practices and cropping. Water quality also can vary from year to year as a result of precipitation and snowpack levels in the upper watersheds and the resulting releases from upstream reservoirs for water supply, flood management, and environmental regulatory obligations.

The principal contaminants and conditions affecting water quality in the San Joaquin River, which pushes tidal waters up Smith Canal, are as follows.

- Stormwater runoff can contribute metals, sediment, pathogens, organic carbon, nutrients, pesticides, dissolved solids (salts), petroleum products, oil and grease, and other chemical residues.
- Wastewater discharges from treatment plants can contribute salts, metals, trace organics, nutrients, pathogens, pesticides, organic carbon, personal care products, pharmaceuticals, and oil and grease.
- Agricultural irrigation return flows and nonpoint discharges can contribute salts (including bromide), organic carbon, nutrients, pesticides, pathogens, and sediment.
- Large dairies and feedlots can contribute nutrients, organic carbon, pathogenic organisms, hormones, and veterinary pharmaceuticals/antibiotics.
- Water-based recreational activities (such as boating) can contribute hydrocarbon compounds, nutrients, and pathogens.
- Atmospheric deposition can contribute metals, nutrients, pesticides, and other synthetic organic chemicals and may lower pH.
- Seawater intrusion can contribute salts, including bromide, which affect total dissolved solids (TDS) concentrations and can contribute to formation of unwanted chemical disinfection by-products (DBPs) in treated drinking water. Additionally, seawater can contribute sulfate, which can influence the methylation of mercury.
- Selenium can originate from irrigation drainage from agricultural lands of the western San Joaquin Valley.
- Organic loading from upstream reaches of the San Joaquin River can contribute to low DO conditions.

303(d) List

As discussed in Section 3.2.1.1, *Regulatory Setting*, CWA Section 303(d) establishes the TMDL process to assist in guiding the application of state water quality standards. It requires states to identify streams in which water quality is impaired (i.e., affected by the presence of pollutants or contaminants) and to establish a TMDL—the maximum quantity of a particular contaminant that a water body can assimilate without experiencing adverse effects. The San Joaquin River, shown as Delta Waterways (Stockton Ship Channel) on the 303(d) list, is listed for chlorpyrifos, dichlorodiphenyltrichloroethane, diazinon, dioxin, furan compounds, Group A pesticides (pesticides with epidemiological evidence that they may cause cancer), invasive species, mercury, organic enrichment/low DO, polychlorinated biphenyls (PCBs), pathogens, and unknown toxicity. The potential sources of pollutants in the San Joaquin River include urban runoff, storm sewers, agriculture, resource extraction, municipal point sources, and contaminated sediments. Smith Canal is listed for organic enrichment/low DO, organophosphorus pesticides, and pathogens, with the potential pollutant sources being urban runoff and storm sewers (California State Water Resources Control Board 2010).

The Central Valley Water Board adopted a TMDL control program in 2005 to reduce low DO in the Stockton Deep Water Ship Channel portion of the San Joaquin River. DO in the channel has increased

since 2007, after the City of Stockton installed a nitrification system at the wastewater treatment plant to reduce ammonia in the effluent (California State Water Resources Control Board 2012:1).

Water Hyacinth

Water hyacinth (*Eichhornia crassipes*) is an invasive, nonnative aquatic plant that is found in wetlands, marshes, shallow waters, and slow moving waterways, and has a fast growth rate. Water hyacinth spreads both through the use of stolons, or runners, and by seed. Water hyacinth seed may remain viable for up to 20 years, making removal of the species challenging. The surface area of water hyacinth mats can double in size in a week (DiTomaso et al. 2013:167). Water hyacinth has become pervasive in the Delta, with estimates ranging from 500 acres to over 2,500 acres of covered area per year since 1981 (California Department of Boating and Waterways 2009:ES-1). Water hyacinth can cause low DO, alter other water quality parameters such as pH and water temperature, displace native aquatic plants such as pennywort (*Hydrocotyle umbellata*), and alter the structure of the local ecological community (Toft et al. 2003:746, 747; DiTomaso and Healy 2003:52).

Densely covered areas of water hyacinth were observed at the end of Atherton Cove and surrounding the Louis Park boat launch area during the site visits on October 8 and 22, 2014. Eradication of water hyacinth is unlikely, but annual control of the population in the study area is feasible. The California Department of Boating and Waterways (DBW), as part of its Aquatic Weed Control Program, applies herbicide to water hyacinth in the Delta and conducts a water quality monitoring program that demonstrates that its control program meets water quality standards for herbicide applications. The DBW program is not able to cover all parts of the Delta every year. In 2014, the Port of Stockton contracted with Aquatic Harvesting, Inc. to mechanically remove water hyacinth from the Port and the waterfront in downtown Stockton. The removal was accomplished by using an aquatic weed harvester, and the removed vegetation was piled on land to decompose and/or be used as compost.

Groundwater Conditions

The California Department of Water Resources (DWR) delineates groundwater basins throughout California under the state's Groundwater Bulletin 118. The proposed project is located in the Eastern San Joaquin Subbasin (Basin No. 5-22.01), which is part of the larger San Joaquin Valley Basin (California Department of Water Resources 2006). The San Joaquin River and several major tributaries drain the Eastern San Joaquin Subbasin, and the San Joaquin River flows in a generally northward direction into the Delta. The primary water bearing formations in the Eastern San Joaquin Subbasin include alluvium and Modesto/Riverbank Formation, flood basin deposits, Laguna Formation, and Mehrten Formation. Continued overdraft of groundwater within the Eastern San Joaquin Subbasin has created significant groundwater depressions below the city of Stockton, with several depressions extending approximately 100 feet below the ground surface.

Most of the groundwater in the Eastern San Joaquin Subbasin is described as having calcium-magnesium bicarbonate or calcium-sodium bicarbonate types (California Department of Water Resources 2006). Large quantities of chloride type water can be found along the western edge of the subbasin, which is adjacent to the San Joaquin River. Based on an analysis of groundwater wells in the subbasin, total dissolved solids vary between 300 and 1,632 milligrams per liter (mg/L), with an average of approximately 310 mg/L. Specific conductance varies between 78 to 5,390 microsiemens per centimeter (µmhos/cm), with an average value of 685 µmhos/cm. Several specific conductance values were found to be high near the western edge of the subbasin and the San Joaquin River. Due

to overdraft, degraded water quality has expanded east along the eastern side of the Delta. Degraded water quality has been particularly evident in the Stockton area, where data has shown that a saline front has moved eastward at a rate of 140 to 150 feet per year. Data collected between 1980 and 1996 has shown that the saline front has migrated up to approximately 1 mile eastward from its 1963 extent.

3.2.2 Environmental Impacts

This section describes the environmental impacts of the proposed project on water quality and groundwater resources. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, where appropriate.

3.2.2.1 Assessment Methods

This evaluation of water quality and groundwater resources is based on professional standards and the information cited throughout the section. The key effects were identified and evaluated based on the environmental characteristics of the study area and the magnitude, intensity, and duration of activities related to the construction and operation of this project.

Hydrodynamic modeling and a water quality residence time analysis were conducted for the gated fixed wall structure proposed under Alternatives 1, 2, and 3. Construction of any of the three alternatives could change the hydrodynamics within Smith Canal and Atherton Cove. To investigate these changes, MIKE-21 software was used to develop a model of Smith Canal, Atherton Cove, and the nearby section of the San Joaquin River (Appendix B). The model was used to simulate velocity, stage, transport, and residence time for each alternative. The effect of Moreing Road culverts and the culverts in the gated fixed wall structure were investigated separately by comparing model results for Alternative 1 with and without these culverts.

One goal of the modeling was to assess whether operation of the proposed project—in particular, the presence of the fixed dual sheet pile wall—would reduce or restrict tidal interchange between the San Joaquin River and Smith Canal, potentially leading to stagnation and a worsening of several water quality parameters. *Residence time*, or the average time a particle resides in a particular hydraulic system, provides a measure of the rate at which waters in a particular hydraulic system would be renewed. The residence time analysis, therefore, provides a method for assessing the water quality of Smith Canal and Atherton Cove and whether changes resulting from the proposed project, such as the fixed dual sheet pile wall, would likely improve or degrade water quality in the system.

The model results indicate that residence time would be unaffected by any of the proposed gated fixed wall structures because the gate opening would still be sufficiently large to enable tidal flow to propagate into Smith Canal and Atherton Cove without causing tidal muting. The model results demonstrate that residence time varies greatly from the outer portion of Smith Canal, through the canal, and into Yosemite Lake because of the narrow and elongated extent of Smith Canal. Typical residence times near the mouth of Smith Canal are around 1 day, whereas residence times approximately midway into the canal approach 30 days. Residence times in the back of the canal and into Yosemite Lake exceed 40 days. The residence time in Atherton Cove is very short, less than 2

days, indicating good flushing and circulation. More detailed modeling results are available in Appendix B.

3.2.2.2 Thresholds of Significance

The thresholds listed below are based on standard professional practice and on the criteria provided in State CEQA Guidelines Appendix G (14 California Code of Regulations 15000 et seq.). The project would be considered to have a significant impact on water quality and groundwater resources if it would result in any of the consequences listed below.

- Violate any water quality standards or waste discharge requirements.
- Substantially degrade water quality.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge.

The project would not involve any activities that would deplete groundwater supplies, degrade groundwater quality, or reduce groundwater recharge. As a result, groundwater effects are not further considered.

3.2.2.3 Impacts and Mitigation Measures

No Project Alternative

The No Project Alternative represents the continuation of existing deficiencies in the project area's flood control structures. The consequences of levee failure and flooding are described under the No Project Alternative description in Chapter 2, Section 2.4, including a summary of possible environmental effects.

Under the No Project Alternative, no flood risk-reduction measures would be implemented, and no construction-related effects related to water quality would occur. Tidal flushing of Smith Canal and Atherton Cove would maintain baseline water quality conditions. Conditions for water hyacinth growth would be the same as under baseline conditions, with high likelihood of water hyacinth presence in much of the slower velocity sections of Smith Canal and Atherton Cove, but little presence near the San Joaquin River where water hyacinth may be tidally washed downstream.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact WQ-1: Violation of Water Quality Standards for Turbidity as a Result of Construction Activities (less than significant with mitigation)

There is some risk that construction activities could cause turbidity levels to exceed the thresholds specified in the Basin Plan (Central Valley Regional Water Quality Control Board 2011:III-9). The Basin Plan guidelines for turbidity are fairly stringent; turbidity should not increase by more than 20% or 1 Nephelometric Turbidity Unit (NTU), whichever is greater. In-water excavation would have potential to cause exceedance of turbidity thresholds. However, all in-water excavation, such as excavation needed to install the gate and the Moreing Road culverts, would be performed behind sheet pile cofferdams. The sheet pile cofferdams and the fixed dual sheet pile walls would be installed using a vibratory hammer (i.e., no excavation).

Potentially turbid water would need to be removed from the area behind the cofferdams. Dewatering of the cofferdam area would begin upon completion of the cofferdam installation and would continue during the entire installation of the gate structure. The cofferdam would need to be continuously dewatered. Initial dewatering would take place prior to placement of the foundation. Procedures would be put into place to manage the silt that would likely be removed during the initial dewatering activities. The silt would be allowed to settle within the cofferdam to limit silt discharged during dewatering. It would be stored onsite and would settle on the channel floor. The cofferdam is assumed to have a low continuous inflow, resulting in a work area that is not watertight, and a sump pump and generator would be used to remove excess water if it reaches a predetermined level. Should continuous dewatering be needed, bag filters would be used to contain and dispose of silt. These precautionary measures would ensure that in-water construction-related increases in turbidity would be temporary and local.

Alternative 1 would also require upland construction activities that include earth disturbance that could directly cause erosion and sedimentation in adjacent water bodies, such as the San Joaquin River, Atherton Cove, and Smith Canal, which could also affect water quality immediately downstream. The associated upland construction activities include tying the sheet pile walls into the banks and the raising the grade on Dad's Point.

These in-water and upland construction activities could cause direct increases in turbidity that would be potentially significant. Implementation of Mitigation Measures WQ-MM-1a and WQ-MM-1b would reduce direct impacts to a less-than-significant level. If ground disturbance exceeds 1 acre, Mitigation Measure WQ-MM-1c would be implemented, which would further reduce potential impacts on turbidity related to upland construction activities.

Mitigation Measure WQ-MM-1a: Prepare and Implement a Turbidity Monitoring Program

SJAFCA or its contractor will monitor turbidity in the adjacent water bodies, where applicable criteria apply, to determine whether turbidity is being affected by construction and ensure that construction does not affect turbidity levels, which ultimately increase sediment loads.

SJAFCA or its contractor will monitor ambient turbidity conditions upstream and downstream of the construction site during in-water construction activities. Sampling locations, frequency of sampling, and acceptable increases in turbidity will be determined in consultation with the Regional Water Board to ensure construction does not violate Basin Plan turbidity standards.

If construction causes turbidity to increase above prescribed thresholds, construction-related, earth-disturbing activities will slow to a point that results in alleviating the problem. SJAFCA will notify the Regional Water Board of the issue and provide an explanation of the cause.

Mitigation Measure WQ-MM-1b: Implement Construction Best Management Practices

SJAFCA will require the construction contractor to implement appropriate BMPs that would be utilized to avoid or minimize impacts on turbidity. Such BMPs will include the following.

- **Staging of construction equipment and materials**. To the extent possible, equipment and materials would be staged in areas that have already been disturbed.
- **Minimize soil and vegetation disturbance**. The construction contractor would minimize ground disturbance and the disturbance/destruction of existing vegetation. This would be accomplished, in part, through establishing designated equipment staging areas, ingress and

egress corridors, equipment exclusion zones prior to the commencement of any grading operations, and protection of existing trees.

- **Install silt fences**. The construction contractor will install silt fences to prevent sediment-laden water from leaving the construction area.
- **Stabilize grading spoils**. Grading spoils generated during the construction will be temporarily stockpiled in staging areas. Silt fences, fiber rolls, or similar devices will be installed around the base of the temporary stockpiles to intercept runoff and sediment during storm events. If necessary, temporary stockpiles may be covered with an appropriate geotextile to increase protection from wind and water erosion.
- **Install sediment barriers**. The construction contractor may install silt fences, fiber rolls, or similar devices to prevent sediment-laden runoff from leaving the construction area.
- **Stormwater drain inlet protection.** The construction contractor may install silt fences, drop inlet sediment traps, sandbag barriers, and/or other similar devices.
- **Permanent site stabilization.** The construction contractor will install structural and vegetative methods to permanently stabilize all graded or otherwise disturbed areas once construction is complete. Structural methods may include the installation of biodegradable fiber rolls and erosion control blankets. Vegetative methods may involve the application of organic mulch and tackifier and/or the application of an erosion control native seed mix.

Mitigation Measure WQ-MM-1c: Prepare and Implement a Stormwater Pollution Prevention Plan

If ground disturbance exceeds 1 acre, SJAFCA will obtain coverage under EPA's NPDES general construction activity stormwater permit. The Regional Water Board administers the NPDES stormwater permit program in San Joaquin County. Obtaining coverage under the NPDES general construction activity permit generally requires that the project applicant prepare a SWPPP that describes the BMPs that will be implemented to control accelerated erosion, sedimentation, and other pollutants during and after project construction. The SWPPP will be prepared by SJAFCA or the construction contractor prior to commencing earth-moving construction activities.

The specific BMPs that will be incorporated into the erosion and sediment control plan and SWPPP will be site-specific and will be prepared by SJAFCA or the construction contractor in accordance with the Regional Water Board Field Manual. However, the plan likely will include the erosion and sediment control BMPs described in Mitigation Measure WQ-MM-1b.

Impact WQ-2: Release of Contaminants into Adjacent Surface Water Bodies from Construction-Related Activities (less than significant with mitigation)

Contaminants could enter the water as a result of spills during construction, contamination of stormwater runoff from the construction site, or disturbance of sediments that contain contaminants. Construction activities would involve the use of construction equipment that uses potentially harmful products such as fuels, lubricants, hydraulic fluids, and coolants, all of which can be toxic to fish and other aquatic organisms. The use of this equipment could be a direct source of contamination if proper equipment and construction practices are not followed. An accidental spill or inadvertent discharge from such equipment could directly affect the water quality of the river or water body in the project area.

The use of cofferdams and other in-water work protocols, as described in impact WQ-1, would reduce risk of contamination. However, this direct impact would remain potentially significant due to construction activities outside of dewatered areas. Implementation of Mitigation Measures WQ-MM-1a and WQ-MM-1b, as well as Mitigation Measure WQ-MM-1c if ground disturbance exceeds 1acre, would reduce this impact to a less-than-significant level.

Mitigation Measure WQ-MM-1a: Prepare and Implement a Turbidity Monitoring Program

Please refer to the discussion of Mitigation Measure WQ-MM-1a under Alternative 1, Impact WQ-1.

Mitigation Measure WQ-MM-1b: Implement Construction Best Management Practices

Please refer to the discussion of Mitigation Measure WQ-MM-1b under Alternative 1, Impact WQ-1.

Mitigation Measure WQ-MM-1c: Prepare and Implement a Stormwater Pollution Prevention Plan

Please refer to the discussion of Mitigation Measure WQ-MM-1c under Alternative 1, Impact WQ-1.

Impact WQ-3: Accumulation of Contaminants, Organic Material, and Nutrients Resulting from a Reduction in Water Circulation in Atherton Cove and Smith Canal (less than significant)

If the openings to Atherton Cove and Smith Canal were too narrow, tidal circulation of San Joaquin River water into and out of these water bodies would be reduced. Reduction in tidal circulation could potentially indirectly result in the accumulation of contaminants from street runoff and the buildup of organic material and nutrients that could lead to eutrophication and low DO on the inland side of the gated fixed wall structure. However, modeling results show that water residence time in Smith Canal and Atherton Cove would change very little if Alternative 1 were constructed. The model results showed a slight increase in residence time at the upstream end of Smith Canal (an increase from approximately 41 days to 42 days), but a slight decrease in residence time at the upstream end of Atherton Cove (a decrease from approximately 1.5 days to 1.4 days). The construction of the Moreing Road culverts would be expected to reduce residence time at the upstream end of Atherton Cove by an additional 0.2 days. The effect of the gated fixed wall structure on accumulation of contaminants, organic material, and nutrients would be less than significant. No mitigation is necessary.

Impact WQ-4: Reduction in Water Quality as a Result of Accumulation of Debris behind Fixed Dual Sheet Pile Walls (no impact)

According to the Basin Plan, "Water shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses" (Central Valley Regional Water Quality Control Board 2011:III-5). Under baseline conditions, debris that enters or is deposited in Atherton Cove and Smith Canal results in a visual nuisance in the area. Most debris eventually will either sink or be tidally washed into the San Joaquin River. Under Alternative 1, construction and operation of the fixed dual sheet pile wall would not result in accumulation of debris on the Atherton Cove and Smith Canal side of the structure due to debris removal maintenance activities described in Section 2.3.1.3, *Operations and Maintenance*. By conducting regular debris removal activities not currently

conducted, implementation of Alternative 1 would have no impact on water quality as a result of debris accumulation and may improve the present baseline condition of debris management, resulting in a potentially beneficial effect.

Impact WQ-5: Reduction in Water Quality Associated with Increase in Water Hyacinth Resulting from Presence of Fixed Dual Sheet Pile Walls (no impact)

It is anticipated that the current extensive presence of water hyacinth in Smith Canal and Atherton Cove would continue following implementation of Alternative 1, due to its ability to spread both through introduction of new plants and by seed. Mats of water hyacinth over 2 acres in extent were observed in the study area at the end of Atherton Cove and at the Louis Park boat launch during the site visits on October 8 and 22, 2014. However, water hyacinth mats were not observed where the gated fixed wall structure would be placed. As discussed in Section 3.7, *Vegetation and Wetlands*, some of the water hyacinth in Smith Canal originates from the San Joaquin River, while some propagates within the cove and canal. Once water hyacinth enters Smith Canal, it can grow quickly. The surface area of water hyacinth mats can double in size in a week (California Department of Boating and Waterways 2009; DiTomaso et al. 2013).

Water hyacinth can alter the local aquatic community, increase aquatic organic material, and alter water quality. Water hyacinth can cause a reduction in DO because hyacinth does not release oxygen into the water and it blocks light, thereby preventing growth of other types of aquatic vegetation and phytoplankton that could add oxygen to the water (Villamagna 2009:5). In addition, DO is reduced by the decomposition of organic material that tends to accumulate below the hyacinth mats (Mironga 2006:573). Reduction in DO is of particular concern because low DO is already an issue for Smith Canal and the San Joaquin River in the vicinity of the project area, although conditions have improved somewhat since 2007 after the City of Stockton installed a nitrification system at the wastewater treatment plant to reduce ammonia in the effluent (California State Water Resources Control Board 2012:1).

Because the project would have essentially no effect on the tidal volume of water exchanged between the San Joaquin River and Smith Canal, water hyacinth would still enter Smith Canal even after project construction, though the area through which it could enter would be limited to the 50-foot gate opening. Project-related increases in velocities near the gates would also help reduce hyacinth presence in the center of the channel. Because the San Joaquin River is almost always moving either upstream, or more commonly downstream, water hyacinth is unlikely to become lodged against the outer side of the gated fixed wall structure.

On the Smith Canal side, however, water hyacinth mats could accumulate adjacent to the gated fixed wall structure in the areas where there will be relatively little surface velocity. Without maintenance, the wall could enhance water hyacinth presence by preventing the hyacinth from drifting downstream into the San Joaquin River. Under Alternative 1, construction and operation of the fixed dual sheet pile wall would not result in an increase in water hyacinth in Atherton Cove and Smith Canal due to water hyacinth removal maintenance activities described in Section 2.3.1.3, *Operations and Maintenance*. By conducting regular water hyacinth removal activities not currently conducted, implementation of Alternative 1 would have no impact on water quality as a result of water hyacinth growth and may improve the present baseline condition, resulting in a potentially beneficial effect.

Alternative 2: Atherton Cove Floodwall with Smith Canal Gate

Impact WQ-1: Violation of Water Quality Standards for Turbidity as a Result of Construction Activities (less than significant with mitigation)

The construction techniques for Alternative 2 have the potential to cause increases in turbidity in the same manner as the techniques for Alternative 1. However, the potential for construction of Alternative 2 to temporarily increase turbidity to levels that would exceed the thresholds in the Basin Plan is greater than the potential described for Alternative 1 because Alternative 2 will have approximately three times the length of dual sheet pile wall. Construction protocols for in-water work would minimize increases in turbidity through the use of cofferdams, use of vibratory hammers to install dual sheet pile walls, and removal of sediment during dewatering activities. However, potential increases in turbidity related to in-water construction activities would make this direct effect potentially significant. Implementation of Mitigation Measures WQ-MM-1a and WQ-MM-1b, as well as Mitigation Measure WQ-MM-1c if ground disturbance exceeds 1 acre, would reduce this impact to a less-than-significant level.

Mitigation Measure WQ-MM-1a: Prepare and Implement a Turbidity Monitoring Program

Please refer to the discussion of Mitigation Measure WQ-MM-1a under Alternative 1, Impact WQ-1.

Mitigation Measure WQ-MM-1b: Implement Construction Best Management Practices

Please refer to the discussion of Mitigation Measure WQ-MM-1b under Alternative 1, Impact WQ-1.

Mitigation Measure WQ-MM-1c: Prepare and Implement a Stormwater Pollution Prevention Plan

Please refer to the discussion of Mitigation Measure WQ-MM-1c under Alternative 1, Impact WQ-1.

Impact WQ-2: Release of Contaminants into Adjacent Surface Water Bodies from Construction-Related Activities (less than significant with mitigation)

The potential for Alternative 2 to directly release contaminants into the water during construction is similar to that described for Alternative 1. The use of cofferdams and other in-water work protocols, as described in Impact WQ-1, would reduce risk of contamination. However, this direct impact would remain potentially significant due to construction activities outside of dewatered areas. Implementation of Mitigation Measures WQ-MM-1a and WQ-MM-1b, as well as Mitigation Measure WQ-MM-1c if ground disturbance exceeds 1 acre, would reduce this impact to a less-than-significant level.

Mitigation Measure WQ-MM-1a: Prepare and Implement a Turbidity Monitoring Program

Please refer to the discussion of Mitigation Measure WQ-MM-1a under Alternative 1, Impact WQ-1.

Mitigation Measure WQ-MM-1b: Implement of Construction Best Management Practices

Please refer to the discussion of Mitigation Measure WQ-MM-1b under Alternative 1, Impact WQ-1.

Mitigation Measure WQ-MM-1c: Prepare and Implement a Stormwater Pollution Prevention Plan

Please refer to the discussion of Mitigation Measure WQ-MM-1c under Alternative 1, Impact WQ-1.

Impact WQ-3: Accumulation of Contaminants, Organic Material, and Nutrients Resulting from a Reduction in Water Circulation in Smith Canal (beneficial)

If the opening to Smith Canal were too narrow, tidal circulation of San Joaquin River water into and out of Smith Canal would be reduced. Reduction in tidal circulation could potentially indirectly result in the accumulation of contaminants from street runoff and the buildup of organic material and nutrients that could lead to eutrophication and low DO on the inland side of the wall structure. However, modeling results show Alternative 2 would have little effect on water residence time in Smith Canal and Atherton Cove, with no locations with increased residence time and generally no change in Smith Canal residence times except for one small location near the gate where modeled residence time decreased from 11.9 days to 8.2 days. The construction of the Moreing Road culverts would be expected to slightly reduce residence time at the upstream end of Atherton Cove (by approximately 0.2 days). Because the modelling results for Alternative 2 showed no areas with increased residence time and some areas with slightly decreased residence time, Alternative 2 would be expected to have a slight beneficial impact on the accumulation of contaminants, organic material, and nutrients. No mitigation is necessary.

Impact WQ-4: Reduction in Water Quality as a Result of Accumulation of Debris behind Fixed Dual Sheet Pile Walls Construction (no impact)

The potential for debris to accumulate behind the gated fixed wall structure that would be constructed at the west end of the narrow portion of Smith Canal under Alternative 2 would be less than the potential for debris to accumulate behind the gated fixed wall structure associated with Alternative 1. Less debris would be expected to accumulate adjacent to the Alternative 2 structure because the gate opening (50 feet) would represent a greater fraction of the total length of the wall (approximately 225 feet) as compared to Alternative 1 (50 feet out of a total of approximately 800 feet). As a result, potential debris accumulation on the landward side of the wall would be reduced under Alternative 2. Further, construction and operation of Alternative 2 would not result in accumulation of debris on the Smith Canal side of the structure due to debris removal maintenance activities described in Section 2.3.2.3, *Operations and Maintenance*. By conducting regular debris removal activities not currently conducted, implementation of Alternative 2 would have no impact on water quality as a result of debris accumulation and may improve the present baseline condition of debris management, resulting in a potentially beneficial effect.

Impact WQ-5: Reduction in Water Quality Associated with Increase in Water Hyacinth Resulting from Presence of Fixed Dual Sheet Pile Walls (no impact)

The potential for water hyacinth to accumulate around the gated fixed wall structure that would be constructed at the west end of the narrow portion of Smith Canal under Alternative 2 would be less

than the potential for hyacinth to accumulate behind the gated fixed wall structure associated with Alternative 1. Less hyacinth would be expected to accumulate adjacent to the Alternative 2 structure because the gate opening (50 feet) would represent a greater fraction of the total length of the wall (approximately 225 feet) compared to Alternative 1 (50 feet out of a total of approximately 800 feet). However, water hyacinth mats could accumulate adjacent to the gated fixed wall structure in the areas where there will be relatively little surface velocity. Without maintenance, the wall could enhance water hyacinth presence by preventing the hyacinth from drifting downstream into the San Joaquin River. Under Alternative 2, construction and operation of the gate structure would not result in an increase in water hyacinth in Smith Canal due to water hyacinth removal maintenance activities described in Section 2.3.2.3, *Operations and Maintenance*. By conducting regular water hyacinth removal activities not currently conducted, implementation of Alternative 2 would have no impact on water quality as a result of water hyacinth growth and may improve the present baseline condition, resulting in a potentially beneficial effect.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact WQ-1: Violation of Water Quality Standards for Turbidity as a Result of Construction Activities (less than significant with mitigation)

The potential for construction of Alternative 3 to temporarily increase turbidity to levels that would exceed the thresholds in the Basin Plan is similar to the potential impact described for Alternative 1. Construction protocols for in-water work would minimize increases in turbidity through the use of cofferdams, use of vibratory hammers to install dual sheet pile walls, and removal of sediment during dewatering activities. However, potential increases in turbidity related to in-water and upland construction activities would make this direct effect potentially significant. Implementation of Mitigation Measures WQ-MM-1a and WQ-MM-1b, as well as Mitigation Measure WQ-MM-1c if ground disturbance exceeds 1 acre, would reduce this direct impact to a less-than-significant level.

Mitigation Measure WQ-MM-1a: Prepare and Implement a Turbidity Monitoring Program

Please refer to the discussion of Mitigation Measure WQ-MM-1a under Alternative 1, Impact WQ-1.

Mitigation Measure WQ-MM-1b: Implement Construction Best Management Practices

Please refer to the discussion of Mitigation Measure WQ-MM-1b under Alternative 1, Impact WQ-1.

Mitigation Measure WQ-MM-1c: Prepare and Implement a Stormwater Pollution Prevention Plan

Please refer to the discussion of Mitigation Measure WQ-MM-1c under Alternative 1, Impact WQ-1.

Impact WQ-2: Release of Contaminants into Adjacent Surface Water Bodies from Construction-Related Activities (less than significant with mitigation)

The potential for Alternative 3 to directly release contaminants into the water during construction is similar to that described for Alternative 1. The use of cofferdams and other in-water work protocols, as described in Impact WQ-1, would reduce risk of contamination. However, this direct impact

would remain potentially significant due to construction activities outside of dewatered areas. Implementation of Mitigation Measures WQ-MM-1a and WQ-MM-1b, as well as Mitigation Measure WQ-MM-1c if ground disturbance exceeds 1 acre, would reduce this impact to a less-than-significant level.

Mitigation Measure WQ-MM-1a: Prepare and Implement a Turbidity Monitoring Program

Please refer to the discussion of Mitigation Measure WQ-MM-1a under Alternative 1, Impact WQ-1.

Mitigation Measure WQ-MM-1b: Implement Construction Best Management Practices

Please refer to the discussion of Mitigation Measure WQ-MM-1b under Alternative 1, Impact WQ-1.

Mitigation Measure WQ-MM-1c: Prepare and Implement a Stormwater Pollution Prevention Plan

Please refer to the discussion of Mitigation Measure WQ-MM-1c under Alternative 1, Impact WQ-1.

Impact WQ-3: Accumulation of Contaminants, Organic Material, and Nutrients Resulting from a Reduction in Water Circulation in Atherton Cove and Smith Canal (less than significant)

If the openings to Atherton Cove and Smith Canal were too narrow, tidal circulation of San Joaquin River water into and out of these water bodies would be reduced. Reduction in tidal circulation could potentially indirectly result in the accumulation of contaminants from street runoff and the buildup of organic material and nutrients that could lead to eutrophication and low DO on the inland side of the walls. However, modeling results show that Alternative 3 would have little effect on water residence time in Smith Canal and Atherton Cove. The modeling indicates that construction of the two gated fixed wall structures would cause a slight decrease in residence time behind the Smith Canal gate (from 11.9 days to 8.2 days) and a small increase in residence time at the upstream end of Atherton Cove (an increase from approximately 1.5 days to 1.6 days), although the construction of the Moreing Road culverts would counteract this increase (by decreasing residence time by approximately 0.2 days). The impact of Alternative 3 on accumulation of contaminants, organic material, and nutrients would be less than significant. No mitigation is necessary.

Impact WQ-4: Reduction in Water Quality as a Result of Accumulation of Debris behind Fixed Dual Sheet Pile Walls Construction (no impact)

The potential for debris to accumulate behind the gated fixed wall structures that would be constructed across Atherton Cove and Smith Canal under Alternative 3 would be similar to the potential for debris to accumulate behind the gated fixed wall structure associated with Alternative 1. Under Alternative 3, the gate openings (100 feet for both gates) would represent a small fraction of the total length of the wall (approximately 900 feet). (For Alternative 1 the gate would be 50 feet out of a total of approximately 800 feet).

Under Alternative 3, construction and operation of the fixed dual sheet pile wall would not result in accumulation of debris on the Atherton Cove and Smith Canal side of the structures due to debris removal maintenance activities described in Section 2.3.3.3, *Operations and Maintenance*. By

conducting regular debris removal activities not currently conducted, implementation of Alternative 3 would have no impact on water quality as a result of debris accumulation and may improve the present baseline condition of debris management, resulting in a potentially beneficial effect.

Impact WQ-5: Reduction in Water Quality Associated with Increase in Water Hyacinth Resulting from Presence of Fixed Dual Sheet Pile Walls (no impact)

Mats of water hyacinth over 2 acres in extent were observed in the study area at the end of Atherton Cove and in the Louis Park boat launch during the site visits on October 8 and 22, 2014. Water hyacinth mats were not observed where the gated fixed wall structures would be placed. The potential for water hyacinth to increase as a result of Alternative 3 would be similar to the potential for hyacinth to increase under Alternative 1. However, water hyacinth mats could accumulate adjacent to the gated fixed wall structures in the areas where there will be relatively little surface velocity. Without maintenance, the walls could enhance water hyacinth presence by preventing the hyacinth from drifting downstream into the San Joaquin River. Under Alternative 3, construction and operation of the gate structures would not result in an increase in water hyacinth in Smith Canal or Atherton Cove due to water hyacinth removal maintenance activities described in Section 2.3.3.3, *Operations and Maintenance*. By conducting regular water hyacinth removal activities not currently conducted, implementation of Alternative 3 would have no impact on water quality as a result of water hyacinth growth and may improve the present baseline condition, resulting in a potentially beneficial effect.

3.3 Transportation and Navigation

This section describes the regulatory and environmental setting for transportation and navigation in the study area. It also analyzes environmental impacts on transportation and navigation that could result from implementing the proposed project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.3.1 Existing Conditions

3.3.1.1 Regulatory Setting

The following Federal, state, and regional and local regulations related to transportation and navigation may apply to implementation of the proposed project. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

River and Harbors Appropriation Act of 1899

The River and Harbors Appropriation Act of 1899 addresses activities that involve the construction of dams, bridges, dikes, and other structures that cross any navigable water; that place obstructions to navigation outside established Federal lines; that use or alter public works; and that excavate from or deposit material in such waters. Such activities require permits from the U.S. Army Corps of Engineers (USACE).

In USACE's Sacramento District, navigable waters of the United States in the project vicinity that are subject to the requirements of the River and Harbors Appropriation Act include the San Joaquin River, Calaveras River, and all waterways in the Sacramento–San Joaquin drainage basin affected by tidal action (U.S. Army Corps of Engineers 2015).

State

State agencies, counties, and cities use various criteria to determine acceptable level of service (LOS) on their roadway systems. LOS is a scale used to determine the operating quality of a roadway segment or intersection based on volume-to-capacity (V/C) ratios or average delay experienced by vehicles on the facility. The levels range from A to F, with LOS A representing free-flow traffic and LOS F representing severe traffic congestion. Agencies adopt LOS standards that define the levels of operations that are acceptable within their jurisdictions.

California Department of Transportation

The California Department of Transportation (Caltrans) is the responsible agency for management of transportation infrastructure and transportation improvements in California. Caltrans manages the state highway system, and works with Federal and local transportation agencies to coordinate funding highway and transit improvements.

Each Caltrans district prepares a Transportation Concept Report (TCR) for every state highway, or portion thereof, in its jurisdiction, to facilitate long-term planning and to determine how a highway will be developed and managed to deliver the targeted LOS and quality of service envisioned. Typical concept LOS standards for Stockton (within Caltrans District 10 jurisdiction) are LOS C in rural areas and LOS D in urban areas (California Department of Transportation District 10 2012). In the project area, Interstate 5 (I-5) is subject to the minimum acceptable level of traffic operation of LOS D or better. Local jurisdictions (counties and cities) have the option of adopting a higher LOS standard for freeway segments within their limits.

Local

The *San Joaquin 2010 County Wide General Plan* (1992) and *2035 Stockton General Plan* (2007) establish traffic capacity and LOS criteria for various types of highways and an operational LOS for signalized intersections. The LOS thresholds for roadway segments and intersections adopted for each jurisdiction are discussed below.

San Joaquin County General Plan

The Transportation Element of the *San Joaquin 2010 County Wide General Plan* (1992) includes goals, policies, and actions designed to maintain acceptable traffic operations and to reduce congestion on County roadways. As the San Joaquin Council of Governments (SJCOG) is the regional transportation planning agency in the county, Roadway Policy 8 directs SJCOG to establish LOS for freeways and roadways in San Joaquin County through the update and amendment of the Congestion Management Plan Per Roadway Policy 8:

- All County roadways shall operate at LOS C or better (except in a City sphere of influence where the City has adopted LOS D).
- Intersections shall operate at an overall LOS D or better on minor arterials and roadways of higher classification and LOS C on all other roads.
- All freeways and State highways shall operate at LOS D (San Joaquin County 1992).

Table 3.3-1 quantifies the daily traffic volume on County roadways for LOS C and number of through lanes.

Table 3.3-1. San Joaquin County Roadway Segment LOS Threshold

Roadway Classification	Through Lanes	LOS C Capacity
Major Arterial	2	15,000
	4	30,000
	6	45,000
Minor Arterial	2	12,500
	4	25,000
Collector (Commercial/Industrial)	2	10,000
Collector (Residential)	2	7,000
Local (Commercial/Industrial)	2	7,000
Local (Residential)	2	2,000

Source: San Joaquin County 1992.
LOS = level of service.

City of Stockton General Plan

The *2035 Stockton General Plan* (2007) sets forth goals and policies to guide development within the City, including policies regarding the operation of the road system. Policy TC-2.1 the Transportation and Circulation Element established an LOS standard of LOS D or better on all City freeway and roadway segments for both daily and peak hour conditions (City of Stockton 2007a). Intersections and roadway segments operating at LOS A, B, C, or D conditions are considered acceptable, whereas those operating at LOS E or F conditions are considered unacceptable. Table 3.3-2 quantifies the daily traffic volume on City roadways for corresponding LOS by number of through lanes and area types.

Table 3.3-2. City of Stockton Roadway Segment LOS Threshold

Facility Class	Lanes	Area Type	LOS A	LOS B	LOS C	LOS D	LOS E
Freeway	4	All areas	27,600	45,200	63,600	77,400	86,400
	6	All areas	41,400	67,800	95,400	116,100	129,600
	8	All areas	55,200	90,400	127,200	154,800	172,800
	10	All areas	69,000	113,000	159,000	193,500	216,000
Arterial	2	Existing	8,400	9,300	11,800	14,700	17,200
	2	New	10,000	11,100	14,000	17,500	20,600
	4	Existing	18,600	20,600	26,000	32,500	38,200
	4	New	23,300	25,800	32,600	40,700	47,900
	6	Existing	28,800	32,000	40,300	50,400	59,300
	6	New	33,300	37,000	46,600	58,300	68,600
	8	Existing	38,100	42,300	53,300	66,600	78,400
	8	New	41,100	45,700	57,600	72,000	84,700
Collector	2	Existing	6,400	7,100	9,000	11,300	13,200
	2	New	6,400	7,100	9,000	11,300	13,200
	4	Existing	17,600	19,600	24,700	30,900	36,300
	4	New	21,100	23,500	29,600	37,000	43,500

Source: City of Stockton 2007b.
LOS = level of service.

3.3.1.2 Environmental Setting

The study area for transportation and navigation is the same as the project area, described in Chapter 1, *Introduction*, and shown in Plate 1-2.

Two primary roads, either Country Club Boulevard north of Smith Canal or Monte Diablo Avenue south of Smith Canal, would be used as haul routes to the project construction areas along Dad's Point and along the north shore of Atherton Cove. A third alternative method for delivering construction materials could include access to the project site via boat or barge along the San Joaquin River.

Construction staging areas that would be used to store construction equipment and mobilize construction activities may include: a parking area near the Louis Park boat launch at the base of

Dad's Point; a parcel to the south of Monte Diablo Avenue and west of Interstate 5 (I-5); and/or the Port of Stockton. The exact location of a staging area within the Port facility has not been determined and therefore is not shown in the plates of this Draft EIR. In the circumstance that the Port is utilized as a project construction staging area, it is assumed that construction materials and equipment would be transported via barge across the San Joaquin River to the project site.

Roadway Systems

I-5 provides freeway access to the project area. From I-5, the designated haul route to Dad's Point would be via the Monte Diablo Avenue interchange and continue west along Monte Diablo Avenue to its terminus at Dad's Point where the staging area would be located. The haul route to the north shore of Atherton Cove from northbound I-5 would exit at the Country Club Boulevard interchange and continue west on Country Club Boulevard to Virginia Lane. From southbound I-5, the haul route to the north shore of Atherton Cove would be via the Alpine Avenue interchange and continue south on Ryde Avenue to Country Club Boulevard, where trucks would turn right and travel west to Virginia Lane. Virginia Lane would be used to access the Atherton Cove shoreline. Truck traffic heading to Moreing Road would use a similar haul route as to the north shore of Atherton Cove but turn left onto Moreing Road prior to reaching Virginia Lane.

The primary roadways and intersections within the study area that would be affected by the project are described below. Plate 3.3-1 shows the local roadway system in the project area.

Roadways

Table 3.3-3 presents the existing LOS based on the current daily traffic volumes for the primary project area roadways and compares it to the applicable City of Stockton and San Joaquin County LOS thresholds for each roadway classification. As shown, the existing LOS along the main roadways in the project area are LOS A conditions within the City and LOS C or better for roadways within the county.

Table 3.3-3. Existing Roadway Segment LOS of Primary Local Access Roads in the Project Area

Roadway	Location	Roadway Classification	Threshold LOS	Threshold Daily Volume Threshold	Existing LOS	Existing Daily Volume Threshold
Country Club Boulevard	Between Oregon Avenue and Gardena Avenue	Collector[a]	D	11,300	A	4,450
	Between Moring Road and Virginia Lane	Collector[b]	D	7,000	A	1,193
Moreing Road	South of Country Club Boulevard	Local[b]	C	2,000	>C	285
Virginia Lane	South of Country Club Boulevard	Local[b]	C	2,000	>C	65
Monte Diablo Avenue	Between Occidental Avenue and Ryde Avenue	Arterial[a]	C	14,700	A	3,844

Source: KD Anderson & Associates, Inc. 2015.

LOS = level of service.

[a] City facility.

[b] County facility.

Monte Diablo Avenue

Monte Diablo Avenue is a two-way arterial roadway in the City that extends approximately 1.5 miles from Victory Park east of I-5 to its terminus at Louis Park, adjacent to the San Joaquin River. Access to and from I-5 from Monte Diablo Avenue is provided via a diamond interchange with the stop sign-controlled on- and off-ramp intersections. West of the Monte Diablo Avenue/I-5 intersection, the roadway width varies from approximately 30 to 50 feet and the pavement is generally in fair to good condition, depending on the location.

West of I-5, the all-way stop at the Ryde Avenue intersection is the only location along Monte Diablo Avenue with stop-control. Sidewalks are discontinuous along Monte Diablo Avenue, with segments of the street having sidewalks along either the north of south side of the roadway. In the project area, Monte Diablo Avenue provides access to Louis Park.

Country Club Boulevard

Country Club Boulevard is a two-lane collector roadway that extends approximately 2.5 miles from Pershing Avenue east of I-5 to its terminus at the entrance of the Stockton Golf and Country Club. The roadway is located within the incorporated limits of the City, except for a 1,100-foot-long segment between Wisconsin Avenue and Oregon Avenue and a 1,300-foot-long segment east of Virginia Lane located within the unincorporated areas of the county. Access to and from I-5 is provided via traffic-signal controlled split-diamond interchanges with the on- and off- ramps located at Country Club Boulevard and Alpine Avenue. Collector-distributor roads run parallel and adjacent to I-5, with Ryde Avenue located to the west and Plymouth Avenue located to the east.

West of the Country Club Boulevard/I-5 intersection, the roadway width varies. The roadway is approximately 64 feet in width adjacent to the freeway, where the road includes two through lanes in each direction and left-turn lanes at the intersection with Ryde Avenue. West of Delano Avenue,

Country Club Boulevard is a two-lane roadway with the road width narrowing to approximately 34 feet near the entrance of the Stockton Golf and Country Club. The pavement is generally in fair condition.

West of I-5, along Country Club Boulevard, there is one traffic signal at the Ryde Avenue/ southbound I-5 on-ramp intersection and an all-way stop at the Rainier Avenue/Virginia Lane intersection. All other intersections along Country Club Boulevard are side-street stop controlled. Sidewalks generally exist along Country Club Boulevard west of Ryde Avenue to Oregon Avenue; however, there are a few locations west of Delano Avenue that have yet to be improved. There are no sidewalks along Country Club Boulevard west of Oregon Avenue, except along two short segments.

Virginia Lane

Virginia Lane is a local County roadway and is part of a four-way, all-way, stop-controlled intersection with Country Club Boulevard and Rainer Avenue. The roadway varies from approximately 16 to 20 feet, and the pavement is generally in fair to good condition. On-street parking is prohibited on Virginia Lane.

Moreing Road

Moreing Road is a local County roadway that tees into Country Club Boulevard and extends south for about 0.5 mile to provide access to residences on Atherton Island. The roadway varies in width from approximately 20 to 24 feet, and the pavement is generally in fair to good condition.

Ryde Avenue

Ryde Avenue is a two-lane roadway in the City that extends southward 0.5 mile from its intersection with Shimizu Drive to its terminus at West Fremont Street. There are no sidewalks along some portions of Ryde Avenue south of Monte Diablo Avenue. The roadway varies in width from approximately 20 to 25 feet, and the pavement is generally in poor condition.

Intersections

Table 3.3-4 presents the existing LOS at the two primary project area intersections during the AM and PM peak hours. The traffic volumes were obtained in late February 2014. As shown, both intersections operate an acceptable LOS, operating at LOS B or better.

Table 3.3-4. Existing Peak Hour LOS at Intersections in the Project Area

		AM Peak Hour		PM Peak Hour	
Location	Control	LOS	Average Delay	LOS	Average Delay
1. Country Club Boulevard/ Ryde Avenue[a]	Signal	B	16.0	B	10.8
2. Monte Diablo Avenue/ Ryde Avenue[a]	All way stop	A	8.4	A	8.9

Source: KD Anderson & Associates, Inc. 2015.
LOS = level of service.
[a] City facility.

Monte Diablo Avenue/Ryde Avenue Intersection

The Monte Diablo Avenue/Ryde Avenue intersection is an all-way, stop-controlled intersection. Each of the approaches consist of a single lane, except the westbound Monte Diablo Avenue approach, which includes a separate right-turn lane. Crosswalks are provided along the north and west approaches.

Country Club Boulevard/Ryde Avenue/Southbound I-5 On-Ramp Intersection

The Country Club Boulevard/Ryde Avenue/southbound I-5 on-ramp intersection is a signalized intersection. Each of the approaches consist of two through lanes with left-turn lanes along southbound Ryde Avenue and westbound Country Club Boulevard. The left-turn movement from westbound Country Club Boulevard to the southbound I-5 on-ramp consists of a protected left arrow. Crosswalks are provided along the north, south, and west approaches.

Transit

The San Joaquin Regional Transit District (SJRTD) operates bus service throughout San Joaquin County and the city of Stockton, providing access to the surrounding communities. SJRTD Routes 60 and 61 provide service along the major access roads in the project area.

Route 60 service runs along Monte Diablo Avenue and provides access from Louis Park/Pixie Woods to the Downtown Transit Mall. The route begins at the Transit Mall and travels west along Monte Diablo Avenue before turning north on Occidental Avenue, along the east side of Louis Park. Route 60 then proceeds west along Shimizu Drive, where it intersects with Monte Diablo Avenue, just east of Dad's Point, and continues east on Monte Diablo Avenue to terminate back at the Transit Mall.

Route 61 service provides access from the Transit Mall to Sherwood Mall in north Stockton. In the project area, Route 61 travels along Michigan Avenue, Oregon Avenue, and Country Club Boulevard. (San Joaquin Regional Transit District 2014).

Bikeways

Bicycle facilities within the San Joaquin County and the city of Stockton are divided into three classes: Class I bicycle paths provide for travel on paved right-of-ways separated from streets or highways; Class II bicycle lanes provide dedicated on-street space for bicyclists delineated by a white stripe, signs, and pavement markings; and Class III bicycle routes provide shared-lane use with motor vehicle traffic. In the project area, there are existing Class III bicycle routes on Country Club Boulevard between Pershing Avenue and Franklin Avenue and on Alpine Avenue between Pershing Avenue and Rainier Avenue (City of Stockton 2007c).

SJCOG and the City of Stockton identify recommended bikeway "vision projects" to be implemented in the long-term (San Joaquin Council of Governments 2012). Identified bicycle facility vision projects in the project area include: Country Club Boulevard between Franklin Avenue and Virginia Lane (Class III); Fairway Drive, River Drive, Rainier Avenue, and Virginia Lane around the Stockton Golf and Country Club (Class III); Stockton Golf and Country Club Path between Virginia Lane and Fairway Drive (Class I); Monte Diablo Avenue between Pershing Avenue and Louis Park (Class III); and Stockton Channel Path between I-5 and Louis Park (Class I). Table 3.3-5 summarizes the existing and proposed bicycle facilities on major local roads in the project area.

Table 3.3-5. Existing and Proposed Bicycle Facilities in the Project Area

Location	Start (East Terminus)	End (West Terminus)	Class
Existing			
Alpine Avenue	Pershing Avenue	Rainer Avenue	Class III
Country Club Boulevard	Pershing Avenue	Franklin Avenue	Class III
Proposed			
Country Club Boulevard	Franklin Avenue	Virginia Lane	Class III
Fairway Drive/River Drive/Rainier Avenue/Virginia Lane	Stockton Golf and Country Club	Stockton Golf and Country Club	Class III
Stockton Golf and Country Club Path	Virginia Lane	Fairway Drive	Class I
Monte Diablo Avenue	Pershing Avenue	Louis Park	Class III
Stockton Channel Path	Interstate 5	Louis Park	Class I

Source: City of Stockton 2007c; San Joaquin Council of Governments 2012.

River Navigation

The project area includes portions of the San Joaquin River, Smith Canal, and Atherton Cove. The San Joaquin River forms the southern edge of the project area and generally flows in a northward direction. Smith Canal receives tidal waters from the San Joaquin River and extends approximately 3 miles east from the river. Atherton Cove is a dead-end slough of the San Joaquin River that extends north and east around Atherton Island; the cove is tidally influenced by the river, with much greater tidal interchange than Smith Canal. Navigation in the San Joaquin River includes commercial vessels, barges, and recreational watercrafts whereas navigation in Smith Canal and Atherton Cove within the project area is limited to recreational watercrafts.

Public recreational boating access to the San Joaquin River in the project area is provided by Louis Park boat launch, located at the west end of Monte Diablo Avenue, at the base of Dad's Point. A majority of the residential properties adjacent to the project area waterways have private boat docks that provide access to the San Joaquin River.

3.3.2 Environmental Impacts

This section describes the environmental impacts of the proposed project on transportation and navigation. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, where appropriate.

3.3.2.1 Assessment Methods

Almost all increased vehicle trips associated with the proposed project would be generated by construction-related activities. Therefore, the focus of the transportation and navigation analysis is to evaluate whether the construction-related trips would degrade the traffic operation of major project access roads. After the project is constructed, operation and maintenance of the project facilities generally would be performed as needed. Maintenance work would be less extensive than the construction activities and would take place only a few days per year.

Construction of the project would result in a temporary increase in local traffic due to travel by construction employees and deliveries of construction equipment and materials to the project site. The amount of employee traffic and truck traffic associated with implementation of the project alternatives would vary throughout construction as each alternative varies in construction duration and the types of construction activities involved. For this analysis, the maximum probable concurrent employment of construction employees on the site, as well as the maximum concurrent truck activity, is assumed for each project alternative. This analysis represents the "worst-case," most conservative scenario for each project alternative. Proposed construction schedules were reviewed to determine when these activities would occur.

Additionally, the Moreing Road culvert installation may occur at the same time as the implementation of the flood risk-reduction measures; however, since the culvert installation is specific to Moreing Road, this roadway segment was analyzed separately.

Construction-related trips associated with the project, including employee commute trips and truck trips, are estimated based on the construction data provided by the project applicant. The traffic impact analysis prepared for the project is included as Appendix C to this Draft EIR.

Project Trip Generation

The construction trips are estimate for travel by construction employees (employee traffic) and deliveries of construction equipment and materials (truck traffic) with the following assumptions.

- **Employee traffic**: Each construction employee would drive a personal vehicle to the project construction site. Although it is likely that some employees would informally carpool to the job site, this analysis assumes no construction employees would carpool to represent the most conservative employee trip generation. Project construction on dry land would occur between 7 a.m. and 4 p.m., Monday through Friday. On any given day, construction employees would arrive at the project site prior to the AM peak hour of adjacent street traffic; however, all construction employees are assumed to depart the project site during the PM peak hour. For the purpose of this analysis, it was also assumed that all employees would arrive during the AM peak period.

  The number of employees at the project site varies by project alternative due to differences in construction activity. A maximum of 30 employees is anticipated under Alternative 1, while Alternative 2 could have 39 employees, and Alternative 3 could have 48 employees on the site at one time.

- **Truck traffic**: Trucks would travel to and from the project site over the life of the project; the amount of truck activity has been estimated based on a review of preliminary construction quantities for each aspect of the project alternatives. The number of truck loads needed to accommodate identified quantities was estimated based on the projected construction schedules, the various construction tasks, and the worst case truck traffic estimates vary by each project alternative. No truck traffic would be expected in the PM peak hour as project construction would have concluded for the day.

  Alternative 1 would expect to generate 85 truck trips (170 truck round trips) to access the site on a daily basis, while Alternative 2 could generate 140 truck trips (280 round trips), and Alternative 3 could generate 137 truck trips (274 round trips).

Table 3.3-6 summarizes the project trip generation for each of the three project alternatives. These estimates include miscellaneous internal site trips.

Table 3.3-6. Trip Generation by Project Alternative

Description	Vehicle Trips		
	Daily	AM Peak Hour	PM Peak Hour
Alternative 1			
Employee (two-way traffic)	60	30	30
Trucks (two-way traffic)	170	16	0
Internal trips	12	0	0
Alternative 1 Total Trips	242	46	30
Alternative 2			
Employee (two-way traffic)	78	39	39
Trucks (two-way traffic)	280	34	0
Internal trips	12	0	0
Alternative 2 Total Trips	370	73	39
Alternative 3			
Employee (two-way traffic)	96	48	48
Trucks (two-way traffic)	274	34	0
Internal trips	12	0	0
Alternative 3 Total Trips	382	82	48

Source: KD Anderson & Associates, Inc. 2015.
Note: Internal trips are trips that would be made between the project's staging areas and work sites.

Project Trip Distribution and Assignment

Employee traffic and truck traffic generated by project construction are distributed differently to the regional and local routes that would be used by the project traffic. It is assumed that the regional distribution of the project's employee and construction truck traffic would differ as employee traffic would be oriented to residential centers, while truck traffic is oriented to the sources of imported materials or the disposal sites for exported materials. I-5 is the major access route to the site, with on- and off-ramps providing direct access to Monte Diablo Avenue and Country Club Boulevard.

Employee traffic is estimated to be split equally along each direction of I-5, while most truck traffic is expected to come from the south where Granite Construction would provide concrete and fill materials from its French Camp batch plant. Trucks hauling debris from the construction site are expected to use either the Lovelace Materials Recovery Facility in Manteca or the North County Recycling Center and Sanitary Landfill in Lodi. Table 3.3-7 presents the project trip distribution assumptions with regards to employee trips and truck trips.

Table 3.3-7. Project Trip Distribution

Route and Direction	Percentage of Total Traffic	
	Employees	Trucks
I-5 Northbound	50%	10%
I-5 Southbound	50%	90%
Total	100%	100%

Source: KD Anderson & Associates, Inc. 2015.

The assignment of traffic to study area roads is based on the projected construction duration for each project alternative. The schedule to construct the project would vary, with the shortest construction duration being 25 months (Alternative 1) and the longest duration being 43 months (Alternative 2). Construction traffic would vary for each project alternative based on the type of construction, the order of construction, and the manpower and material necessary for each phase of construction.

Based on the projected construction schedule, Table 3.3-8 presents the trip assignment, incorporating the trip distribution and incorporating it to the project's generated trips, during the months when there would be the highest volume of truck traffic and employee traffic for each project alternative. The table provides an estimate of traffic to and from the staging area at Dad's Point using the Monte Diablo Avenue haul route and to the north side of Atherton Cove using the Country Club Boulevard haul route.

Table 3.3-8. Trip Assignment by Project Alternative

Description	To Monte Diablo Avenue			To Country Club Boulevard		
	Daily	AM Peak Hour	PM Peak Hour	Daily	AM Peak Hour	PM Peak Hour
Alternative 1						
Employee (two-way traffic)	40	20	20	20	10	10
Trucks (two-way traffic)	84	8	0	86	8	0
Internal trips	6	0	0	6	0	0
Alternative 1 Total Trips	130	28	20	112	18	10
Alternative 2						
Employee (two-way traffic)	20	10	10	58	29	29
Trucks (two-way traffic)	142	11	0	138	23	0
Internal trips	6	0	0	6	0	0
Alternative 2 Total Trips	168	21	10	202	52	29
Alternative 3						
Employee (two-way traffic)	48	24	24	48	24	24
Trucks (two-way traffic)	138	16	0	136	18	0
Internal trips	6	0	0	6	0	0
Alternative 3 Total Trips	192	40	24	184	42	24

Source: KD Anderson & Associates, Inc. 2015.
Note: Internal trips are trips that would be made between the project's staging areas and work sites.

3.3.2.2 Thresholds of Significance

The thresholds listed below are based on professional standards and the criteria provided in State CEQA Guidelines Appendix G (14 California Code of Regulations 15000 et seq.). The proposed project would be considered to have a significant impact on transportation and navigation if it would result in any of the following consequences.

- 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, and including intersections, streets, highways and freeways, and pedestrian and bicycle paths.
- Conflict with an applicable congestion management program, including level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Effects related to emergency access are discussed in Section 3.13, *Public Health and Environmental Hazards*.

3.3.2.3 Impacts and Mitigation Measures

No Project Alternative

The No Project Alternative represents the continuation of existing deficiencies in the project area's flood control structures. No flood risk–reduction measures would be implemented, and no construction-related effects related to transportation or navigation would occur. The consequences of levee failure and flooding are described under the No Project Alternative description in Chapter 2, *Proposed Project and Alternatives*, Section 2.4, including a summary of possible environmental effects.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact TRA-1: Temporary Increase in Traffic Volumes from Construction-Generated Traffic (less than significant)

Table 3.3-6 summarizes the estimated number of trips generated by construction activities for Alternative 1 and Table 3.3-8 shows the distribution of the estimated trips via designated haul routes. The relative impact from implementing Alternative 1 is determined by superimposing the amount of traffic associated with the construction activities within the project area onto existing traffic volume levels. A project's impact is considered significant if implementation of the project would result in an intersection or roadway segment LOS levels changing from levels considered acceptable to levels considered unacceptable, or if the project would substantially worsen already unacceptable LOS.

Table 3.3-9 summarizes the projected LOS at the project area's major intersections for both AM and PM peak hour under Alternative 1. As shown in Table 3.3-9, both intersections would continue to operate at an acceptable LOS, operating at LOS B or better. Alternative 1 would not change the project area's intersection LOS levels from levels considered acceptable to levels considered unacceptable, and the impact would be less than significant. No mitigation is necessary.

Table 3.3-9. Alternative 1—Existing Plus Alternative 1 Peak Hour LOS at Intersections in the Project Area

		AM Peak Hour				PM Peak Hour			
		Existing		Existing Plus Alternative 1		Existing		Existing Plus Alternative 1	
Location	Control	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay
1. Country Club Boulevard/Ryde Avenue[a]	Signal	B	16.0	B	16.5	B	10.8	B	10.8
2. Monte Diablo Avenue/Ryde Avenue[a]	All way stop	A	8.4	A	8.7	A	8.9	A	9.0

Table 3.3-10 summarizes the amount of traffic added to local roadways on a daily basis during construction of Alternative 1. As shown in Table 3.3-10, although Alternative 1 would increase traffic along each of the project routes, Alternative 1's maximum projected roadway segment traffic volumes would not substantially deteriorate existing roadway segment LOS. All arterial and collector routes in the project area would operate at LOS C or better through the duration of project construction. Construction traffic would increase on local streets over the short term and would continue to operate above the County's LOS C threshold.

In regards to highway facilities, Alternative 1 would add 170 daily truck trips on a temporary basis along I-5. I-5 currently services approximately 26,000 trucks on a daily basis. Alternative 1's slight addition of truck trips would not result in an appreciable change to current operating LOS on I-5. Thus, Alternative 1 would not change the project area's roadway segment LOS levels from levels considered acceptable to levels considered unacceptable, and the impact would be less than significant. No mitigation is necessary.

Table 3.3-10. Alternative 1—Existing Plus Alternative 1 Peak Hour LOS at Roadway Segments in the Project Area

			Threshold		Existing Plus Alternative 1			
					Daily Volume			
Roadway	Location	Roadway Classification	LOS	Daily Volume Threshold	Existing	Alternative 1 Only	Total	LOS
Country Club Boulevard	Between Oregon Avenue and Gardena Avenue	Collector[a]	D	11,300	4,450	112	4,562	A
	Between Moring Road and Virginia Lane	Collector[b]	D	7,000	1,193	112	1,305	A
Moreing Road	South of Country Club Boulevard	Local[b]	C	2,000	285	20	305	>C
Virginia Lane	South of Country Club Boulevard	Local[b]	C	2,000	65	112	177	>C
Monte Diablo Avenue	Between Occidental Avenue and Ryde Avenue	Arterial[a]	C	14,700	3,844	130	3,074	A

Impact TRA-2: Increase in Safety Hazard Attributable to Construction-Generated Deterioration of Roads (less than significant with mitigation)

Construction of Alternative 1 would add heavy-duty truck traffic to the project area as these trucks would be used to transport and deliver construction equipment and materials to the project site. Because of their weight, trucks can have a disproportional impact on roadway pavement sections and can accelerate the need for maintenance. The turning paths taken by large trucks also exceed that of regular automobiles, and trucks may encroach into opposing lanes or leave the pavement when negotiating turns on narrow streets. This may lead to the accelerated deterioration of roadway pavement for haul routes utilized for the project and may increase safety hazards for automobiles. This direct impact would be significant.

Mitigation Measure TRA-MM-2 requires repair of roadways damaged by the project's construction trucks to preproject conditions. Implementation of this mitigation measure would reduce potential safety hazards from deteriorated roadways to a less-than-significant level.

Mitigation Measure TRA-MM-2: Implement Pavement Repairs

SJAFCA or its contractor will prepare a baseline videography survey of the pavement conditions on all potential haul routes and use this information as the basis for identifying and installing

final repairs to return the routes to preexisting conditions at the end of project construction activities. SJAFCA or its contractor will also monitor pavement conditions each year and make interim improvements as needed to ensure motorist safety.

Impact TRA-3: Conflicts between Construction Traffic and Local Traffic, Pedestrians, Bicyclists, and Bus Services (less than significant with mitigation)

Project construction would add short-term truck traffic on the local roads and involve short-term closures to roadways and parking areas within the vicinity of the project area. The presence of construction truck traffic in the project area, where construction trucks are not typically present, would disrupt local roadways and create conflicts with local traffic, pedestrians, bicyclists, and bus services. Narrow local streets along the project haul routes, such as Moreing Road, where culverts would be installed, and Virginia Lane, which would be used to access the Atherton Cove work area, would be disrupted due to roadway width incompatibilities with truck traffic. Turning paths taken by large construction trucks exceed that of regular automobiles, and the trucks may encroach into opposing lanes or leave the pavement into bicycle or pedestrian facilities when negotiating turns on narrow streets.

Further, SJRTD bus routes may be disrupted in areas where project construction traffic would travel. Specifically, SJRTD Route 60 also utilizes the Monte Diablo Avenue/Shimizu intersection at the entrance of Louis Park; traveling west on Monte Diablo Avenue, the route turns north at the Monte Diablo Avenue/Shimizu intersection, continues through Louis Park, before heading east to the Transit Mall. The Monte Diablo Avenue/Shimizu intersection would serve as the primary entrance point to the Dad's Point work site and staging area. This intersection would experience recurrent construction traffic due to the delivery of construction materials to the staging area and the transfer of construction materials from the staging area to the construction work site along Dad's Point. Existing SJRTD bus service in the project area may be disrupted due to project construction traffic.

Implementation of Alternative 1 would also involve short-term closures of portions of Dad's Point, Louis Park, and Atherton Island in order to construct the project. These temporary closures may include partial road closures, full closures to parking areas, and the closure of trail areas. Moreing Road would be subject to half-road closures during the construction of culverts along the road, and access to local residential driveways along Moreing Road and Virginia Lane may be blocked.

Project construction traffic would disrupt local roadways; create conflicts with local traffic, pedestrians, bicyclists, and bus services; and result in temporary road closures that would affect the existing surrounding community. This direct impact would be significant. Mitigation Measure TRA-MM-3 prescribes the preparation of a construction Traffic Management Plan (TMP) to facilitate the movement of construction traffic and to address potential traffic conflicts from project construction in the project area. Measures incorporated in the TMP would include advance public advisories to residents, construction-period signage and flag personnel, other special traffic-control actions, and closure plans to provide alternative access routes and maintain access to private residential driveway along roadways that would be impacted by project construction. Implementation of Mitigation Measure TRA-MM-3 would reduce potential conflict between construction traffic and local traffic and alternative forms of transportation to a less-than-significant level.

Mitigation Measure TRA-MM-3: Implement a Construction Traffic Management Plan

SJAFCA or its contractor will implement a Construction Traffic Management Plan to enhance the safety of local traffic, pedestrians, and bicyclists. The plan will be prepared sufficiently in

advance of project construction for adequate review, comment, and concurrence by the City of Stockton Engineering Division. The plan will include advance public advisories, construction-period signage, flag personnel, other special traffic-control actions, traffic control closure plans to provide alternative access routes for the project's proposed roadway closures. Specific measures contained in the plan will include those listed below.

- Distribute or mail flyers to residents in the nearby Country Club Boulevard and Louis Park neighborhoods advising about upcoming project traffic prior to the initiation of construction.
- Place advisory signs along construction routes in advance of construction to alert traffic, pedestrian, and bicyclists about the upcoming construction traffic activity.
- Install construction area signage on designated haul routes to inform the public of the presence of trucks.
- Provide construction flagging personnel at the intersections to guide motorists through the construction zone when construction traffic is present and where trucks may be turning onto major routes and may encroach into opposing lanes or may interfere with pedestrians and bicycle through traffic.
- Provide adequate measures outside of construction hours to maintain traffic safety through the construction zone.
- Provide information to all truck drivers identifying haul routes, speed limits, location of flaggers, and any other pertinent public safety information.
- Monitor truck and traffic conditions to identify traffic congestion, safety concerns regarding truck, vehicle, pedestrian and bicycle conflicts and to adjust the traffic control measures as needed.
- Traffic control closure plans will include adequate information to provide guidance for alternative parking locations and closure of trail areas with provisions for alternative access routes. The closure plans will follow the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) guidelines for construction zones and should provide for alternative access beyond the closure location where available.
- Advance notification of closures will be completed indicating the dates of closure. This will include signage along the roadways and via mailings and or open houses. The mailings and open houses will discuss how to maintain access during construction.
- In the event road closures impact access to private residence driveways in the project area, traffic plates will be placed across open trenches with asphalt cutback along the edge of the plate to minimize rough transitions. Access to private driveways will be maintained throughout the duration of project construction.
- Full road closures will apply to through traffic only. Local traffic, including residents, school buses and mail carrier service, and emergency vehicles will have access to the roadway at all times. The project contractor will provide full access to emergency vehicles. The project contractor will be allowed to delay local non-emergency traffic in order to allow the project contractor to complete a portion of work. The maximum delay allowed will be 15 minutes.

Impact TRA-4: Temporary Reduction in Parking Spaces (less than significant with mitigation)

Construction staging areas that would be used to store construction equipment and mobilize construction activities may include: a parking area near the Louis Park boat launch at the base of Dad's Point; a parcel to the south of Monte Diablo Avenue and west of I-5; and/or the Port of Stockton. Although these construction staging areas may include limited facilities for construction employee parking, designated parking areas for project construction employees have not been specifically identified. Adequate parking for employees may not be readily available at each of the construction sites. Parking in the vicinity of the construction activities on the north shore of Atherton Cove and on Moreing Road is limited due to the narrow roadways and the lack of open areas providing access to these locations. Because no dedicated parking areas have been identified for construction employees, project construction could impact the overall supply of parking spaces in the project area if construction employees choose to park in the vicinity of the project work sites.

Further, project construction may reduce available parking for recreational visitors at Louis Park. The softball fields in Louis Park are currently used by the City of Stockton for recreational programs. The project would reduce the amount of available parking for activities at Louis Park as the associated parking areas for these recreational uses would be used as project construction staging areas. This direct impact would be significant.

Mitigation Measure TRA-MM-4a requires SJAFCA or its contractor to provide parking for construction employees off the roadways throughout the project area. Mitigation Measure TRA-MM-4b requires SJAFCA or its contractor to work with the City of Stockton to provide for parking spaces in the event of period of high use at Louis Park. Implementation of these mitigation measures would reduce potential impacts on parking spaces in the project area to a less-than-significant level.

Mitigation Measure TRA-MM-4a: Provide Satellite Construction Parking Areas

SJAFCA or its contractor will identify and provide adequate parking for all construction-related employees during the entire length of construction. Vehicles will not block any roadways and driveways. If necessary, construction-related employees will be transported from satellite parking areas identified by SJAFCA or its contractor. SJAFCA or its contractor will work with the City to identify possible short-term satellite parking locations for construction employees.

Mitigation Measure TRA-MM-4b: Provide Additional Recreational Parking Areas

SJAFCA or its contractor will continuously monitor the parking supply for the park activities at Louis Park. When periods of high park use are identified, such as a softball tournament or special events, SJAFCA or its contractor will work with the City of Stockton to identify and provide nearby additional parking to meet the short-term needs of the activity or event.

Impact TRA-5: Temporary Changes to Navigation (less than significant)

In lieu of utilizing trucks and haul routes to deliver construction materials to the project site, boats or barges may be used to deliver construction materials, which could cause a temporary reduction in navigability in the San Joaquin River. The use of boats and barges would decrease the available space for navigation of commercial and recreational watercraft. However, given the width of the waterways to be used, watercraft would still be able to pass along the section of the river adjacent to the project area. Navigation in the San Joaquin River would return to normal conditions following

project construction, and there would be no permanent effects. Therefore, impacts would be less than significant. No mitigation is necessary.

Impacts on recreational boating are discussed in Section 3.11, *Recreation*.

Alternative 2: Atherton Cove Floodwall with Smith Canal Gate

Impact TRA-1: Temporary Increase in Traffic Volumes from Construction-Generated Traffic (less than significant)

The construction effects of Alternative 2 would be the same as those under Alternative 1. Table 3.3-6 summarizes the estimated number of trips generated by construction activities for Alternative 2 and Table 3.3-8 shows the distribution of the estimated trips to designated haul routes. The relative impact from implementing Alternative 2 is determined by superimposing the amount of traffic associated with the construction activities within the project area onto existing traffic volume levels. A project's impact is considered significant if implementation of the project would result in an intersection or roadway segment LOS levels changing from levels considered acceptable to levels considered unacceptable, or if the project would substantially worsen already unacceptable LOS.

Table 3.3-11 summarizes the projected LOS at the project area's major intersections for both AM and PM peak hour under Alternative 2. As shown in Table 3.3-11, both intersections would continue to operate at an acceptable LOS, operating at LOS B or better. Alternative 2 would not change the project area's intersection LOS levels from levels considered acceptable to levels considered unacceptable, and the impact would be less than significant. No mitigation is necessary.

Table 3.3-11. Alternative 2—Existing Plus Alternative 2 Peak Hour LOS at Intersections in the Project Area

		AM Peak Hour				PM Peak Hour			
		Existing		Existing Plus Alternative 2		Existing		Existing Plus Alternative 2	
Location	Control	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay
1. Country Club Boulevard/ Ryde Avenue[a]	Signal	B	16.0	B	17.2	B	10.8	B	10.9
2. Monte Diablo Avenue/Ryde Avenue[a]	All way stop	A	8.4	A	8.7	A	8.9	A	8.9

Source: KD Anderson & Associates, Inc. 2015.
LOS = level of service.
[a] City facility.

Table 3.3-12 summarizes the amount of traffic added to local roadways on a daily basis during construction of Alternative 2. As shown in Table 3.3-12, although Alternative 2 would increase traffic along each of the project routes, Alternative 2's maximum projected roadway segment traffic volumes would not substantially deteriorate existing roadway segment LOS. All arterial and collector routes in the project area would operate at LOS C or better through the duration of project

construction. Construction traffic would increase on local streets over the short term and would continue to operate above the County's LOS C threshold.

In regards to highway facilities, Alternative 2 would add 280 daily truck trips on a temporary basis along I-5. I-5 currently services approximately 26,000 trucks on a daily basis. Alternative 2's slight addition of truck trips would not result in an appreciable change to current operating LOS on I-5. Thus, Alternative 2 would not change the project area's roadway segment LOS levels from levels considered acceptable to levels considered unacceptable, and the impact would be less than significant. No mitigation is necessary.

Table 3.3-12. Alternative 2—Existing Plus Alternative 2 Peak Hour LOS at Roadway Segments in the Project Area

			Threshold		Existing Plus Alternative 2			
					Daily Volume			
Roadway	Location	Roadway Classification	LOS	Daily Volume Threshold	Existing	Alternative 2 Only	Total	LOS
Country Club Boulevard	Between Oregon Avenue and Gardena Avenue	Collector[a]	D	11,300	4,450	112	4,562	A
	Between Moring Road and Virginia Lane	Collector[b]	D	7,000	1,193	202	1,395	A
Moreing Road	South of Country Club Boulevard	Local[b]	C	2,000	285	20	305	>C
Virginia Lane	South of Country Club Boulevard	Local[b]	C	2,000	65	202	267	>C
Monte Diablo Avenue	Between Occidental Avenue and Ryde Avenue	Arterial[a]	C	14,700	3,844	170	4,014	A

Source: KD Anderson & Associates, Inc. 2015.
LOS = level of service.
[a] City facility.
[b] County facility.

Impact TRA-2: Increase in Safety Hazard Attributable to Construction-Generated Deterioration of Roads (Less than significant with mitigation)

The construction effects of Alternative 2 would be the same as those under Alternative 1. Construction of Alternative 2 would add heavy-duty truck traffic to the project area as these trucks would be used to transport and deliver construction equipment and materials to the project site. Because of their weight, trucks can have a disproportional impact on roadway pavement sections

and can accelerate the need for maintenance and may increase safety hazards to automobiles. This direct impact would be significant.

However, as with Alternative 1, implementation of Mitigation Measure TRA-MM-2, which prescribes the repairing of roadways damaged by the project's construction trucks to preproject conditions, would reduce potential safety hazards from deteriorated roadways to a less-than-significant level.

Mitigation Measure TRA-MM-2: Implement Pavement Repairs

Please refer to the discussion of Mitigation Measure TRA-MM-2 under Alternative 1, Impact TRA-2.

Impact TRA-3: Conflicts between Construction Traffic and Local Traffic, Pedestrians, Bicyclists, and Bus Services (less than significant with mitigation)

As with Alternative 1, construction of Alternative 2 would also add short-term truck traffic on the local roads and involve short-term closures of roadways and parking areas within the vicinity of the project area. The presence of construction truck traffic in the project area, where construction trucks are not typically present, would disrupt local roadways and create conflicts with local traffic, pedestrians, bicyclists, and bus services. Narrow local streets along the project haul routes, such as Moreing Road, where culverts would be installed, and Virginia Lane, which would be used to access the Atherton Cove work area, would be disrupted due to roadway width incompatibilities with truck traffic. Turning paths taken by large construction trucks exceed that of regular automobiles and the trucks may encroach into opposing lanes or leave the pavement into bicycle or pedestrian facilities when negotiating turns on narrow streets.

Further, SJRTD bus routes may be disrupted in areas where project construction traffic would travel. Specifically, SJRTD Route 60 also utilizes the Monte Diablo Avenue/Shimizu intersection at the entrance of Louis Park; traveling west on Monte Diablo Avenue, the route turns north at the Monte Diablo Avenue/Shimizu intersection, continues through Louis Park, before heading east to the Transit Mall. The Monte Diablo Avenue/Shimizu would serve as the primary entrance point to the Dad's Point work site and staging area. This intersection would experience recurrent construction traffic due to the delivery of construction materials to the staging area and the transfer of construction materials from the staging area to the construction work site along Dad's Point. Existing SJRTD bus service in the project area may be disrupted due to project construction traffic.

Implementation of Alternative 2 would also involve short-term closures of portions of Dad's Point, Louis Park, and Atherton Island in order to construct the project. These temporary closures may include partial road closures, full closures of parking areas, and the closure of trail areas. Moreing Road would be subject to half-road closures during the construction of culverts along the road and access to local residential driveways along Moreing Road, and Virginia Lane may be blocked.

Project construction traffic would disrupt local roadways; create conflicts with local traffic, pedestrians, bicyclists, and bus services; and result in temporary road closures that would affect the existing surrounding community. This direct impact would be significant. Mitigation Measure TRA-MM-3prescribes the preparation of a construction Traffic Management Plan (TMP) to facilitate the movement of construction traffic and to address potential traffic conflicts from project construction in the project area. Measures incorporated in the TMP would include advance public advisories to residents, construction-period signage and flag personnel, other special traffic-control actions, and closure plans to provide alternative access routes and maintain access to private residential

driveway along roadways that would be impacted by project construction. Implementation of Mitigation Measure TRA-MM-3 would reduce potential conflict between construction traffic and local traffic and alternative forms of transportation to a less-than-significant level.

Mitigation Measure TRA-MM-3: Implement a Construction Traffic Management Plan

Please refer to the discussion of Mitigation Measure TRA-MM-3 under Alternative 1, Impact TRA-3.

Impact TRA-4: Temporary Reduction in Parking Spaces (less than significant with mitigation)

As with Alternative 1, Alternative 2's construction staging areas that would be used to store construction equipment and mobilize construction activities may include: a parking area near the Louis Park boat launch at the base of Dad's Point; a parcel to the south of Monte Diablo Avenue and west of I-5; and/or the Port of Stockton. Although these construction staging areas may include limited facilities for employee parking, designated parking areas for project construction employees have not been specifically identified. Adequate parking for employees may not be readily available at each of the construction sites. Parking in the vicinity of the construction activities on the north shore of Atherton Cove and on Moreing Road is limited due to the narrow roadways and the lack of open areas providing access to these locations. Because no dedicated parking areas have been identified for construction employees, project construction could impact the overall supply of parking spaces in the project area if construction employees chose to park in the vicinity of the project work sites.

Further, project construction may reduce available parking for recreational visitors at Louis Park. The softball fields in Louis Park are currently used by the City of Stockton for recreational programs. The project would reduce the amount of available parking for activities at Louis Park as the associated parking areas for these recreational uses would be used as project construction staging areas. This direct impact would be significant.

Mitigation Measure TRA-MM-4a requires SJAFCA or its contractor to provide parking for construction employees off the roadways throughout the project area. Mitigation Measure TRA-MM-4b requires SJAFCA or its contractor to work with the City of Stockton to provide for parking spaces in the event of period of high use at Louis Park. Implementation of these mitigation measures would reduce potential impacts on parking spaces in the project area to a less-than-significant level.

Mitigation Measure TRA-MM-4a: Provide Satellite Construction Parking Areas

Please refer to the discussion of Mitigation Measure TRA-MM-4a under Alternative 1, Impact TRA-4.

Mitigation Measure TRA-MM-4b: Provide Recreational Parking Areas

Please refer to the discussion of Mitigation Measure TRA-MM-4b under Alternative 1, Impact TRA-4.

Impact TRA-5: Temporary Changes to Navigation (less than significant)

As with Alternative 1, Alternative 2 may use boats or barges to deliver construction materials to the project site in lieu of utilizing trucks and haul routes. This could cause a temporary reduction in navigability in the San Joaquin River. The use of boats and barges would decrease the available space for navigation of commercial and recreational watercraft. However, given the width of the

waterways to be used, watercraft would still be able to pass along the section of the river adjacent to the project area. Navigation in the San Joaquin River would return to normal conditions following project construction, and there would be no permanent effects. Therefore, impacts would be less than significant. No mitigation is necessary.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact TRA-1: Temporary Increase in Traffic Volumes from Construction-Generated Traffic (less than significant)

The construction effects of Alternative 3 would be the same as those under Alternative 1 and Alternative 2. Table 3.3-6 summarizes the estimated number of trips generated by construction activities for Alternative 3 and Table 3.3-8 shows the distribution of the estimated trips to designated haul routes. The relative impact from implementing Alternative 3 is determined by superimposing the amount of traffic associated with the construction activities within the project area onto existing traffic volume levels. A project's impact is considered significant if implementation of the project would result in an intersection or roadway segment LOS levels changing from levels considered acceptable to levels considered unacceptable, or if the project would substantially worsen already unacceptable LOS.

Table 3.3-13 summarizes the projected LOS at the project area's intersections for both AM and PM peak hour under Alternative 3. As shown in Table 3.3-13, both intersections would continue to operate at an acceptable LOS, operating at LOS B or better. Alternative 3 would not change the project area's intersection LOS level from levels considered acceptable to levels considered unacceptable, and the impact would be less than significant. No mitigation is necessary.

Table 3.3-13. Alternative 3—Existing Plus Alternative 3 Peak Hour LOS at Intersections in the Project Area

		AM Peak Hour				PM Peak Hour			
		Existing		Existing Plus Alternative 3		Existing		Existing Plus Alternative 3	
Location	Control	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay	LOS	Average Delay
1. Country Club Boulevard/ Ryde Avenue[a]	Signal	B	16.0	B	17.0	B	10.8	B	10.9
2. Monte Diablo Avenue/ Ryde Avenue[a]	All way stop	A	8.4	A	8.9	A	8.9	A	9.0

Source: KD Anderson & Associates, Inc. 2015.
LOS = level of service.
[a] City facility.

Table 3.3-14 summarizes the amount of traffic added to local roadways on a daily basis during construction of Alternative 3. As shown in Table 3.3-14, although Alternative 3 would increase traffic along each of the project routes, Alternative 3's maximum projected roadway segment traffic volumes would not substantially deteriorate existing roadway segment LOS. All arterial and collector routes in the project area would operate at LOS C or better through the duration of project

construction. Construction traffic would increase on local streets over the short term and would continue to operate above the County's LOS C threshold.

In regards to highway facilities, Alternative 3 would add 274 daily truck trips on a temporary basis along I-5. I-5 currently services approximately 26,000 trucks on a daily basis. Alternative 3's slight addition of truck trips would not result in an appreciable change to current operating LOS on I-5. Thus, Alternative 3 would not change the project area's roadway segment LOS levels from levels considered acceptable to levels considered unacceptable, and the impact would be less than significant. No mitigation is necessary.

Table 3.3-14. Alternative 3—Existing Plus Alternative 3 Peak Hour LOS at Roadway Segments in the Project Area

			Threshold		Existing Plus Alternative 3			
					Daily Volume			
Roadway	Location	Roadway Classification	LOS	Daily Volume Threshold	Existing	Alternative 3 Only	Total	LOS
Country Club Boulevard	Between Oregon Avenue and Gardena Avenue	Collector[a]	D	11,300	4,450	184	4,634	A
	Between Moring Road and Virginia Lane	Collector[b]	D	7,000	1,193	184	1,377	A
Moreing Road	South of Country Club Boulevard	Local[b]	C	2,000	285	20	305	>C
Virginia Lane	South of Country Club Boulevard	Local[b]	C	2,000	65	184	249	>C
Monte Diablo Avenue	Between Occidental Avenue and Ryde Avenue	Arterial[a]	C	14,700	3,844	192	4,036	A

Source: KD Anderson & Associates, Inc. 2015.
LOS = level of service.
[a] City facility.
[b] County facility.

Impact TRA-2: Increase in Safety Hazard Attributable to Construction-Generated Deterioration of Roads (less than significant with mitigation)

The construction effects of Alternative 3 would be the same as those under Alternative 1 and Alternative 2. Construction of Alternative 3 would add heavy-duty truck traffic to the project area as these trucks would be used to transport and deliver construction equipment and materials to the project site. Because of their weight, trucks can have a disproportional impact on roadway pavement

sections, can accelerate the need for maintenance, and may increase safety hazards to automobiles. This direct impact would be significant.

However, as with Alternative 1, implementation of Mitigation Measure TRA-MM-2, which prescribes the repairing of roadways damaged by the project's construction trucks to preproject conditions, would reduce potential safety hazards from deteriorated roadways to a less-than-significant level.

Mitigation Measure TRA-MM-2: Implement Pavement Repairs

Please refer to the discussion of Mitigation Measure TRA-MM-2 under Alternative 1, Impact 2.

Impact TRA-3: Conflicts between Construction Traffic and Local Traffic, Pedestrians, Bicyclists, and Bus Services (less than significant with mitigation)

As with Alternative 1, construction of Alternative 3 would also add short-term truck traffic on the local roads and involve short-term closures to roadways and parking areas within the vicinity of the project area. The presence of construction truck traffic in the project area, where construction trucks are not typically present, would disrupt local roadways and create conflicts with local traffic, pedestrians, bicyclists, and bus services. Narrow local streets along the project haul routes, such as Moreing Road, where culverts would be installed, and Virginia Lane, which would be used to access the Atherton Cove work area, would be disrupted due to roadway width incompatibilities with truck traffic. Turning paths taken by large construction trucks exceed that of regular automobiles and the trucks may encroach into opposing lanes or leave the pavement into bicycle or pedestrian facilities when negotiating turns on narrow streets.

Further, SJRTD bus routes may be disrupted in areas where project construction traffic would travel. Specifically, SJRTD Route 60 also utilizes the Monte Diablo Avenue/Shimizu intersection at the entrance of Louis Park; traveling west on Monte Diablo Avenue, the route turns north at the Monte Diablo Avenue/Shimizu intersection, continues through Louis Park, before heading east to the Transit Mall. The Monte Diablo Avenue/Shimizu intersection would serve as the primary entrance point to the Dad's Point work site and staging area. This intersection would experience recurrent construction traffic due to the delivery of construction materials to the staging area and the transfer of construction materials from the staging area to the construction work site along Dad's Point. Existing SJRTD bus service in the project area may be disrupted due to project construction traffic.

Implementation of Alternative 3 would also involve short-term closures of portions of Dad's Point, Louis Park, and Atherton Island in order to construct the project. These temporary closures may include partial road closures, full closures to parking areas, and the closure of trail areas. Moreing Road would be subject to half-road closures during the construction of culverts along the road, and access to local residential driveways along Moreing Road and Virginia Lane may be blocked.

Project construction traffic would disrupt local roadways; create conflicts with local traffic, pedestrians, bicyclists, and bus services; and result in temporary road closures that would affect the existing surrounding community. This direct impact would be significant. Mitigation Measure TRA-MM-3 prescribes the preparation of a construction Traffic Management Plan (TMP) to facilitate the movement of construction traffic and to address potential traffic conflicts from project construction in the project area. Measures incorporated in the TMP would include advance public advisories to residents, construction-period signage and flag personnel, other special traffic-control actions, and closure plans to provide alternative access routes and maintain access to private residential driveway along roadways that would be impacted by project construction. Implementation of

Mitigation Measure TRA-MM-3 would reduce potential conflict between construction traffic and local traffic and alternative forms of transportation to a less-than-significant level.

Mitigation Measure TRA-MM-3: Implement a Construction Traffic Management Plan

Please refer to the discussion of Mitigation Measure TRA-MM-3 under Alternative 1, Impact TRA-3.

Impact TRA-4: Temporary Reduction in Parking Spaces (Less than significant with mitigation)

As with Alternative 1, Alternative 3's construction staging areas that would be used to store construction equipment and mobilize construction activities may include: a parking area near the Louis Park boat launch at the base of Dad's Point; a parcel to the south of Monte Diablo Avenue and west of I-5; and/or the Port of Stockton. Although these construction staging areas may include limited facilities for employee parking, designated parking areas for project construction employees have not been specifically identified. Adequate parking for employees may not be readily available at each of the construction sites. Parking in the vicinity of the construction activities on the north shore of Atherton Cove and on Moreing Road is limited due to the narrow roadways and the lack of open areas providing access to these locations. Because no dedicated parking areas have been identified for construction employees, project construction could impact the overall supply of parking spaces in the project area if construction employees chose to park in the vicinity of the project work sites.

Further, project construction may reduce available parking for recreational visitors at Louis Park. The softball fields in Louis Park are currently used by the City of Stockton for recreational programs. The project would reduce the amount of available parking for activities at Louis Park as the associated parking areas for these recreational uses would be used as project construction staging areas. This direct impact would be significant.

Mitigation Measure TRA-MM-4a prescribes SJAFCA or its contractor to provide parking for construction employees off the roadways throughout the project area. Mitigation Measure TRA-MM-4b requires SJAFCA or its contractor to work with the City of Stockton to provide for parking spaces in the event of period of high use at Louis Park. Implementation of these mitigation measures would reduce potential impacts on parking spaces in the project area to a less-than-significant level.

Mitigation Measure TRA-MM-4a: Provide Satellite Construction Parking Areas

Please refer to the discussion of Mitigation Measure TRA-MM-4a under Alternative 1, Impact TRA-4.

Mitigation Measure TRA-MM-4b: Provide Recreational Parking Areas

Please refer to the discussion of Mitigation Measure TRA-MM-4b under Alternative 1, Impact TRA-4.

Impact TRA-5: Temporary Changes to Navigation (less than significant)

As with Alternative 1, Alternative 3 may use boats or barges may be used to deliver construction materials to the project site in lieu of utilizing trucks and haul routes. This could cause a temporary reduction in navigability in the San Joaquin River. The use of boats and barges would decrease the available space for navigation of commercial and recreational watercraft. However, given the width

of the waterways to be used, watercraft would still be able to pass along the section of the river adjacent to the project area. Navigation in the San Joaquin River would return to normal conditions following project construction, and there would be no permanent effects. Therefore, impacts would be less than significant. No mitigation is necessary.

3.4 Air Quality

This section describes the regulatory and environmental setting for air quality resources in the project area. It also analyzes environmental impacts on air quality that could result from implementing the project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.4.1 Existing Conditions

3.4.1.1 Regulatory Setting

The following federal, state, and regional and local regulations related to air quality may apply to implementation of the project. Air quality regulation in the United States is governed by the federal Clean Air Act (CAA). In addition to being subject to requirements of the CAA, air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). At the federal level, the CAA is administered by the U.S. Environmental Protection Agency (EPA). In California, the CCAA is administered by the California Air Resources Board (ARB) and air districts at regional and local levels. The CAA and CCAA set overall air quality standards, which are achieved by various rules and regulations at the regional and local level. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

Clean Air Act

The CAA was first enacted in 1963 and has been amended numerous times in subsequent years (1965, 1967, 1970, 1977, and 1990). The CAA establishes federal air quality standards, known as National Ambient Air Quality Standards (NAAQS), and specifies future dates for achieving compliance. The CAA also mandates that the state submit and implement a State Implementation Plan (SIP) for local areas that fail to meet those standards. The plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA identify specific emissions reduction goals for areas that fail to meet the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. The sections of the CAA that would most substantially affect development of the project include Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions).

Table 3.4-1 shows the NAAQS that are currently in effect for each criteria pollutant. The California Ambient Air Quality Standards (CAAQS) (discussed below) are also provided for reference.

Table 3.4-1. Federal and State Ambient Air Quality Standards

Criteria Pollutant	Average Time	California Standards	National Standards[a]	
			Primary	Secondary
Ozone	1 hour	0.09 ppm	None[b]	None[b]
	8 hours	0.070 ppm	0.075 ppm	0.075 ppm
Particulate Matter (PM10)	24 hours	50 μg/m^3	150 μg/m^3	150 μg/m^3
	Annual mean	20 μg/m^3	None	None
Fine Particulate Matter (PM2.5)	24 hours	None	35 μg/m^3	35 μg/m^3
	Annual mean	12 μg/m^3	12.0 μg/m^3	15 μg/m^3
Carbon Monoxide	8 hours	9.0 ppm	9 ppm	None
	1 hour	20 ppm	35 ppm	None
Nitrogen Dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1 hour	0.18 ppm	0.100 ppm	None
Sulfur Dioxide[c]	Annual mean	None	0.030 ppm	None
	24 hours	0.04 ppm	0.014 ppm	None
	3 hours	None	None	0.5 ppm
	1 hour	0.25 ppm	0.075 ppm	None
Lead	30-day average	1.5 μg/m^3	None	None
	Calendar quarter	None	1.5 μg/m^3	1.5 μg/m^3
	3-month average	None	0.15 μg/m^3	0.15 μg/m^3
Sulfates	24 hours	25 μg/m^3	None	None
Visibility-Reducing Particles	8 hours	—[d]	None	None
Hydrogen Sulfide	1 hour	0.03 ppm	None	None
Vinyl Chloride	24 hours	0.01 ppm	None	None

Source: California Air Resources Board 2013.

ppm = parts per million.

μg/m^3 = micrograms per cubic meter.

[a] National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

[b] The federal 1-hour standard of 12 parts per hundred million was in effect from 1979 through June 15, 2005. The revoked standard is referenced because it was employed for such a long period and is a benchmark for State Implementation Plans.

[c] The annual and 24-hour NAAQS for SO_2 apply only for 1 year after designation of the new 1-hour standard to those areas that were previously in nonattainment for 24-hour and annual NAAQS.

[d] The CAAQS for visibility-reducing particles are defined by an extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more due to particles when relative humidity is less than 70%.

State

California Clean Air Act

In 1988, the state legislature adopted the CCAA, which established a statewide air pollution control program. The CCAA requires all air districts in the state to endeavor to meet the CAAQS by the earliest practical date. Unlike the federal CAA, the CCAA does not set precise attainment deadlines.

Instead, the CCAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards. The CAAQS are generally more stringent than the NAAQS and incorporate additional standards for sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride. The CAAQS and NAAQS are listed together in Table 3.4-1.

ARB and local air districts bear responsibility for achieving California's air quality standards, which are to be achieved through district-level air quality management plans and incorporated into the SIP. In California, EPA has delegated authority to prepare SIPs to ARB, which, in turn, has delegated that authority to individual air districts. Traditionally, ARB has established state air quality standards and maintained oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emissions inventories, collecting air quality and meteorological data, and approving SIPs.

The CCAA adds substantially to the authority and responsibilities of the air districts. The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants the air districts authority to implement transportation control measures. The CCAA also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and establish traffic control measures (TCMs).

State Tailpipe Emission Standards

ARB established a series of increasingly strict emissions standards for new off-road diesel equipment, on-road diesel trucks, and harbor craft. New construction equipment used for the project, including heavy-duty trucks and off-road construction equipment, will be required to comply with the standards.

Toxic Air Contaminant Regulations

California regulates toxic air contaminants (TACs) (equivalent to hazardous air pollutants at the federal level) primarily through the Toxic Air Contaminant Identification and Control Act (Tanner Act) and the Air Toxics "Hot Spots" Information and Assessment Act of 1987 ("Hot Spots" Act). In the early 1980s, ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created California's program to reduce exposure to air toxics. The "Hot Spots" Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people who have been exposed to a significant health risk, and facility plans to reduce these risks.

In August 1998, ARB identified diesel particulate matter (DPM) from diesel-fueled engines as TACs. In September 2000, ARB approved a comprehensive Diesel Risk Reduction Plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan was to reduce DPM emissions (i.e., respirable particulate matter) and the associated health risk by 75% by 2010 and by 85% by 2020. The plan identifies 14 measures that ARB will implement over the next several years. Because the ARB measures would be enacted before any phase of construction, the project would be required to comply with the applicable diesel control measures.

Regional and Local

Air quality districts have local responsibility with respect to overseeing stationary-source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality–related sections of the environmental

documents required by the California Environmental Quality Act (CEQA). The air quality districts are also responsible for establishing and enforcing local air quality rules and regulations that support the requirements of federal and state air quality laws and ensuring that the NAAQS and CAAQS are met.

The air quality study area falls under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The SJVAPCD adopted CEQA emissions thresholds in its *Guide for Assessing and Mitigating Air Quality Impacts* (2002) to help lead agencies determine the level of significance of project-related emissions. According to the SJVAPCD handbook, emissions that exceed the recommended threshold levels are considered potentially significant and should be mitigated where feasible.

Under the CCAA, the SJVAPCD is required to develop an air quality plan for nonattainment criteria pollutants in the air district. The air district has adopted attainment plans to address issues related to ozone, particulate matter (PM), and carbon monoxide (CO). The *2007 Ozone Plan* contains a comprehensive list of regulatory and incentive-based measures to reduce reactive organic gases (ROG) and nitrogen oxide (NO_X) emissions. In particular, the plan purposes a 75% reduction in NO_X and a 25% reduction in ROG by 2023. The SJVAPCD's *2007 PM10 Maintenance Plan* and *2008 PM2.5 Plan* likewise include strategies to reduce PM emissions throughout the air basin. Finally, the *2004 California State Implementation Plan for Carbon Monoxide* addresses issues related to CO emissions throughout the state.

The alternatives may be subject to the following district rules. This list of rules may not be all encompassing because additional SJVAPCD rules may apply to the alternatives as specific components are identified. These are rules that have been adopted by the SJVAPCD to reduce emissions throughout the San Joaquin Valley. Note that the project would not be subject to Rule 9510 because the proposed gate structure would not involve more than 9,000 square feet of space.

- Rule 2201 (New and Modified Stationary-Source Review Rule). This rule applies to all new stationary sources and all modifications to existing stationary sources that are subject to SJVAPCD permit requirements that, after construction, emit or may emit one or more pollutants that are regulated by the rule.
- Rule 3135 (Dust Control Plan Fees). This rule requires the applicant to submit a fee in addition to a Dust Control Plan. The purpose of this rule is to recover the SJVAPCD's cost for reviewing these plans and conducting compliance inspections.
- Rule 4101 (Visible Emissions). This rule prohibits emissions of visible air contaminants to the atmosphere and applies to any source operation that emits or may emit air contaminants.
- Rule 4102 (Nuisance). This rule applies to any source operation that emits or may emit air contaminants or other materials. In the event that the project or construction of the project creates a public nuisance, it could be in violation and subject to SJVAPCD enforcement action.
- Rule 4641 (Cutback, Slow-Cure, and Emulsified Asphalt, Paving, and Maintenance Operations). This rule applies to the manufacture and use of cutback asphalt, slow-cure asphalt, and emulsified asphalt for paving and maintenance operations.
- Rule 4701 (Internal Combustion Engines—Phase 1). This rule limits the emissions of NO_X, CO, and ROG from internal combustion engines. These limits are not applicable to standby engines as long as they are used fewer than 200 hours per year (e.g., for testing during non-emergencies).

- Rule 4702 (Internal Combustion Engines—Phase 2). This rule limits the emissions of NO_X, CO, and ROG from spark-ignited internal combustion engines.
- Regulation VIII (Fugitive PM10 Prohibitions). This is a series of rules (Rules 8011–8081) that have been designed to reduce PM emissions (predominantly dust/dirt) generated by human activity, including construction, road construction, bulk materials storage, landfill operations, and other activities.

3.4.1.2 Environmental Setting

The project area, described in Chapter 1, *Introduction*, and shown in Plate 1-2, is located within the larger San Joaquin Valley Air Basin (SJVAB); the air basin comprises the study area for the project. Ambient air quality in the study area is affected by climatological conditions, topography, and the types and amounts of pollutants that are emitted. The following discussion describes relevant characteristics of the SJVAB, describes key pollutants of concern, summarizes existing ambient pollutant concentrations, and identifies sensitive receptors.

Regional Climate and Meteorology

The SJVAB is bounded by the Sierra Nevada to the east, the Coast Ranges to the west, and the Tehachapi Mountains to the south. The SJVAB contains all of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare Counties as well as a portion of Kern County (California Code of Regulations [CCR] Section 60107). The area has an inland Mediterranean climate that is characterized by warm, dry summers and cool winters. Summer high temperatures often exceed 100°F, averaging in the low 90s in the northern valley and high 90s in the southern portion.

Although marine air generally flows into the basin from the Sacramento–San Joaquin River Delta, the surrounding mountain ranges restrict air movement through and out of the valley. Wind speed and direction influence the dispersion and transportation of pollutants—the more wind flow, the less accumulation.

The vertical dispersion of air pollutants in the SJVAB is limited by the presence of persistent temperature inversion. Because of differences in air density, the air above and below the inversion does not mix. Air pollutants tend to collect under an inversion, leading to higher concentrations of emitted pollutants.

Precipitation and fog tend to reduce pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog block the required radiation. Precipitation in the San Joaquin Valley decreases from north to south, with approximately 20 inches in the north, 10 inches in the middle, and less than 6 inches in the south (San Joaquin Valley Air Pollution Control District 2002).

Pollutants of Concern

Criteria Pollutants

As discussed above, the federal and state governments established the NAAQS and CAAQS, respectively, for six criteria pollutants: ozone, lead, CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and PM, which consists of PM less than or equal to 10 microns in diameter (PM10) and PM less than or equal to 2.5 microns in diameter (PM 2.5). Ozone and NO_2 are considered regional pollutants because they (or their precursors) affect air quality on a regional scale. Pollutants such as CO, SO_2, and lead are considered local pollutants that tend to accumulate in the air locally.

The primary pollutants of concern in the project area are ozone (including NO_X and ROG), CO, and PM. The principal characteristics surrounding these pollutants are discussed below.

Ozone, or smog, is photochemical oxidant that is formed when ROG and NO_X (both by-products of the internal combustion engine) react with sunlight. Ozone poses a health threat to those who already suffer from respiratory diseases as well as healthy people. Additionally, ozone has been tied to crop damage, typically in the form of stunted growth and premature death. Ozone can also act as a corrosive, resulting in property damage, such as the degradation of rubber products.

Reactive organic gases are compounds that are made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROG are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROG but rather by reactions of ROG that form secondary pollutants such as ozone.

Nitrogen oxides serve as integral participants in the process of photochemical smog production. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas that is formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown gas that is formed by the combination of NO and oxygen. NO_X acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.

Carbon monoxide is a colorless, odorless, toxic gas that is produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in oxygen deprivation in the tissues.

Particulate matter consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized—inhalable course particles, or PM10, and inhalable fine particles, or PM2.5. Particulate discharges into the atmosphere result primarily from industrial, agricultural, construction, and transportation activities. However, wind on arid landscapes also contributes substantially to local particulate loading. Both PM10 and PM2.5 may adversely affect the human respiratory system, especially in those people who are naturally sensitive or susceptible to breathing problems.

Toxic Air Containments

Although the NAAQS and CAAQS have been established for criteria pollutants, no ambient standards exist for TACs. Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, ARB has consistently found that there are no levels or thresholds below which exposure is risk free. Individual TACs vary greatly in the risks they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA).

Air toxics are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, auto body shops, and combustion sources; mobile sources, such as diesel trucks, ships, and trains; and area sources, such as farms, landfills, and construction sites. The adverse health effects of TACs can be carcinogenic (cancer causing), short-term (acute) noncarcinogenic, or long-

term (chronic) noncarcinogenic. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders.

Valley Fever

Valley Fever is not an air pollutant but, rather, a disease that is caused by inhaling *Coccidioides immitis* (*C. immitis*) fungus spores. The spores are found in certain types of soil and become airborne when the soil is disturbed. After the fungal spores have settled in the lungs, they change into a multicellular structure called a spherule. Valley Fever symptoms generally occur within 2 to 3 weeks of exposure. Approximately 60% of Valley Fever cases are mild and display flu-like symptoms or no symptoms at all. Of those who are exposed and seek medical treatment, the most common symptoms are fatigue, cough, chest pain, fever, rash, headache, and joint aches. Although *C. immitis* is not typically found in the Sacramento or Bay Area, the fungus is endemic to the Central Valley (U.S. Geological Survey 2000).

Existing Air Quality Conditions

The existing air quality conditions in the project area can be characterized by the monitoring data collected in the region. Table 3.4-2 summarizes the criteria air pollutant levels recorded at the Stockton Hazelton Street monitoring station for the last 3 years from which complete data are available (2011–2013). The Stockton Hazelton Street monitoring station is approximately 5 miles east of the project area. Air quality concentrations are expressed in terms of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). As shown in Table 3.4-3, the monitoring station has recorded occasional violations of the ozone NAAQS and CAAQS and frequent violations of the PM NAAQS and CAAQS. No violations of the CO and NO_2 NAAQS and CAAQS were reported during the monitoring period.

Table 3.4-2. Ambient Air Quality Monitoring Data from the Stockton Hazelton Monitoring Station (2011–2013)

Pollutant	2011	2012	2013
Ozone (O_3)			
Maximum 1-hour concentration (ppm)	0.089	0.097	0.080
Maximum 8-hour concentration (ppm)	0.068	0.083	0.067
Number of days standard exceeded[a]			
CAAQS 1-hour standard (> 0.09 ppm)	0	1	0
CAAQS 8-hour standard (> 0.070 ppm)	0	6	0
NAAQS 8-hour standard (> 0.075 ppm)	0	2	0
Carbon Monoxide (CO)[b]			
Maximum 8-hour concentration (ppm)	2.13	1.78	–
Maximum 1-hour concentration (ppm)	3.2	3.0	2.2
Number of days standard exceeded[a]			
NAAQS 8-hour standard (≥ 9 ppm)	0	0	–
CAAQS 8-hour standard (≥ 9.0 ppm)	0	0	–
NAAQS 1-hour standard (≥ 35 ppm)	0	0	0
CAAQS 1-hour standard (≥ 20 ppm)	0	0	0

Pollutant	2011	2012	2013
Nitrogen Dioxide (NO_2)			
State maximum 1-hour concentration (ppm)	62	78	62
State second-highest 1-hour concentration (ppm)	59	58	61
Annual average concentration (ppm)	16	14	15
Number of days standard exceeded			
CAAQS 1-hour standard (0.18 ppm)	0	0	0
Particulate Matter (PM10)[c]			
National[d] maximum 24-hour concentration (μg/m³)	66.1	69.4	90.1
National[d] second-highest 24-hour concentration (μg/m³)	53.0	58.2	69.4
State[e] maximum 24-hour concentration (μg/m³)	70.1	70.0	95.5
State[e] second-highest 24-hour concentration (μg/m³)	57.8	61.7	74.0
National annual average concentration (μg/m³)	23.3	22.4	31.3
State annual average concentration (μg/m³)[f]	24.1	22.8	32.0
Number of days standard exceeded[a]			
NAAQS 24-hour standard (> 150 μg/m³)[g]	0	0	0
CAAQS 24-hour standard (> 50 μg/m³)[g]	24	18	58
Particulate Matter (PM2.5)			
National[d] maximum 24-hour concentration (μg/m³)	60.0	60.4	66.5
National[d] second-highest 24-hour concentration (μg/m³)	53.1	45.0	64.4
State[e] maximum 24-hour concentration (μg/m³)	65.5	60.4	66.5
State[e] second-highest 24-hour concentration (μg/m³)	59.5	45.0	64.4
National annual average concentration (μg/m³)	11.3	12.3	17.6
State annual average concentration (μg/m³)[f]	14.0	12.4	–
Number of days standard exceeded[a]			
NAAQS 24-hour standard (> 35 μg/m³)	11	6	28
Sulfur Dioxide (SO_2)			
No data available			

Sources: California Air Resources Board 2014a; U.S. Environmental Protection Agency 2014a.

ppm = parts per million.
NAAQS = National Ambient Air Quality Standards.
CAAQS = California Ambient Air Quality Standards.
μg/m³ = micrograms per cubic meter.
mg/m³ = milligrams per cubic meter.
> = greater than.
NA = not applicable.

[a] An exceedance is not necessarily a violation.

[b] Values from the 68 Goldenland Court monitoring station (Sacramento County). There are no stations in Placer County that monitor CO.

[c] National statistics are based on standard conditions data. In addition, national statistics are based on samplers that use a federal reference or equivalent methods.

[d] State statistics are based on local conditions data, except in the South Coast Air Basin, where statistics are based on standard conditions data. In addition, state statistics are based on California-approved samplers.

[e] Measurements are usually collected every 6 days.

[f] The state criteria for ensuring that data are sufficiently complete for calculating valid annual averages are

Pollutant	2011	2012	2013

more stringent than the national criteria.

[g] Mathematical estimate of how many days the concentrations would have been measured as higher than the level of the standard had each day been monitored. Values have been rounded.

Attainment Status

Local monitoring data (Table 3.4-2) are used to designate areas as nonattainment, maintenance, attainment, or unclassified areas with respect to the NAAQS and CAAQS. The four designations are further defined as follows.

- Nonattainment—assigned to areas where monitored pollutant concentrations consistently violate the standard in question.
- Maintenance—assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past but are no longer in violation of that standard.
- Attainment—assigned to areas where pollutant concentrations meet the standard in question over a designated period of time.
- Unclassified—assigned to areas where not enough data are available to determine whether a pollutant is violating the standard in question.

Table 3.4-3 summarizes the federal and state attainment status of the project area.

Table 3.4-3. Federal and State Attainment Status of the Project Area

Pollutant	Federal	State
Ozone (8 hours)	Extreme Nonattainment	Nonattainment
CO	Moderate Maintenance	Attainment
PM10	Serious Maintenance	Nonattainment
PM2.5	Nonattainment	Nonattainment

Sources: U.S. Environmental Protection Agency 2014b; California Air Resources Board 2014b.

Sensitive Receptors

The NAAQS and CAAQS apply at publicly accessible areas, regardless of whether those areas are populated. For the purposes of air quality analysis, sensitive land uses are defined as locations where human populations, especially children, seniors, and sick persons, are located and where there is reasonable expectation of continuous human exposure according to the averaging period for the air quality standards (i.e., 24 hours, 8 hours, and 1 hour). Typical sensitive receptors include residences, hospitals, and schools.

The study area would include recreational areas located at Dad's Point, Louis Park, and Stockton Golf and Country Club. Residential receptors are located throughout the study area as well, including several single-family homes on Atherton Island and along Atherton Cove. Residential receptors are also adjacent to Smith Canal west of Interstate 5. The nearest receptor would be within 50 feet of construction activities.

3.4.2 Environmental Impacts

This section describes the environmental impacts of the project on air quality resources. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, where appropriate.

Because the project would not result in any direct operational activities or emissions, this analysis evaluates construction-related emissions only.

3.4.2.1 Assessment Methods

Impacts of the project on air quality and criteria pollutant emissions from construction and operations were assessed and quantified using standard and accepted software tools, techniques, and emission factors. This section describes the primary assumptions and key methods use to quantify emissions and estimate potential impacts. Assumptions used in the air quality analysis are found in Appendix D, *Air Quality and GHG Analysis Data.*

Construction of the project would generate emissions of ROG, NO_X, CO, PM10, and PM2.5 that would result in short-term impacts on ambient air quality in the study area. Emissions would originate from the exhaust of mobile and stationary construction equipment and employees' vehicles, dust from land clearing, and the application of architectural coatings. It is expected that construction of the three alternatives would occur between March 2017 and September 2019, with Alternatives 1 and 3 occurring during 2017 and 2018 and Alternative 2 occurring between 2017 and 2019. The various phases of construction would occur concurrently within each alternative.

Criteria pollutant emissions from heavy-duty equipment, on-road vehicles, and land disturbance were estimated using the California Emissions Estimator Model (CalEEMod), version 2013.2.2, and the construction activity/scheduling and equipment inventory data provided by the project engineer. However, model default values for equipment horsepower were utilized in the analysis because data were not provided by the project engineers. Therefore, 10-hour workdays were assumed during the in-water season (July 15 through October 15); all other work was assumed to involve 9-hour workdays.

Emissions were estimated for each month of activity, assuming 22 days of construction per month, based on activity data (e.g., construction schedule, equipment, trip lengths) provided by the project engineers. Monthly emissions were combined for construction activities that overlapped and annualized for comparison to SJVAPCD annual thresholds.

Data related to barge activities were not provided by the project engineers. Therefore, barge emissions were based on an assumed 1,500-horsepower tugboat operating 10 hours per day to represent a conservative estimate of emissions.

3.4.2.2 Thresholds of Significance

The thresholds listed below are based on standard professional practice, relevant thresholds of significance established by agencies with jurisdictional authority, applicable laws and regulations, and the criteria provided in State CEQA Guidelines Appendix G (14 CCR 15000 et seq.). For the purposes of this analysis, the project would have a significant impact on air quality if it would result in any of the following effects.

- Conflict with or obstruct implementation of the applicable air quality plan. For the purposes of this analysis, "conflict with or obstruct implementation" is defined as circumstances in which the project would worsen existing air quality violations or exceed the growth assumptions utilized by the City of Stockton and San Joaquin Council of Governments (SJCOG).
- Violate any air quality standard or substantially contribute to an existing or projected air quality violation. For the purposes of this analysis, "violate any air quality standard or substantially contribute to an existing or project air quality violation" is defined as circumstances in which construction or operational emissions exceed the applicable SJVAPCD thresholds, as described below under *Local Air District Thresholds*.
- Expose sensitive receptors to substantial pollutant concentrations. For the purpose of this analysis, schools, day-care facilities, medical facilities, parks, and residences are considered sensitive receptor locations. A "substantial pollutant concentration" is defined as levels in excess of applicable SJVAPCD thresholds, as described below under *Local Air District Thresholds*.
- Create objectionable odors that would affect a substantial number of people. For the purpose of this analysis, construction of an odor-producing facility, as defined by the SJVAPCD, would result in an "objectionable odor" that would be capable of affecting a substantial number of people.

The following SJVAPCD thresholds (Table 3.4-4) were also used to determine whether project construction emissions would have either of the following effects.

- Interfere with or impede attainment of state or federal ambient air quality standards (CAAQS and NAAQS, respectively).
- Cause an increased risk to human health.

Local Air District Regional Thresholds for Air Basin Attainment of Ambient Air Quality Standards

The project falls under the jurisdiction of the SJVAPCD, which has established thresholds (Table 3.4-4) for regional criteria pollutants. This section presents substantial evidence regarding the basis upon which these thresholds (summarized above) were developed and describes how they are used to determine project impacts. The regional criteria pollutant thresholds identified in Table 3.4-4 were adopted by the SJVAPCD to help lead agencies determine the significance of environmental impacts with regard to local attainment of CAAQS and NAAQS.

The SJVAPCD's ROG, NO_X, and regional PM thresholds are based on emissions levels identified under the New Source Review (NSR) program. The NSR program is a permitting program that was established by Congress as part of the CAA to ensure that air quality is not significantly degraded by new sources of emissions. The NSR program requires stationary sources to receive permits before they start construction and/or use equipment. By permitting large stationary sources, the NSR program ensures that new emissions will not slow regional progress toward attaining the NAAQS. SJVPACD has concluded that the stationary pollutants described under the NSR program are equally significant to those pollutants generated with land use projects. The SJVAPCD's regional thresholds identified in Table 3.4-4 were set as the total emissions thresholds associated within the NSR program to help attain the NAAQS (San Joaquin Valley Air Pollution Control District 2015).

Health-Based Thresholds for Project-Generated Pollutants of Human Health Concern

The May 27, 2014, Fifth Appellate District Court decision, *Sierra Club et al. v. County of Fresno County et al*., concludes that an EIR should disclose and evaluate the public health consequences associated with increasing levels of air pollutants.[1] As discussed in Section 3.4.1, *Existing Conditions*, all criteria pollutants are associated with some form of health risk (e.g., asthma, asphyxiation). Adverse health effects associated with criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, and the number and character of exposed individuals [e.g., age, gender]). Moreover, ozone precursors (ROG and NO_X) affect air quality on a regional scale. Health effects related to ozone are, therefore, the product of emissions generated by numerous sources throughout a region. Existing models have limited sensitivity to small changes in criteria pollutant concentrations; as such, translating project-generated criteria pollutants to specific health effects would produce meaningless results. Minor increases in regional air pollution from project-generated ROG and NO_X would have nominal or negligible impacts on human health.[2] Therefore, an analysis of impacts on human health associated with project-generated mass emissions is not included in this discussion. Rather, consistent with the current state-of-practice and published guidance by the SJVAPCD (2014), California Air Pollution Control Officers Association (CAPCOA) (2009), OEHHA (2003), and ARB (2000), the analysis of project-related impacts on human health focuses only on those pollutants with the greatest potential to result in a significant, material impact on human health, which are (1) locally concentrated PM and CO, (2) DPM,[3] and (3) *C. immitis* (Valley Fever). SJVAPCD thresholds of significance for each pollutant are identified below.

Localized Diesel Particulate Matter Concentrations

DPM is a form of localized PM (see above) that is generated by diesel equipment and vehicle exhaust. DPM has been identified as TAC and is particularly concerning because long-term exposure can lead to cancer, birth defects, and damage to the brain and nervous system. The SJVAPCD has adopted incremental cancer and hazard thresholds to evaluate receptor exposure to DPM emissions. The "substantial" DPM threshold defined by SJVAPCD is the probability of contracting cancer for the maximum exposed individual (MEI) that exceeds 10 in 1 million, or ground-level concentrations of non-carcinogenic TACs that result in a hazard index (HI) greater than 1 for the MEI.

[1] On October 1, 2014, the California Supreme Court granted the Real Party in interest and respondent Friant Ranch, L.P.'s petition for review.

[2] As an example, the Bay Area Air Quality Management District's (BAAQMD's) Multi-Pollutant Evaluation Method (MPEM) requires a 3% to 5% increase in regional ozone precursors to produce a material change in modeled human health impacts. Based on 2008 ROG and NO_X emissions in the Bay Area, a 3% to 5% increases equates to more than 20,000 pounds per day or ROG and NO_X. Although this example is specific to the Bay Area, similar model limitations would be observed in the San Joaquin Valley.

[3] DPM is the primary TAC of concern for mobile sources. Of all controlled TACs, emissions of DPM are estimated to be responsible for about 70% of the total ambient TAC risk (California Air Resources Board 2000). Given the risks associated with DPM, tools and factors for evaluating human health impacts from project-generated DPM have been developed and are readily available. Conversely, tools and techniques for assessing project-specific health outcomes as a result of exposure to other TACs (e.g., benzene) remain limited. These limitations impede the ability to evaluate and precisely quantify potential public health risks posed by TAC exposure.

Valley Fever Exposure

Neither the state nor the SJVAPCD have adopted thresholds to evaluate receptor exposure to increased Valley Fever risk. The potential for the project to expose receptors to Valley Fever is highest in areas that are known to contain *C. immitis* and during earthmoving activities that generate fugitive dust. Accordingly, uncontrolled construction dust emissions in endemic regions of *C. immitis* could result in increased health impacts from exposure of receptors to *C. imcites* spores.

Table 3.4-4. SJVAPCD Significance Thresholds for Air Quality Impacts Associated with the Project

Analysis	Threshold
Regional Criteria Pollutants	ROG: 10 tons/year NO_X: 10 tons/year CO: 100 tons/year SO_X: 27 tons/year PM10: 15 tons/year PM2.5: 15 tons/year
Localized DPM	Increased cancer risk of 10 in 1 million or increased non-cancer hazard greater than 1.0 (HI)

Sources: San Joaquin Valley Air Pollution Control District 2015; Siong pers. comm.

3.4.2.3 Impacts and Mitigation Measures

No Project Alternative

The No Project Alternative represents the continuation of existing deficiencies in the project area's flood control structures. No flood risk–reduction measures would be implemented, and no construction or operational elements would be implemented that would result in direct or indirect air pollutant emissions. The consequences of levee failure and flooding are described under the No Project Alternative description in Chapter 2, *Proposed Project and Alternatives*, Section 2.4, including a summary of possible environmental effects.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact AQ-1: Generation of Construction-Related Criteria Pollutant Emissions in Excess of San Joaquin Valley Air Pollution Control District Thresholds (less than significant with mitigation)

Mass Emissions

Construction of the proposed project has the potential to create air quality impacts through the use of heavy-duty construction equipment, construction employees' vehicle trips, and truck hauling trips. In addition, fugitive dust emissions would result from site preparation and grading. Criteria pollutant emissions generated by these sources were quantified using CalEEMod (version 2013.2.2). Please refer to Appendix D for assumptions used in the air quality analysis.

As discussed in Section 3.4.2.1, *Assessment Methods*, several construction activities would occur concurrently. The combination of phases that would produce the highest daily emissions in each construction year was selected as the peak day for impact analysis purposes. This approach is meant

to convey a worst-case scenario and, therefore, is not necessarily representative of actual emissions that would be generated on a daily basis throughout the construction period.

Estimated construction emissions are summarized in Table 3.4-5.

Table 3.4-5. Alternative 1, Unmitigated Maximum Annual Construction Emissions (tons/year)

Year	ROG	NO_X	CO	SO_X	PM10	PM2.5
2017	0.3	4.5	2.3	0.4	0.3	0.3
2018	0.4	7.3	3.8	0.8	0.5	0.5
2019	0	0	0	0	0	0
Yearly Maximum	0.4	7.3	3.8	0.8	0.5	0.5
SJVAPCD Threshold	*10*	*10*	*100*	*27*	*15*	*15*
SJVAPCD Threshold Exceeded?	*No*	*No*	*No*	*No*	*No*	*No*

ROG = reactive organic gases.
NO_x = nitrogen oxides.
CO = carbon monoxide.
SO_x = sulfur oxides.
PM10 = particulate matter.
PM2.5 = fine particulate matter.

As indicated in Table 3.4-5, construction of the project would not generate emissions in excess of SJVAPCD's adopted numeric thresholds. Consequently, this direct impact would be less than significant.

Fugitive Dust Emissions

As previously indicated, all construction projects must abide by Regulation VIII. Since the publication of the district's guidance manual, the SJVAPCD has revised some of the rules that make up Regulation VIII. Guidance from SJVAPCD staff members indicates that implementation of a Dust Control Plan would satisfy all of the requirements of SJVAPCD Regulation VIII. Compliance with Regulation VIII and/or implementation of a Dust Control Plan through mitigation measure AQ-MM-1a would help reduce construction-related fugitive dust emissions to a less-than-significant level.

Mitigation Measure AQ-MM-1a: Prepare and Implement a Dust Control Plan to Reduce Fugitive Dust Emissions

To control the generation of construction-related PM10 emissions, construction contractors will be required to prepare a Dust Control Plan and submit it to the SJVAPCD for approval at least 30 days before any earthmoving or construction activities. Construction activities will not commence until the Dust Control Plan has been approved or conditionally approved. Potential measures in the Dust Control Plan could include, but are not limited to, the following.

- Pre-activity.
    - Pre-water the work site and phase work to reduce the amount of disturbed surface area at any one time.
- Active operations.

- Apply water to dry areas during leveling, grading, trenching, and earthmoving activities.
- Construct and maintain wind barriers and apply water or dust suppressants to the disturbed surface areas.

- Inactive operations, including after work hours, weekends, and holidays.
  - Apply water or dust suppressants on disturbed surface areas to form a visible crust; vehicle access will be restricted to maintain the visible crust.
- Temporary stabilization of areas that remain unused for 7 or more days.
  - Restrict vehicular access and apply and maintain water or dust suppressants on all unvegetated areas.
  - Establish vegetation on all previously disturbed areas.
  - Apply and maintain gravel at all previously disturbed areas.
  - Pave previously disturbed areas.
- Unpaved access and haul roads, traffic and equipment storage areas.
  - Apply water or dust suppressants to unpaved haul and access roads.
  - Post a speed limit of not more than 15 miles per hour, using signs at each entrance and again every 500 feet.
  - Water or dust suppressants will be applied to vehicle traffic and equipment storage areas.
- Wind events.
  - Water-application equipment will be used to apply water and control fugitive dust during wind events, unless unsafe to do so.
  - Outdoor construction activities that disturb the soil will cease whenever visible dust emissions cannot be effectively controlled.
- Outdoor handling of bulk materials.
  - Water or dust suppressants will be applied when handling bulk materials.
  - Wind barriers with less than 50% porosity will be installed and maintained, and water or dust suppressants will be applied.
- Outdoor storage of bulk materials.
  - Water or dust suppressants will be applied to storage piles.
  - Storage piles will be covered with tarps, plastic, or other suitable material and anchored in a manner that prevents the cover from being removed by wind action.
  - Wind barriers with less than 50% porosity will be installed and maintained around the storage piles, and water or dust suppressants will be applied.
  - A three-sided structure with less than 50% porosity that is at least as high as the storage piles will be used.

- Onsite transporting of bulk materials.
  - Vehicle speed will be limited on the work site.
  - All haul trucks will be loaded such that the freeboard is not less than 6 inches when traveling across any paved public access road.
  - A sufficient amount of water will be applied to the top of the load to limit visible dust emissions.
  - Haul trucks will be covered with a tarp or other suitable cover.
- Offsite transporting of bulk materials.
  - The following practices will be followed:
    - The interior of emptied truck cargo compartments will be cleaned or covered before leaving the site.
    - Spillage or the loss of bulk materials from holes or other openings in the cargo compartment's floor, sides, and tailgate will be prevented.
- Outdoor transport using a chute or conveyor.
  - No open chutes or conveyors will be used.
  - Chutes or conveyors will be fully enclosed.
  - Water spray equipment will be used to wet the materials adequately.
  - Transported materials will be washed or screened to remove fines (PM 10 or smaller)

Impact AQ-2: Generation of Construction Emissions in Excess of San Joaquin Valley Air Pollution Control District Ambient Air Quality Screening-Level Thresholds (less than significant)

The SJVAPCD's 2015 *Guidance for Assessing and. Mitigating Air Quality Impacts* (GAMAQI) introduced screening-level thresholds for construction and operational emissions to help determine when an ambient air quality analysis (AAQA) must be performed. An AAQA would entail the use of air dispersion modeling to determine whether increased emissions from a proposed project would cause or contribute to a violation of the CAAQS or NAAQS. The SJVAPCD's AAQA screening-level threshold is 100 pounds per day of any criteria pollutant. Projects with emissions above the threshold would require dispersion modeling. It is presumed that projects with emissions below the threshold would not be in violation of the CAAQS or NAAQS. Although the SJVAPCD's AAQA screening-level thresholds are presented in pounds per day, they have been annualized and converted to tons per year for comparison to the proposed project's annual emissions, as presented in Table 3.4-5. This annualization is based on a SJVAPCD 100-pounds-per-day AAQA screening-level threshold with an assumed 250-day construction period, resulting in a calculated annual AAQA equivalency threshold of 12.5 tons per year.

Table 3.4-6 compares annual emissions to the calculated annual AAQA equivalency threshold of 12.5 tons per year.

Table 3.4-6. Alternative 1, Unmitigated Annual Ambient Air Quality Analysis Construction Emissions (tons/year)

Year	ROG	NO_X	CO	SO_X	PM10	PM2.5
2017	0.3	4.5	2.3	0.4	0.3	0.3
2018	0.4	7.3	3.8	0.8	0.5	0.5
2019	0	0	0	0	0	0
Yearly Maximum	0.4	7.3	3.8	0.8	0.5	0.5
SJVAPCD AAQA Screening-Level Thresholds[a]	*12.5*	*12.5*	*12.5*	*12.5*	*12.5*	*12.5*
SJVAPCD Threshold Exceeded?	*No*	*No*	*No*	*No*	*No*	*No*

ROG = reactive organic gases.
NO_x = nitrogen oxides.
CO = carbon monoxide.
SO_x = sulfur oxides.
PM10 = particulate matter.
PM2.5 = fine particulate matter.

[a] The SJVAPCD's 100-pounds-per-day AAQA screening-level threshold has been annualized and converted to tons per year for comparison to the proposed project's annual emissions. The annualization is based on 100 pounds per day over the assumed 250-day construction period.

Table 3.4-6 indicates that construction emissions would not exceed the calculated annual AAQA equivalency threshold of 12.5 tons per year. Consequently, project-related construction emissions would not result in a violation of the CAAQS or NAAQS, and this direct impact is considered less than significant.

Impact AQ-3: Exposure of Sensitive Receptors to Substantial Pollutant Concentrations (less than significant with mitigation)

Toxic Air Contaminants

Project construction would generate DPM, resulting in the exposure of nearby existing sensitive receptors (e.g., residences) to increased DPM concentrations. Cancer health risks associated with exposure to diesel exhaust are typically associated with chronic exposure, with an assumed 70-year exposure period. However, DPM concentrations and, thus, cancer health risks dissipate as a function of distance from the emissions source.

As described above, there are sensitive receptors within 50 feet of the project site. DPM generated during construction may expose these receptors to increased health risks. The greatest potential for DPM emissions would occur in 2018 (see Table 3.4-5).

Construction of the entire project would occur over a 2-year period. This is well below the 70-year exposure period that is typically associated with increased cancer health risks. As indicated in Table 3.4-5, construction activities would generate only minor amounts of DPM; PM10 exhaust emissions are estimated to range from 0.3 to 0.5 tons per year, with maximum emissions generated in 2018. Consequently, construction activities are not anticipated to result in an elevated cancer risk for exposed persons or exceed SJVAPCD significance thresholds. Construction-related DPM emissions impacts would be less than significant.

Valley Fever

The disturbance of soil that contains the *C. immitis* fungus could expose the general public to spores that are known to cause Valley Fever. More than 75% of the Valley Fever cases in California have been in people who live in the San Joaquin Valley. However, San Joaquin County has a relatively moderate Valley Fever rate, with between 1 and 10 cases reported per 100,000 people per year between 2008 and 2012 (California Health and Human Services Agency 2013). Construction activities in areas that are known to contain the *C. immitis* fungus may expose workers and the general public to spores and could result in Valley Fever. Compliance with SJVAPCD Regulation VIII/Dust Control Plan (Mitigation Measure AQ-MM-1a) would reduce the risk of contracting Valley Fever. This direct impact would be less than significant.

Mitigation Measure AQ-MM-1a: Prepare and Implement a Dust Control Plan to Reduce Fugitive Dust Emissions

Please refer to the discussion of Mitigation Measure AQ-MM-1a under Alternative 1, Impact AQ-1.

Alternative 2: Atherton Cove Flood Wall with Smith Canal Gate

Impact AQ-1: Generation of Construction-Related Criteria Pollutant Emissions in Excess of San Joaquin Valley Air Pollution Control District Thresholds (less than significant with mitigation)

Construction of Alternative 2 has the potential to create air quality impacts through the use of heavy-duty construction equipment, construction employees' vehicle trips, and truck hauling trips. In addition, fugitive dust emissions would result from site preparation and grading. Criteria pollutant emissions generated by these sources were quantified using CalEEMod (version 2013.2.2). Please refer to Appendix D for the assumptions used in the air quality analysis.

As discussed in Section 3.4.2.1, *Assessment Methods*, several construction activities would occur concurrently. The combination of phases that would produce the highest daily emissions in each construction year was selected as the peak day for impact analysis purposes. This approach is meant to convey a worst-case scenario and, therefore, is not necessarily representative of actual emissions that would be generated on a daily basis throughout the construction period.

Estimated construction emissions are summarized in Table 3.4-7. Violations of SJVAPCD thresholds are underlined.

Table 3.4-7. Alternative 2, Unmitigated Maximum Annual Construction Emissions (tons/year)

Year	ROG	NO_X	CO	SO_X	PM10	PM2.5
2017	0.6	11.0	5.7	1.2	0.8	0.7
2018	1.0	18.3	9.5	2.2	1.3	1.2
2019	0.2	4.5	2.4	0.5	0.3	0.3
Yearly Maximum	1.0	18.3	9.5	2.2	1.3	1.2
SJVAPCD Threshold	*10*	*10*	*100*	*27*	*15*	*15*
SJVAPCD Threshold Exceeded?	*No*	*Yes*	*No*	*No*	*No*	*No*

ROG = reactive organic gases.
NO_x = nitrogen oxides.
CO = carbon monoxide.
SO_x = sulfur oxides.
PM10 = particulate matter.
PM2.5 = fine particulate matter.

As indicated in Table 3.4-7, in 2017 and 2018, construction of the project would generate NO_X emissions that would be in excess of SJVAPCD's adopted numeric threshold of 10 tons per year. The predominant source of the exceedances would be operation of the barge during construction activities. As indicated above, data related to barge activities were not provided by the project engineers; therefore, the analysis of barge emissions was based on assumed values that represent a conservative estimate of emissions. Consequently, it is unknown what specific mitigation measures could be implemented to help reduce these emissions. Although the quantification of mitigation measures is considered speculative, mitigation measure AQ-MM-1b is recommended to help reduce exhaust emissions, while mitigation measure AQ-MM-1c would offset the remaining emissions and ensure that the impact of construction-related emissions would be mitigated to a less-than significant level.

Mitigation Measure AQ-MM-1b: Implement SJVAPCD-Recommended Mitigation Measures to Reduce Construction-Related Exhaust Emissions

The following measures shall be implemented to reduce construction-related exhaust emissions. The project shall implement one or more of the following.

- Use alternative-fuel or catalyst-equipped diesel construction equipment.
- Minimize idling time (e.g., 5-minute maximum).
- Limit the hours of operation of heavy-duty equipment and/or the amount of equipment in use.
- Replace fossil-fueled equipment with electrically driven equivalents (provided they are not run from a portable generator).
- Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing construction activity during the peak hour of vehicular traffic on adjacent roadways.
- Implement activity management (e.g., reschedule activities to reduce short-term impacts).

Mitigation Measure AQ-MM-1c: Enter into a Voluntary Emissions Reduction Agreement with the SJVAPCD to Offset Construction-Related Emissions below SJVAPCD Thresholds

Prior to construction, SJAFCA will enter into a development mitigation contract, a Voluntary Emissions Reduction Agreement (VERA), with the SJVAPCD to reduce annual construction-related NO_X emissions within the SJVAB to below SJVAPCD's numeric threshold of 10 tons per year. The requirements could, however, change because the VERA requirements are reassessed at each ~~phase~~ year of project development (i.e., at the end of each year of construction activities) in coordination with SJAFCA. This requirement will be enforced and verified by the SJVAPCD. The fees will depend on the emissions that are required to be mitigated after all selected emissions reduction projects are completed. The current VERA payment fee for construction emissions is $9,350 per ton of NO_X; payment fees vary by year (i.e., future-year payment fees for NO_X could be more than the current price of $9,350) and are sensitive to the number of projects that require emissions reductions within the same air basin. Consequently, the method for calculating VERA fees has not been finalized for this project and is not included in this analysis.

Prior to issuance of a grading/building permit, the project proponent shall enter into a VERA with the SJVAPCD to mitigate annual construction project emissions to below SJVAPCD's threshold of 10 tons per year for NO_X to a less-than-significant level. The VERA shall identify the amount of emissions to be reduced in addition to the amount of funds to be paid by the project proponent to the SJVAPCD to implement the emissions reduction projects required for the project. SJAFCA will pay mitigation fees based on the projected emissions in the EIR, and the emissions and associated offset fees (if applicable) will be reconciled and verified by the SJVAPCD based on actual data after each year of construction activities.

Fugitive Dust Emissions

As previously indicated, all construction projects must abide by Regulation VIII. Since publication of the district's guidance manual, the SJVAPCD has revised some of the rules that make up Regulation VIII. Guidance from SJVAPCD staff members indicates that implementation of a Dust Control Plan would satisfy all of the requirements of SJVAPCD Regulation VIII. Compliance with Regulation VIII and/or implementation of a Dust Control Plan as set forth in Mitigation Measure AQ-MM-1a would help reduce the impact of construction-related fugitive dust emissions to a less-than-significant level.

Mitigation Measure AQ-MM-1a: Prepare and Implement a Dust Control Plan to Reduce Fugitive Dust Emissions

Please refer to the discussion of Mitigation Measure AQ-MM-1a under Alternative 1, Impact AQ-1.

Impact AQ-2: Generation of Construction Emissions in Excess of San Joaquin Valley Air Pollution Control District Ambient Air Quality Screening-Level Thresholds (less than significant with mitigation)

The SJVAPCD's 2015 GAMAQI introduced screening-level thresholds for construction and operational emissions to help determine when an AAQA must be performed. An AAQA would entail the use of air dispersion modeling to determine whether emissions increases from a proposed project would cause or contribute to a violation of the CAAQS or NAAQS. The SJVAPCD's AAQA screening-level threshold is 100 pounds per day of any criteria pollutant. Projects with emissions

above the threshold would require dispersion modeling. It is presumed that projects with emissions below the threshold would not be in violation of the CAAQS or NAAQS. Although the SJVAPCD's AAQA screening-level threshold is presented in pounds per day, the threshold has been annualized and converted to tons per year for comparison to the Alternative 2 annual emissions, as presented in Table 3.4-7. This annualization is based on the SJVAPCD's 100-pounds-per-day AAQA screening-level threshold with an assumed 250-day construction period, resulting in a calculated annual AAQA equivalency threshold of 12.5 tons per year.

Table 3.4-8 compares annual emissions to the calculated annual AAQA equivalency threshold of 12.5 tons per year.

Table 3.4-8. Alternative 2, Unmitigated Annual Ambient Air Quality Analysis Construction Emissions (tons/year)

Year	ROG	NO_X	CO	SO_X	PM10	PM2.5
2017	0.6	11.0	5.7	1.2	0.8	0.7
2018	1.0	18.3	9.5	2.2	1.3	1.2
2019	0.2	4.5	2.4	0.5	0.3	0.3
Yearly Maximum	1.0	18.3	9.5	2.2	1.3	1.2
SJVAPCD AAQA Screening-Level Thresholds[a]	*12.5*	*12.5*	*12.5*	*12.5*	*12.5*	*12.5*
SJVAPCD Threshold Exceeded?	*No*	*Yes*	*No*	*No*	*No*	*No*

ROG = reactive organic gases.
NO_x = nitrogen oxides.
CO = carbon monoxide.
SO_x = sulfur oxides.
PM10 = particulate matter.
PM2.5 = fine particulate matter.

[a] The SJVAPCD's 100-pounds-per-day AAQA screening-level threshold has been annualized and converted to tons per year for comparison to the proposed project's annual emissions. The annualization is based on 100 pounds per day over the assumed 250-day construction period.

Table 3.4-8 indicates that construction emissions would exceed the calculated annual AAQA equivalency threshold of 12.5 tons per year in 2018. Consequently, project-related construction emissions could result in a violation of the CAAQS or NAAQS. This direct impact is considered significant. Implementation of Mitigation Measure AQ-MM-1b would reduce construction-related exhaust emissions, while Mitigation Measure AQ-MM-1c is recommended to offset construction-related emissions. This direct impact would be less than significant with implementation of Mitigation Measures AQ-MM-1b and AQ-MM-1c.

Mitigation Measure AQ-MM-1b: Implement SJVAPCD-Recommended Mitigation Measures to Reduce Construction-Related Exhaust Emissions

Please refer to the discussion of Mitigation Measure AQ-MM-1b under Alternative 2, Impact AQ-1.

Mitigation Measure AQ-MM-1c: Enter into a Voluntary Emissions Reduction Agreement with the SJVAPCD to Offset Construction-Related Emissions

Please refer to the discussion of Mitigation Measure AQ-MM-1c under Alternative 2, Impact AQ-1.

Impact AQ-3: Exposure of Sensitive Receptors to Substantial Pollutant Concentrations (less than significant with mitigation)

Toxic Air Contaminants

Project construction would generate DPM, resulting in the exposure of nearby sensitive receptors (e.g., residences) to increased DPM concentrations. Cancer health risks associated with exposure to diesel exhaust are typically associated with chronic exposure, with an assumed 70-year exposure period. In addition, DPM concentrations and, thus, cancer health risks dissipate as a function of distance from the emissions source.

As described above, there are sensitive receptors within 50 feet of the project site. DPM generated during construction may expose these receptors to increased health risks. The greatest potential for DPM emissions would occur in 2018 (see Table 3.4-7).

Construction of the entire project would occur over a 2-year period. This is well below the 70-year exposure period that is typically associated with increased cancer health risks. As indicated in Table 3.4-7, construction activities would generate only minor amounts of DPM. It is estimated that PM10 exhaust emissions would range from 0.3 to 1.3 tons per year, with maximum emissions generated in 2018. Mitigation Measure AQ-MM-1b would help reduce the impact of construction-related exhaust emissions. Consequently, construction activities are not anticipated to result in an elevated cancer risk for exposed persons or exceed the SJVAPCD significance thresholds. Impacts from construction-related DPM emissions would be less than significant.

Valley Fever

The disturbance of soil that contains the *C. immitis* fungus could expose the general public to spores that are known to cause Valley Fever. More than 75% of Valley Fever cases in California have been in people who live in the San Joaquin Valley. However, San Joaquin County has a relatively moderate Valley Fever rate, with between 1 and 10 cases reported per 100,000 people per year between 2008 and 2012 (California Health and Human Services Agency 2013). Construction activities in areas that are known to contain the *C. immitis* fungus may expose workers and the general public to spores and could result in Valley Fever. Compliance with SJVAPCD Regulation VIII/Dust Control Plan (Mitigation Measure AQ-1a) would reduce the risk of contracting Valley Fever. This direct impact is considered less than significant.

Mitigation Measure AQ-MM-1a: Prepare and Implement a Dust Control Plan to Reduce Fugitive Dust Emissions

Please refer to the discussion of Mitigation Measure AQ-MM-1a under Alternative 1, Impact AQ-1.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact AQ-1: Generation of Construction-Related Criteria Pollutant Emissions in Excess of San Joaquin Valley Air Pollution Control District Thresholds (less than significant with mitigation)

Construction of the Alternative 3 has the potential to create air quality impacts through the use of heavy-duty construction equipment, construction employees' vehicle trips, and truck hauling trips. In addition, fugitive dust emissions would result from site preparation and grading. Criteria pollutant emissions generated by these sources were quantified using CalEEMod (version 2013.2.2). Please refer to Appendix D for the assumptions used in the air quality analysis.

As discussed in Section 3.4.2.1, *Assessment Methods*, several construction activities would occur concurrently. The combination of phases that would produce the highest daily emissions in each construction year was selected as the peak day for impact analysis purposes. This approach is meant to convey a worst-case scenario and, therefore, is not necessarily representative of actual emissions that would be generated on a daily basis throughout the construction period.

Estimated construction emissions are summarized in Table 3.4-9.

Table 3.4-9. Alternative 3, Unmitigated Maximum Annual Construction Emissions (tons/year)

Year	ROG	NO_X	CO	SO_X	PM10	PM2.5
2017	0.3	5.4	2.8	0.5	0.4	0.3
2018	0.1	0.6	0.4	0.0	0.0	0.0
2019	0	0	0	0	0	0
Yearly Maximum	0.3	5.4	2.8	0.5	0.4	0.3
SJVAPCD Threshold	*10*	*10*	*100*	*27*	*15*	*15*
SJVAPCD Threshold Exceeded?	*No*	*No*	*No*	*No*	*No*	*No*

ROG = reactive organic gases.
NO_x = nitrogen oxides.
CO = carbon monoxide.
SO_x = sulfur oxides.
PM10 = particulate matter.
PM2.5 = fine particulate matter.

As indicated in Table 3.4-9, construction of the project would not generate emissions that would be in excess of the SJVAPCD's adopted numeric thresholds. Consequently, this direct impact would be less than significant.

Fugitive Dust Emissions

As previously indicated, all construction projects must abide by Regulation VIII. Since publication of the district's guidance manual, the SJVAPCD has revised some of the rules that make up Regulation VIII. Guidance from SJVAPCD staff members indicates that implementation of a Dust Control Plan would satisfy all of the requirements of SJVAPCD Regulation VIII. Compliance with Regulation VIII and/or implementation of a Dust Control Plan through Mitigation Measure AQ-MM-1a would help reduce the impact of construction-related fugitive dust emissions to a less-than-significant level.

Mitigation Measure AQ-MM-1a: Prepare and Implement a Dust Control Plan to Reduce Fugitive Dust Emissions

Please refer to the discussion of Mitigation Measure AQ-MM-1a under Alternative 1, Impact AQ-1.

Impact AQ-2: Generation of Construction Emissions in Excess of San Joaquin Valley Air Pollution Control District Ambient Air Quality Analysis Screening-Level Thresholds (less than significant)

The SJVAPCD's 2015 GAMAQI introduced screening-level thresholds for construction and operational emissions to help determine when an AAQA must be performed. An AAQA would entail the use of air dispersion modeling to determine whether emissions increases from a proposed project would cause or contribute to a violation of the CAAQS or NAAQS. The SJVAPCD's AAQA screening-level threshold is 100 pounds per day of any criteria pollutant. Projects with emissions above the threshold would require dispersion modeling. It is presumed that projects with emissions below the threshold would not be in violation of the CAAQS or NAAQS. Although the SJVAPCD's AAQA screening-level threshold is presented in pounds per day, the threshold have been annualized and converted to tons per year for comparison to the proposed project's annual emissions, as presented in Table 3.4-9. This annualization is based on the SJVAPCD's 100-pounds-per-day AAQA screening-level threshold with an assumed 250-day construction period, resulting in a calculated annual AAQA equivalency threshold of 12.5 tons per year.

Table 3.4-10 compares annual emissions to the calculated annual AAQA equivalency threshold of 12.5 tons per year.

Table 3.4-10. Alternative 3, Unmitigated Annual Ambient Air Quality Analysis Construction Emissions (tons/year)

Year	ROG	NO_X	CO	SO_X	PM10	PM2.5
2017	0.3	5.4	2.8	0.5	0.4	0.3
2018	0.1	0.6	0.4	0.0	0.0	0.0
2019	0	0	0	0	0	0
Yearly Maximum	0.3	5.4	2.8	0.5	0.4	0.3
SJVAPCD AAQA Screening-Level Thresholds[a]	*12.5*	*12.5*	*12.5*	*12.5*	*12.5*	*12.5*
SJVAPCD Threshold Exceeded?	*No*	*No*	*No*	*No*	*No*	*No*

ROG = reactive organic gases.
NO_x = nitrogen oxides.
CO = carbon monoxide.
SO_x = sulfur oxides.
PM10 = particulate matter.
PM2.5 = fine particulate matter.

[a] The SJVAPCD's 100-pounds-per-day AAQA screening-level threshold has been annualized and converted to tons per year for comparison to the proposed project's annual emissions. The annualization is based on 100 pounds per day over the assumed 250-day construction period.

Table 3.4-10 indicates that construction emissions would not exceed the calculated annual AAQA equivalency threshold of 12.5 tons per year. Consequently, project-related construction emissions would not result in a violation of the CAAQS or NAAQS. This direct impact would be less than significant.

Impact AQ-3: Exposure of Sensitive Receptors to Substantial Pollutant Concentrations (less than significant with mitigation)

Toxic Air Contaminants

Project construction would generate DPM, resulting in the exposure of nearby sensitive receptors (e.g., residences) to increased DPM concentrations. Cancer health risks associated with exposure to diesel exhaust are typically associated with chronic exposure, with an assumed 70-year exposure period. In addition, DPM concentrations and, thus, cancer health risks dissipate as a function of distance from the emissions source.

As described above, there are sensitive receptors within 50 feet of the project site. DPM generated during construction may expose these receptors to increased health risks. The greatest potential for DPM emissions would occur in 2017 (see Table 3.4-9).

Construction of the entire project would occur over a 2-year period. This is well below the 70-year exposure period that is typically associated with increased cancer health risks. As indicated in Table 3.4-9, construction activities would generate only minor amounts of DPM. It is estimated that PM10 exhaust emissions would range from 0.0[4] to 0.4 ton per year, with maximum emissions generated in 2017. Consequently, construction activities are not anticipated to result in an elevated cancer risk for exposed persons or exceed SJVAPCD significance thresholds. Impacts from construction-related DPM emissions would be less than significant.

Valley Fever

The disturbance of soil that contains the *C. immitis* fungus could expose the general public to spores that are known to cause Valley Fever. More than 75% of Valley Fever cases in California have been in people who live in the San Joaquin Valley. However, San Joaquin County has a relatively moderate Valley Fever rate, with between 1 and 10 cases reported per 100,000 people per year between 2008 and 2012 (California Health and Human Services Agency 2013). Construction activities in areas that are known to contain the *C. immitis* fungus may expose workers and the general public to spores and could result in Valley Fever. Compliance with SJVAPCD Regulation VIII/Dust Control Plan (Mitigation Measure AQ-MM-1a) would reduce the risk of contracting Valley Fever. This direct impact would be less than significant.

Mitigation Measure AQ-MM-1a: Prepare and Implement a Dust Control Plan to Reduce Fugitive Dust Emissions

Please refer to the discussion of Mitigation Measure AQ-MM-1a under Alternative 1, Impact AQ-1.

[4] Because of rounding to one significant digit, emissions are reported as being 0.0.

3.5 Greenhouse Gases and Climate Change

This section describes the regulatory and environmental setting for greenhouse gases (GHG) and climate change resources in the project area. It also analyzes environmental impacts on GHG and climate change that could result from implementing the project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.5.1 Existing Conditions

3.5.1.1 Regulatory Setting

The following Federal, state, and local regulations and technical guidelines related to GHGs and climate change may apply to implementation of the proposed project. A description of each regulation is included in Chapter 5, *Regulatory Framework and Compliance*.

Federal

Although there is currently no Federal overarching law specifically related to climate change or the reduction of GHG, the U.S. Environmental Protection Agency (EPA) is developing regulations under the Clean Air Act (CAA) that may be adopted pursuant to the EPA's authority under the CAA in the next 2 years. Foremost among recent developments have been the settlement agreements between the EPA, several states, and nongovernmental organizations (NGOs) to address GHG emissions from electric generating units and refineries; the U.S. Supreme Court's decision in *Massachusetts v. EPA;* and the EPA's "Endangerment Finding," "Cause or Contribute Finding," and Mandatory Reporting Rule. Although periodically debated in Congress, there is no Federal legislation concerning GHG emissions limitations. In *Coalition for Responsible Regulation, Inc., et al. v. EPA*, the United States Court of Appeals upheld the EPA's authority to regulate GHG emissions under the CAA.

State

California has adopted statewide legislation that addresses various aspects of climate change and GHG emissions mitigation. Much of this establishes a broad framework for the state's long-term GHG reduction and climate change adaptation program. The governor of California has also issued several executive orders (EOs) related to the state's evolving climate change policy. Of particular importance to local governments is the direction provided by the Assembly Bill (AB) 32 Scoping Plan, which recommends that local governments reduce their GHG emissions by a level consistent with state goals (i.e., 15% below current levels).

In the absence of Federal regulations, control of GHGs is generally regulated at the state level and typically approached by setting emissions reduction targets for existing sources of GHGs, setting policies to promote renewable energy and increase energy efficiency, and developing statewide action plans. Summaries of key policies, legal cases, regulations, and legislation at the state level that are relevant to the project are provided below.

Assembly Bill 1493—Pavley Rules (2002, Amendments 2009, 2012 rulemaking)

Known as "Pavley I," AB 1493 standards are the nation's first GHG standards for automobiles. AB 1493 requires the California Air Resources Board (ARB) to adopt vehicle standards that will lower GHG emissions from new light-duty autos to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards (referred to previously as "Pavley II," now referred to as the "Advanced Clean Cars" measure) has been proposed for vehicle model years 2017 through 2025. Together, the two standards are expected to increase average fuel economy to roughly 43 miles per gallon by 2020 and reduce GHG emissions from the transportation sector in California by approximately 14%. In June 2009, EPA granted California's waiver request, enabling the state to enforce its GHG emissions standards for new motor vehicles beginning with the current model year.

Assembly Bill 32—California Global Warming Solutions Act (2006)

AB 32 codified the state's GHG emissions target by requiring that the state's global warming emissions be reduced to 1990 levels by 2020. Since being adopted, ARB, the California Energy Commission (CEC), California Public Utilities Commission (CPUC), and the Building Standards Commission have been developing regulations that will help meet the goals of AB 32 and EO S-03-05. The AB 32 Scoping Plan identifies specific measures to reduce GHG emissions to 1990 levels by 2020 and requires ARB and other state agencies to develop and enforce regulations and other initiatives for reducing GHGs. Specifically, the scoping plan articulates a key role for local governments, recommending they establish GHG reduction goals for both their municipal operations and the community that are consistent with those of the state.

Executive Order S-01-07—Low Carbon Fuel Standard (2007)

EO S-01-07 mandates (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020 and (2) that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established in California.[1]

State CEQA Guidelines (2010)

The California Environmental Quality Act (CEQA) Guidelines require lead agencies to describe, calculate, or estimate the amount of GHG emissions that would result from a project. Moreover, the State CEQA Guidelines emphasize the necessity to determine potential climate change effects of a project and propose mitigation as necessary. The State CEQA Guidelines confirm the discretion of lead agencies to determine appropriate significance thresholds but require the preparation of an environmental impact report (EIR) if "there is substantial evidence that the possible effects of a particular project are still cumulatively considerable, notwithstanding compliance with adopted regulations or requirements" (Section 15064.4).

State CEQA Guidelines Section 15126.4 includes considerations for lead agencies related to feasible mitigation measures to reduce GHG emissions, which may include, among others, measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision; implementation of project features, project designs, or other measures that

[1] ARB approved the LCFS on April 23, 2009, and the regulation became effective on January 12, 2010 (California Air Resources Board 2011). The U.S. District Court for the Eastern District of California ruled in December 2011 that the LCFS violates the Commerce Clause of the U.S. Constitution. ARB appealed this ruling in 2012, and on September 18, 2013, a 9th U.S. Circuit Court of Appeals panel upheld the LCFS, ruling that the program does not violate the Commerce Clause and remanded the case to the Eastern District.

are incorporated into the project to reduce energy consumption or GHG emissions substantially; and offsite measures, including offsets that are not otherwise required.

Local

San Joaquin Valley Air Pollution Control District

As discussed in Section 3.4, *Air Quality*, the air quality study area falls under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The SJVAPCD has produced GHG guidance to help lead agencies determine the level of significance of operational GHG emissions, pursuant to CEQA (San Joaquin Valley Air Pollution Control District 2009a). The SVJAPCD's GHG guidance is intended to streamline CEQA review by pre-quantifying the emissions reductions that would be achieved through the implementation of best performance standards (BPS). Projects are considered to have a less-than-significant cumulative impact on climate change if any of the following conditions are met.

- Comply with an approved GHG reduction plan (see below).
- Achieve a score of at least 29[2] using any combination of approved operational BPS.
- Reduce operational GHG emissions by at least 29% over business-as-usual conditions (demonstrated quantitatively).

The SJVAPCD guidance recommends quantification of GHG emissions for all projects in which an EIR is required, regardless of whether the BPS achieve a score of 29 (San Joaquin Valley Air Pollution Control District 2009a). The SJVAPCD does not have an adopted or recommended significance threshold for construction-related GHG emissions. However, lead agencies should quantify and disclose GHG emissions that would occur during construction and make a determination on the significance of these construction-generated GHG emission impacts in relation to meeting AB 32 GHG emissions reduction goals (San Joaquin Valley Air Pollution Control District 2009b).

City of Stockton Climate Action Plan

On December 2, 2014, the City of Stockton adopted the *City of Stockton Climate Action Plan* (CAP), which details the City's efforts to reduce GHG emissions consistent with AB 32. The CAP estimates current (2010) and future (2020) GHG emissions generated by community activities. The CAP specifies 2020 emissions reduction goals and identifies a list of mitigation measures that are recommended to achieve these goals. The City intends for the CAP to serve as a streamlining tool for CEQA analysis. Projects that are consistent with the applicable mitigation measures can tier from the CAP and associated EIR.

3.5.1.2 Environmental Setting

The study area for GHGs and climate change consists of the San Joaquin Valley Air Basin (SJVAB), as described in Section 3.4, *Air Quality*. However, because climate change is a global problem and GHGs are global pollutants, the study area extends beyond the local and regional level (see Section 3.5.2.1, *Assessment Methods,* and Section 3.5.2.2, *Thresholds of Significance*).

[2] A score of 29 represents a 29% reduction in GHG emissions relative to unmitigated conditions (1 point = 1%). This goal is consistent with the reduction targets established by AB 32.

Greenhouse Effect and Climate Change

The phenomenon known as the *greenhouse effect* keeps the atmosphere near the Earth's surface warm enough for the successful habitation of humans and other life forms. Present in the Earth's lower atmosphere, GHGs play a critical role in maintaining the Earth's temperature. GHGs trap some of the long-wave infrared radiation emitted from the Earth's surface that would otherwise escape to space. According to AB 32, GHGs include the following gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorinated carbons (PFCs), sulfur hexafluoride (SF_6), and hydrofluorocarbons (HFCs). The State CEQA Guidelines (Section 15364.5) also identify these six gases as GHGs.

Sunlight, including infrared, visible, and ultraviolet light, passes through the atmosphere. Some of the sunlight that strikes the Earth is absorbed and converted to heat, which warms the surface. The surface emits infrared radiation to the atmosphere. Some of it is absorbed by GHGs and re-emitted toward the surface; some of the heat is not trapped by GHGs and escapes into space. Human activities that emit additional GHGs into the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and amplifying the warming of the Earth (Center for Climate and Energy Solutions 2011).

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the Industrial Revolution. Rising atmospheric concentrations of GHGs in excess of natural levels enhance the greenhouse effect, which contributes to global warming of the Earth's lower atmosphere. This warming induces large-scale changes in ocean circulation patterns, precipitation patterns, global ice cover, biological distributions, and other changes to the Earth system. These changes are collectively referred to as *climate change*.

Greenhouse Gases

As noted above, the principal anthropogenic GHGs that contribute to global warming are CO_2, CH_4, N_2O, and fluorinated compounds, including SF_6, HFCs, and PFCs. Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic (human-made) sources. The primary GHGs of concern associated with the project are CO_2, CH_4, and N_2O. The principal characteristics surrounding these pollutants are discussed below.

Carbon Dioxide (CO_2) enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, respiration, and as a result of chemical reactions (e.g., the manufacture of cement). Carbon dioxide is also removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH_4) is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and agricultural practices and the decay of organic waste in municipal solid waste landfills.

Nitrous Oxide (N_2O) is emitted during agricultural and industrial activities as well as during the combustion of fossil fuels and solid waste.

Methods have been set forth to describe emissions of GHGs in terms of a single gas to simplify reporting and analysis. The most commonly accepted method for comparing GHG emissions is the global warming potential (GWP) methodology, as defined in Intergovernmental Panel on Climate Change (IPCC) reference documents. The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of carbon dioxide equivalent (CO_2e), which

compares the gas in question to that of the same mass of CO_2 (CO_2 has a global warming potential of 1 by definition).

Table 3.5-1 lists the global warming potential of CO_2, CH_4, and N_2O; their lifetimes; and their atmospheric abundance.

Table 3.5-1. Lifetimes and Global Warming Potentials of Key Greenhouse Gases

Greenhouse Gases	GWP (100 years)	Lifetime (years)	2014 Atmospheric Abundance
CO_2 (ppm)	1	50–200	398
CH_4 (ppb)	28	9–15	1,893
N_2O (ppb)	265	121	326

Sources: Myhre et al. 2013; Blasing 2014; National Oceanic and Atmospheric Administration 2014.
CH_4 = methane.
CO_2 = carbon dioxide.
N_2O = nitrous oxide.
ppb = parts per billion.
ppm = parts per million.

Greenhouse Gas Emissions Inventories

A GHG inventory is a quantification of all GHG emissions and sinks within a selected physical and/or economic boundary. A *GHG sink* is a process, activity, or mechanism that removes a GHG from the atmosphere. GHG inventories can be performed on a large scale (e.g., for global and national entities) or on a small scale (e.g., for a particular building or person). Although many processes are difficult to evaluate, several agencies have developed tools to quantify emissions from certain sources.

Table 3.5-2 outlines the most recent global, national, statewide, and local GHG inventories to help contextualize the magnitude of potential project-related emissions.

Table 3.5-2. Global, National, State, and Local GHG Emissions Inventories

Emissions Inventory[a]	CO_2e (metric tons)
2004 IPCC Global GHG Emissions Inventory	49,000,000,000
2012 EPA National GHG Emissions Inventory	6,526,000,000
2012 ARB State GHG Emissions Inventory	458,680,000
2005 City of Stockton GHG Emissions Inventory	2,360,932

Sources: Intergovernmental Panel on Climate Change 2007; U.S. Environmental Protection Agency 2014a; California Air Resources Board 2014; City of Stockton 2014.
CO_2e = carbon dioxide equivalent.

3.5.2 Environmental Impacts

This section describes the environmental impacts of the project related to GHGs and climate change. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, where appropriate.

3.5.2.1 Assessment Methods

Impacts of the project related to climate change and GHG emissions from construction and operations were assessed and quantified using standard and accepted software tools, techniques, and emissions factors. This section describes the primary assumptions and key methods use to quantify emissions and estimate potential impacts. Assumptions used in the air quality analysis can be found in Appendix I, *Air Quality and GHG Analysis Data.*

Construction of the project would generate emissions of reactive organic gases (ROG), nitrogen oxides (NO_X), carbon monoxide (CO), particulate matter less than or equal to 10 microns in diameter (PM10), and particulate matter less than or equal to 2.5 microns in diameter (PM 2.5) that would result in short-term impacts on ambient air quality in the study area. Emissions would originate from the exhaust of mobile and stationary construction equipment and employees' vehicles, dust from land clearing, and the application of architectural coatings. It is expected that construction of the three alternatives would occur between March 2017 and September 2019, with Alternatives 1 and 3 occurring during 2017 and 2018 and Alternative 2 between 2017 and 2019. The various phases of construction would occur concurrently within each alternative.

Criteria pollutant emissions from heavy-duty equipment, on-road vehicles, and land disturbance were estimated using the California Emissions Estimator Model (CalEEMod), version 2013.2.2, and the construction activity/scheduling and equipment inventory data provided by the project engineer. However, model default values for equipment horsepower were utilized in the analysis because data were not provided by the project engineers. Therefore, 10-hour workdays were assumed during the in-water season (July 15 through October 15); all other work was assumed to involve 9-hour workdays.

Emissions were estimated for each month of activity, assuming 22 days of construction per month, based on activity data (e.g., construction schedule, equipment, trip lengths) provided by the project engineers. Monthly emissions were combined for construction activities that overlapped and annualized for comparison to SJVAPCD annual thresholds.

Data related to barge activities were not provided by the project engineers. Therefore, barge emissions were based on an assumed 1,500-horsepower tugboat operating 10 hours per day to represent a conservative estimate of emissions.

Consistent with SJVAPCD practice (San Joaquin Valley Air Pollution Control District 2011), construction-related emissions were amortized over the anticipated 30-year operational lifespan of the proposed project for comparison to applicable thresholds of significance (see Section 3.5.2.2, *Thresholds of Significance*, below, for a discussion of the thresholds that were used to evaluate project significance related to climate change).

3.5.2.2 Thresholds of Significance

Greenhouse Gases

GHGs and climate change are exclusively cumulative impacts; there is no non-cumulative GHG emissions impact from a climate change perspective (California Air Pollution Control Officers Association 2008). Therefore, in accordance with scientific consensus regarding the cumulative

nature of GHGs,[3] the analysis herein analyzes the cumulative contribution of project-related GHG emissions.

The thresholds listed below are based on standard professional practice and the criteria provided in State CEQA Guidelines Appendix G (14 California Code of Regulations 15000 et seq.). The proposed project would be considered to have a significant impact on GHGs if it would result in any of the following consequences.

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

To make these determinations, the criteria listed below were used to evaluate impacts related to the proposed project.

City of Stockton Climate Action Plan

As discussed in Section 3.5.1, *Existing Conditions*, the City of Stockton prepared a CAP as a "Plan for the Reduction of Greenhouse Gas Emissions" for purposes of State CEQA Guidelines Section 15183.5. This section of the State CEQA Guidelines provides that quantified plans "may be used in the cumulative impacts analysis of later projects." More specifically, "[l]ater project-specific environmental documents may tier from and/or incorporate by reference" the "programmatic review" conducted for the GHG reduction plan. Moreover,

> An environmental document that relies on a GHG 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 (Section 15183.5).

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 State CEQA Guidelines, Section 15064[h][3]).

The significance of potential operational GHG emissions would be evaluated by determining whether the project is consistent with all applicable measures outlined in the CAP. If the project is consistent with these measures, it would not conflict with the City's ability to achieve future emissions reduction goals, and operational GHG emissions would therefore be found to be less than significant. However, because the project would not result in any direct operational activities or emissions, this analysis evaluates construction-related emissions only.

The City's CAP does not establish a quantitative threshold for the evaluation of construction-related GHG emissions. Therefore, the City's CAP is not appropriate for evaluating the significance of project-related construction GHG emissions.

[3] Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors), which are primarily pollutants of regional and local concern. Given their long atmospheric lifetimes (Table 3.5-1), GHGs emitted by countless sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless past, present, and future sources. Therefore, GHG impacts are inherently cumulative.

SJVAPCD GHG CEQA Guidance

Guidance for Valley Land Use Agencies in Addressing GHG Emissions Impacts for New Projects Under CEQA

As discussed in Section 3.5.1.1, *Regulatory Setting*, the SJVAPCD has produced GHG guidance to help lead agencies assess a project's significance for GHGs under CEQA. This guidance does not address the significance threshold for construction-related GHG emissions.

Zero Equivalency Policy for Greenhouse Gases (APR-2015)

The SJVAPCD has adopted a zero equivalency policy (APR-2015) for GHGs emissions. APR-2015 was adopted to supplement the district's 2009 GHG guidance, which uses BPS as a means of determining the cumulative significance of GHG emissions from stationary sources and land use development projects (San Joaquin Valley Air Pollution Control District 2009c).

APR-2015 "establishes a level of greenhouse emissions below which project-specific increases in greenhouse gas emissions would be considered equivalent to zero for CEQA purposes" and would not "require further environmental review for greenhouse gas impacts" (San Joaquin Valley Air Pollution Control District 2012).

Pursuant to the zero-equivalency policy, stationary-source projects that generate less than 230 metric tons of CO_2e per year would be considered to have a less-than-significance impact for CEQA purposes, and no further analysis or implementation of BPS would be required. Although the policy is most applicable to stationary sources, because GHGs are cumulative pollutants, the emissions level of 230 metric tons of CO_2e per year can be used as an indicator of the potential GHG impacts of all projects. Emissions above 230 metric tons of CO_2e per year would warrant further analysis and potential mitigation, consistent with the SJVAPCD's 2009 GHG guidance, while emissions below 230 metric tons of CO_2e per year would be presumed to result in a less-than-significant impact related to climate change.

Climate Change

The California Second District Court of Appeals has held that although an EIR must analyze the environmental effects that may result from a project, an EIR is not required to examine the effects of the environment, such as sea-level rise, on a project (see *Ballona Wetlands Land Trust v. City of Los Angeles*, 201 Cal. App. 4th 455). In its decision, the court called into question the validity of portions of the State CEQA Guidelines that require consideration of the impacts of the environment on a project. The Ballona decision potentially eliminates the need for lead agencies in the second appellate district to consider the impacts of climate change on proposed projects. The Ballona decision did not, however, call into question the State CEQA Guidelines amendments enacted in 2010 that establish how GHG emissions are to be analyzed and mitigated under CEQA.

Unless binding legislation that overturns the Ballona decision is adopted,[4] this decision is expected to be argued as precedent in CEQA cases throughout the state for the premise that CEQA does not need to examine the impacts of the environment on a project. Nonetheless, courts outside of the

[4] On March 21, 2012, the California Supreme Court denied case review and depublication requests submitted by several environmental organizations. However, while the California Supreme Court denied case review of the Ballona decision, on November 26, 2013, the California Supreme Court granted review of California Building Industry Association v. Bay Area Air Quality Management District to settle whether CEQA requires an evaluation of how existing environmental conditions will affect a proposed project.

second appellate district will have the discretion to differ in their interpretation of the State CEQA Guidelines and may find that an analysis of the effects of climate change on proposed projects is required. Accordingly, the qualitative analysis that follows in Section 3.5.2.3, *Impacts and Mitigation Measures*, uses as its criteria the question of whether the project would place people or structures at substantial risk of harm due to predicted climate change effects.

3.5.2.3 Impacts and Mitigation Measures

No Project Alternative

The No Project Alternative represents the continuation of existing deficiencies in the project area's flood control structures. No flood risk–reduction measures would be implemented, and no construction or operational elements would be implemented that would result in direct or indirect GHG emissions. The consequences of levee failure and flooding are described under the No Project Alternative description in Chapter 2, *Proposed Project and Alternatives*, Section 2.4, including a summary of possible environmental effects.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact GHG-1: Generate Construction-Related GHG Emissions in Excess of SJVAPCD Thresholds (less than significant)

Project construction would generate direct GHG emissions from the exhaust of mobile and stationary construction equipment as well as employees' vehicles and haul trucks. Estimated emissions resulting from construction of the project are summarized in Table 3.5-3.

Table 3.5-3. Alternative 1, Maximum Annual Construction Emissions (metric tons/year)

Year	CO_2e	Amortized CO_2e[a]
2017	440.9	14.7
2018	881.3	29.4
2019	0	0
Total Construction Emissions	1,322.2	44.1
SJVAPCD Zero-Equivalency Threshold	*NA*	*230*
SJVAPCD Threshold Exceeded?	*NA*	*No*

CO_2e = carbon dioxide equivalent.

[a] Yearly construction emissions were amortized over the anticipated 30-year operational lifespan of the proposed project for comparison to the SJVAPCD's zero-equivalency threshold of 230 metric tons of CO_2e per year.

As indicated in Table 3.5-3, construction of the project would generate a total of 1,322.2 metric tons of CO_2e per year. When amortized over the anticipated 30-year operational lifespan of the proposed project, these emissions would result in 44.1 metric tons of CO_2e per year. This is well below the SJVAPCD's zero-equivalency threshold of 230 metric tons of CO_2e per year and equivalent to adding nine single-occupancy vehicles to the road during the construction period (U.S. Environmental Protection Agency 2014b). Because amortized emissions are below the SJVAPCD's zero-equivalency threshold, this impact is considered less than significant. No mitigation is necessary.

Impact GHG-2: Expose Property and Persons to the Physical Effects of Climate Change, Including Flooding, Public Health, Wildfire Risk, or Other Impacts Resulting from Climate Change (less than significant)

Climate change is a complex phenomenon that has the potential to alter local climatic patterns and meteorology. Although modeling indicates that climate change will result globally and regionally in sea-level rise as well as changes in climate and rainfall, among other effects, there remains uncertainty with regard to characterizing precise *local* climatic characteristics and predicting precisely how various ecological and social systems will react to any changes in the existing climate at the local level. Regardless of this uncertainty in precise predictions, it is widely understood that substantial climate change is expected to occur in the future, although the extent will take further research to define.

Several impacts on the environment are expected throughout California as a result of global climate change. The extent of these effects is still being defined as climate modeling tools become more refined. Regardless of the uncertainty in precise predictions, it is widely understood that substantial climate change is expected to occur in the future. Potential climate change impacts in California and the San Joaquin Valley include the following.

- Rising sea levels along the California coastline, particularly in San Francisco and the San Joaquin Delta, due to ocean expansion.
- Extreme heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent.
- An increase in heat-related human deaths and infectious diseases and a higher risk of respiratory problems caused by deteriorating air quality.
- Reduced snow pack and streamflow in the Sierra Nevada, affecting winter recreation and water supplies.
- Potential increases in the severity of winter storms, affecting peak streamflows and causing flooding.
- Changes in growing season conditions that could affect California agriculture, causing variations in crop quality and yield.
- Changes in the distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

Sea-level rise is not a primary concern for the Central Valley because the valley is approximately 100 feet above sea level. However, as indicated above, ocean expansion associated with rising sea levels could affect the San Joaquin Delta and the proposed project. Therefore, the proposed project would be designed, engineered, and constructed in anticipation of the potential effects of climate change and rising water levels to ensure that the project area would be unlikely to be affected by flooding. Although a range of potential climate change impacts may affect the project, including higher temperatures and an increased number of heat-stress days, the project itself would not exacerbate these issues. As identified above, the project would not increase the exposure of property or persons to the potential effects of climate change. The project site is not anticipated to be affected by future sea-level rise. Consequently, the impact of climate change on the project is considered less than significant. No mitigation is necessary.

Alternative 2: Atherton Cove Floodwall with Smith Canal Gate

Impact GHG-1: Generate Construction-Related GHG Emissions in Excess of SJVAPCD Thresholds (less than significant)

Project construction would generate direct GHG emissions from the exhaust of mobile and stationary construction equipment as well as employees' vehicles and haul trucks. Estimated emissions resulting from construction of the project are summarized in Table 3.5-4.

Table 3.5-4. Alternative 2, Maximum Annual Construction Emissions (metric tons/year)

Year	CO_2e	Amortized CO_2e[a]
2017	1,358.0	45.3
2018	1,319.4	44.0
2019	339.2	11.3
Total Construction Emissions	3,016.5	100.5
SJVAPCD Zero-Equivalency Threshold	*NA*	*230*
SJVAPCD Threshold Exceeded?	*NA*	*No*

CO_2e = carbon dioxide equivalent.

[a] Yearly construction emissions were amortized over the anticipated 30-year operational lifespan of the proposed project for comparison to the SJVAPCD's zero-equivalency threshold of 230 metric tons of CO_2e per year.

As indicated in Table 3.5-4, construction of the project would generate a total of 3,016.5 metric tons of CO_2e per year. When amortized over the anticipated 30-year operational lifespan of the proposed project, these emissions would result in 100.5 metric tons of CO_2e per year. This is well below the SJVAPCD's zero-equivalency threshold of 230 metric tons CO_2e per year and equivalent to adding 21 single-occupancy vehicles to the road during the construction period (U.S. Environmental Protection Agency 2014b). Because amortized emissions are below the SJVAPCD's zero-equivalency threshold, this impact is considered less than significant. No mitigation is necessary.

Impact GHG-2: Expose Property and Persons to the Physical Effects of Climate Change, Including Flooding, Public Health, Wildfire Risk, or Other Impacts Resulting from Climate Change (less than significant)

Climate change is a complex phenomenon that has the potential to alter local climatic patterns and meteorology. Although modeling indicates that climate change will result globally and regionally in sea-level rise as well as changes in climate and rainfall, among other effects, there remains uncertainty with regard to characterizing precise *local* climatic characteristics and predicting precisely how various ecological and social systems will react to any changes in the existing climate at the local level. Regardless of this uncertainty in precise predictions, it is widely understood that substantial climate change is expected to occur in the future, although the extent will take further research to define.

Several impacts on the environment are expected throughout California as a result of global climate change. The extent of these effects is still being defined as climate modeling tools become more refined. Regardless of the uncertainty in precise predictions, it is widely understood that substantial

climate change is expected to occur in the future. Potential climate change impacts in California and the San Joaquin Valley include the following.

- Rising sea levels along the California coastline, particularly in San Francisco and the San Joaquin Delta, due to ocean expansion.
- Extreme heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent.
- An increase in heat-related human deaths and infectious diseases and a higher risk of respiratory problems caused by deteriorating air quality.
- Reduced snow pack and streamflow in the Sierra Nevada, affecting winter recreation and water supplies.
- Potential increase in the severity of winter storms, affecting peak stream lows and causing flooding.
- Changes in growing season conditions that could affect California agriculture, causing variations in crop quality and yield.
- Changes in the distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

Sea-level rise is not a primary concern for the Central Valley because the valley is approximately 100 feet above sea level. However, as indicated above, ocean expansion associated with rising sea levels could affect the San Joaquin Delta and the proposed project. Therefore, Alternative 2 would be designed, engineered, and constructed in anticipation of potential effects of climate change and rising water levels to ensure that the project area would be unlikely to be affected by flooding. Although a range of potential climate change impacts may affect the project, including higher temperatures and an increased number of heat-stress days, the project itself would not exacerbate these issues. As identified above, the project would not increase the exposure of property or persons to the potential effects of climate change. The project site is not anticipated to be affected by future sea-level rise. Consequently, the impact of climate change on the project is considered less than significant. No mitigation is necessary.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact GHG-1: Generate Construction-Related GHG Emissions in Excess of SJVAPCD Thresholds (less than significant)

Construction of Alternative 3 would generate direct GHG emissions from the exhaust of mobile and stationary construction equipment as well as employees' vehicles and haul trucks. Estimated emissions resulting from construction of the project are summarized in Table 3.5-5.

Table 3.5-5. Alternative 3, Maximum Annual Construction Emissions (metric tons/year)

Year	CO_2e	Amortized CO_2e[a]
2017	745.0	24.8
2018	1,136.8	37.9
2019	0	0
Total Construction Emissions	1,881.8	62.7
SJVAPCD Zero-Equivalency Threshold	*NA*	*230*
SJVAPCD Threshold Exceeded?	*NA*	*No*

CO_2e = carbon dioxide equivalent.

[a] Yearly construction emissions were amortized over the anticipated 30-year operational lifespan of the proposed project for comparison to the SJVAPCD's zero-equivalency threshold of 230 metric tons of CO_2e per year.

As indicated in Table 3.5-5, construction of the project would generate a total of 1,881.8 metric tons of CO_2e per year. When amortized over the anticipated 30-year operational lifespan of the proposed project, these emissions would result in 62.7 metric tons of CO_2e per year. This is well below the SJVAPCD's zero-equivalency threshold of 230 metric tons of CO_2e per year and equivalent to adding 13 single-occupancy vehicles to the road during the construction period (U.S. Environmental Protection Agency 2014b). Because amortized emissions are below the SJVAPCD's zero-equivalency threshold, this impact is considered less than significant. No mitigation is necessary.

Impact GHG-2: Expose Property and Persons to the Physical Effects of Climate Change, Including Flooding, Public Health, or Wildfire Risk, or Other Impacts Resulting from Climate Change (less than significant)

Climate change is a complex phenomenon that has the potential to alter local climatic patterns and meteorology. Although modeling indicates that climate change will result globally and regionally in sea-level rise as well as changes in climate and rainfall, among other effects, there remains uncertainty with regard to characterizing precise *local* climatic characteristics and predicting precisely how various ecological and social systems will react to any changes in the existing climate at the local level. Regardless of this uncertainty in precise predictions, it is widely understood that substantial climate change is expected to occur in the future, although the extent will take further research to define.

Several impacts on the environment are expected throughout California as a result of global climate change. The extent of these effects is still being defined as climate modeling tools become more refined. Regardless of the uncertainty in precise predictions, it is widely understood that substantial climate change is expected to occur in the future. Potential climate change impacts in California and the San Joaquin Valley include the following.

- Rising sea levels along the California coastline, particularly in San Francisco and the San Joaquin Delta, due to ocean expansion.
- Extreme heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent.
- An increase in heat-related human deaths and infectious diseases and a higher risk of respiratory problems caused by deteriorating air quality.

- Reduced snow pack and streamflow in the Sierra Nevada, affecting winter recreation and water supplies.
- Potential increase in the severity of winter storms, affecting peak stream lows and causing flooding.
- Changes in growing season conditions that could affect California agriculture, causing variations in crop quality and yield.
- Changes in the distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

Sea-level rise is not a primary concern for the Central Valley because the valley is approximately 100 feet above sea level. However, as indicated above, ocean expansion associated with rising sea levels could affect the San Joaquin Delta and the proposed project. Therefore, Alternative 3 would be designed, engineered, and constructed in anticipation of potential effects of climate change and rising water levels to ensure that the project area would be unlikely to be affected by flooding. Although a range of potential climate change impacts may affect the project, including higher temperatures and an increased number of heat-stress days, the project itself would not exacerbate these issues. As identified above, the project would not increase the exposure of property or persons to the potential effects of climate change. The project site is not anticipated to be affected by future sea-level rise. Consequently, the impact of climate change on the project is considered less than significant. No mitigation is necessary.

3.6 Noise

This section describes the regulatory and environmental setting for noise in the study area. It also analyzes noise and vibration impacts that could result from implementing the proposed project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.6.1 Existing Conditions

3.6.1.1 Fundamentals of Noise and Vibration

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise can be 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). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient sound level. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary enormously within the range of human hearing, the logarithmic decibel scale is used to keep sound intensity numbers at a convenient and manageable level.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels, when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000 Hertz [Hz] to 8,000 Hz) range. However, it is widely accepted that people are able to begin to detect sound level changes of 3 dB for typical noisy environments. Further, a 10-dB increase is generally perceived as a doubling of loudness. Therefore, doubling sound energy (e.g., doubling the volume of traffic on a highway) would generally be perceived as a detectable, but not substantial increase in sound level.

The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called A-weighting. Because humans are less sensitive to low frequency sound than to high frequency sound, A-weighted decibel (dBA) levels deemphasize low frequency sound energy to better represent how humans hear. Table 3.6-1 summarizes typical A-weighted sound levels.

Table 3.6-1. Typical A-Weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock band
Jet flyover at 1,000 feet		
	100	
Gas lawnmower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60	
		Large business office
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20	
		Broadcast/recording studio
	10	
	0	

Source: California Department of Transportation 2009.
dBA = A-weighted decibel.
mph = miles per hour.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (L_{eq}), the minimum and maximum sound levels (L_{min} and L_{max}), percentile-exceeded sound levels (L_{xx}), the day-night sound level (L_{dn}), and the community noise equivalent level (CNEL). Below are brief definitions of these measurements and other terminology used in this section.

- **Sound**. A vibratory disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise**. Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Ambient noise**. The composite of noise from all sources near and far in a given environment exclusive of particular noise sources to be measured.
- **Decibel (dB)**. A unitless measure of sound. A sound level measurement in decibels describes the logarithmic ratio of a measured sound pressure level to a reference sound pressure level of 20 micropascals.
- **A-Weighted Decibel (dBA)**. An overall frequency-weighted sound level that approximates the frequency response of the human ear.
- **Maximum and Minimum Sound Levels (L_{max} and L_{min})**. The maximum or minimum sound level measured during a specified interval.
- **Equivalent Sound Level (L_{eq})**. L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The duration of the measurement is commonly indicated in the subscript; for example, a 1-hour L_{eq} sound level would be indicated as dBA L_{eq}(1h).

- **Exceedance sound level (L_{xx}).** The sound level exceeded XX% of the time during a sound level measurement period. For example, L_{90} is the sound level exceeded 90% of the time, and L_{10} is the sound level exceeded 10% of the time. L_{90} is typically considered to represent the ambient noise level.
- **Day-night level (L_{dn}).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
- **Community noise equivalent level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.

L_{dn} and CNEL values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent and are treated as such in this assessment. In general, human sound perception is such that a change in sound level of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving sound level.

For a point source such as a stationary compressor, sound attenuates based on geometry at rate of 6 dB per doubling of distance. For a line source such as free-flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance. Atmospheric conditions including wind, temperature gradients, and humidity can change how sound propagates over distance and can affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface such as grass attenuates at a greater rate than sound that travels over a hard surface such as pavement. The increased attenuation is typically in the range of 1 to 2 dB per doubling of distance. Barriers such as buildings and topography that block the line of site between a source and receiver also increase the attenuation of sound over distance.

Auditory and non-auditory effects can result from excessive or chronic exposure to elevated noise levels. Auditory effects of noise on people can include temporary or permanent hearing loss. Non-auditory effects of exposure to elevated noise levels include sleep disturbance, speech interference, and psychological effects such as annoyance. Land use compatibility standards for noise typically are based on research related to these non-auditory effects.

Vibration

In contrast to airborne sound, groundborne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually much lower than the threshold of human perception. Most perceptible indoor vibration is caused by sources within buildings, such as mechanical equipment while in operation, people moving, or doors slamming. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. Dynamic construction equipment, such as pile drivers, can create vibrations that radiate along the surface and downward into the earth. These surface waves can be felt as groundborne vibration. Vibration can result in effects that range from annoyance to structural damage. Variations in geology and distance result in different vibration levels with different frequencies and displacements.

Groundborne vibration can also be expressed in terms of root-mean-square (RMS) vibration velocity to evaluate human response to vibration levels. RMS is defined as the average of the squared

amplitude of the vibration signal. The vibration amplitude is expressed in terms of vibration decibels (VdB), which use a reference level of 1 micro-inch per second. Typical background vibration levels are between 50 and 60 VdB. The threshold of perception for most people is around 65 VdB. Vibration levels in the 70 to 80 VdB range are often noticeable but acceptable. Typically, vibration levels must exceed 100 VdB before building damage occurs. Historic structures, however, may have a damage threshold as low as 90 VdB.

3.6.1.2 Regulatory Setting

The following Federal, state, and regional and local regulations and technical guidelines related to noise may apply to implementation of the proposed project. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

Noise Control Act of 1972

The Noise Control Act of 1972 (Public Law 92 574) established a requirement for all Federal agencies to administer their programs in a manner that promotes an environment that is free of noise that jeopardizes public health or welfare. The U.S. Environmental Protection Agency (EPA) was given the following responsibilities.

- Providing information to the public regarding the identifiable effects of noise on public health and welfare.
- Publishing information on the levels of environmental noise to protect the public health and welfare with an adequate margin of safety.
- Coordinating Federal research and activities related to noise control.
- Establishing Federal noise emission standards for selected products distributed in interstate commerce.

U.S. Environmental Protection Agency Standards for Environmental Noise

In 1974, EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*," a comprehensive document that identifies noise levels consistent with the protection of public health and welfare against hearing loss, annoyance, and activity interference.

In response to the requirements of the Noise Control Act, EPA identified indoor and outdoor noise limits to protect public health and welfare. Outdoor L_{dn} limits of 55 dB and indoor L_{dn} limits of 45 dB were identified as desirable for protecting against speech interference and sleep disturbance in residential areas and at educational and health care facilities. The sound-level criterion for protecting against hearing damage in commercial and industrial areas is identified as the 24-hour L_{eq} value of 70 dB (both outdoors and indoors). Based on attitudinal surveys, EPA determined that a 5 dB increase in L_{dn} or L_{eq} is the minimum required for a change in community reaction (U.S. Environmental Protection Agency 1974).

The Noise Control Act also directed Federal agencies to comply with applicable Federal, state, interstate, and local noise control regulations. Although EPA was given a major role in disseminating information to the public and coordinating with Federal agencies, each Federal agency retained

authority to adopt noise regulations pertaining to agency programs. EPA can, however, require Federal agencies to justify their noise regulations in terms of Noise Control Act policy requirements.

Key Federal agencies that have adopted noise regulations and standards include those listed below.

- Housing and Urban Development: Noise standards for Federally funded housing projects.
- Federal Aviation Administration: Noise standards for aircraft.
- Federal Highway Administration (FHWA): Noise standards for Federally funded highway projects.
- Federal Transit Administration (FTA): Noise standards for Federally funded transit projects.
- Federal Railroad Administration: Noise standards for Federally funded rail projects.

Federal Transit Administration Standards for Construction Noise

FTA has developed methods for evaluating construction noise levels, which are discussed in the FTA Manual (Federal Transit Administration 2006). The FTA Manual does not contain standardized criteria for assessing construction noise impacts but includes guidelines for suggested noise limits for residential uses exposed to construction noise to describe levels that may result in an adverse community reaction. These guidelines are summarized in Table 3.6-2.

Table 3.6-2. FTA Construction Noise Impact Guidelines

Land Use	8-hour L_{eq} (dBA), Day	8-hour L_{eq} (dBA), Night
Residential	80	70
Commercial	85	85
Industrial	90	90

Source: Federal Transit Administration 2006.

Thresholds for construction noise may be set at the local level according to expected hours of equipment operation and the noise limits specified in the noise ordinances of the applicable jurisdictions.

State

Relevant state regulations, such as CEQA and the Caltrans Vibration Standards, are described in Chapter 5, *Regulatory Framework and Compliance*.

Local

City of Stockton City Code

Chapter 16.60 of the City of Stockton City Code prohibits the use of noise-producing construction equipment, equipment used for loading and unloading, and equipment used for demolition or repair work during the hours of 10 p.m. to 7 a.m. However, public health and safety activities including flood control operations on public rights-of-way are exempt from City provisions of the noise chapter at all times.

For land use compatibility, the City recognizes a noise standard for outdoor activity areas of 55 dBA L_{eq} during daytime hours (7 a.m. to 10 p.m.) and 45 dBA L_{eq} during nighttime hours (10 p.m. to 7 a.m.) The City also indicates a nighttime standard of 65 dBA L_{max} for a single-event maximum level.

San Joaquin County

Performance standards for San Joaquin County (Section 9-1025.9) prohibit excessive noise that is incompatible with nearby sensitive land uses. Construction activities conducted between 6:00 a.m. and 9:00 p.m. on any day are exempt from noise standards. Projects that will result in new stationary noise sources must not create daytime (7:00 a.m. to 10:00 p.m.) noise levels over 50 dBA L_{eq} or nighttime (10:00 p.m. to 7:00 a.m.) noise levels over 45 dBA L_{eq} at the nearest location of offsite outdoor activity (i.e., the property line of the nearest sound receiver).

3.6.1.3 Environmental Setting

The study area for noise is the same as the project area, described in Chapter 1, *Introduction,* and as shown in Plate 1-2.

Noise Sources in the Project Area

The project is located on the San Joaquin River across from Port of Stockton (Port) storage facilities. Existing noise sources in the project area include shipping activities and rail car movements at the Port, aircraft overflights from Stockton Metropolitan Airport, motorized boats along the San Joaquin River, heating and cooling equipment, and equipment used for landscape maintenance at residences and the Stockton Golf and Country Club. Traffic noise does not contribute significantly to noise levels in the area.

Surrounding Noise-Sensitive Land Uses

Sensitive land uses are generally defined as locations where people reside or where the presence of noise could adversely affect the use of the land. Sensitive land uses in the project area potentially affected by the noise and groundborne vibration from the project include neighborhoods of single-family residences along Atherton Cove near the golf course and at the end of Moreing Road. Recreational uses, including the Stockton Golf Club and Louis Park, include outdoor areas of frequent human use adjacent to the proposed project.

3.6.2 Environmental Impacts

3.6.2.1 Assessment Methods

The assessment of potential construction noise levels was based on methodology developed by the FTA (2006). Potential effects associated with construction of the proposed project would be temporary and intermittent. Noise levels produced by commonly used construction equipment are summarized in Table 3.6-3. Individual types of construction equipment are expected to generate maximum noise levels ranging from 76 to 101 dBA at a distance of 50 feet. The construction noise level at a given receiver location depends on the type of construction activity and the distance and shielding between the activity and noise-sensitive receivers.

Construction would primarily involve the use of impact and vibratory pile drivers, crawler cranes, barges, rollers and haul trucks. The source level is based on the L_{max} of equipment emission levels

developed by FTA. Utilization factors for construction noise are used in the analysis to develop L_{eq} noise exposure values. The L_{eq} value accounts for the energy-average of noise over a specified interval (usually 1 hour), and utilization factors represent the amount of time a type of equipment is used during a typical interval.

To characterize the source level of the worst-case noise condition during a given phase of construction, the three loudest pieces of equipment were assumed to operate simultaneously at a perimeter location, at a receiver distance of 50 feet. Pile drivers were assumed to operate up to 20% of a given hour, and other equipment such as cranes and trucks were assumed to operate up to 50% of a given hour.

Sheet piles would be driven using both impact and vibratory hammers during construction of intake facilities, and drilled piles would be used for other project components such as pumping plants, canal box culvert siphons, and barge unloading facilities. As shown in Table 3.6-3, the source level for an impact pile driver is 101 dBA at 50 feet. For most features, pile driving can be completed in less than 6 months. Vibration source levels for pile drivers are shown in Table 3.6-4.

Table 3.6-3. Commonly Used Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 Feet from Source
Pile-driver (Impact)	101
Pile-driver (Sonic)	96
Truck	88
Loader	80
Crawler Crane	80
Roller	80
Barge	85
Skid Steer	85
Auger Drill Rig (for drilled piles)	85
Crane, Derrick	88

Source: Federal Highway Administration 2006.
dBA = A-weighted decibel.

Table 3.6-4. Vibration Source Levels for Pile Drivers

Equipment		PPV at 25 Feet (inches/second)	Approximate Vibration Level (VdB)
Pile Driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile Driver (sonic)	Upper range	0.734	105
	Typical	0.170	93

Source: Federal Transit Administration 2006.
PPV = peak particle velocity.
VdB = root mean square velocity in decibels re 1 micro-inch/second.

3.6.2.2 Thresholds of Significance

The thresholds listed below are based on standard professional practice, FTA guidance, City of Stockton City Code standards, and on the criteria provided in State CEQA Guidelines Appendix G (14 California Code of Regulations 15000 et seq.). The project would be considered to have a significant impact on noise if it would result in any of the consequences listed below.

- Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies.
- Expose persons to or generate excessive groundborne vibration or groundborne noise levels.
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- Although construction and operation of flood control measures are exempt from local noise standards at all times, noise and vibration during construction would result in noise above existing ambient levels at nearby residences. Therefore, although noise from the project would not violate the local noise ordinance, effects were determined to result in a significant impact if any of the following exceedances occurred. Exceed 80 dBA L_{eq} (8 hours) of construction equipment noise at a residential location between the hours of 7 a.m. and 10 p.m.
- Exceed 45 dBA L_{eq} (1 hour) or 65 dBA L_{max} (single-event maximum) of construction equipment noise at outdoor activity areas between the hours of 10 p.m. and 7 a.m.

A vibration impact potentially resulting in building damage could occur at a PPV of 0.20 inch per second. This is based on the FTA criterion for non-engineered timber and masonry buildings. Therefore, the project would have a significant impact from groundborne vibration if it would cause vibration levels from construction equipment that are perceptible at a receiving residential use, potentially resulting in building damage.

As all construction would be conducted between the hours of 7 a.m. and 10 p.m., the nighttime noise standards are not discussed in this analysis.

3.6.2.3 Impacts and Mitigation Measures

No Project Alternative

The No Project Alternative represents the continuation of existing deficiencies in the project area's flood control structures. No flood risk-reduction measures would be implemented, and no construction-related effects related to noise or vibration would occur. The consequences of levee failure and flooding are described under the No Project Alternative description in Chapter 2, Section 2.4, including a summary of possible environmental effects.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact NOI-1: Exposure of Noise-Sensitive Land Uses to Noise during Construction of Wall Structures (significant and unavoidable)

Potential noise levels resulting from construction of the proposed project were evaluated by summing the noise levels of the three loudest pieces of equipment that would likely operate at the same time (impact pile driver, crane, and truck), and multiplying by a usage factor (percent of time equipment is in operation). The combined noise level is 95 dBA at 50 feet. Table 3.6-5 shows the estimated sound levels from construction activities as a function of distance, based on calculated point-source attenuation over hard (i.e., acoustically reflective) ground.

Residential land uses and outdoor activity areas are located adjacent to the project site, and construction activities are expected to occur in close proximity to noise-sensitive receivers at these locations. The results in Table 3.6-5 indicate that residences and outdoor activity areas located within about 275 feet of an active construction site could be exposed to construction noise in excess of the FTA-suggested daytime standard of 80 dBA L_{eq}.

Table 3.6-5. Predicted Noise Levels from Construction Activities

Distance Between Source and Receiver (feet)	Calculated L_{eq} (1hr)
50	95
100	89
200	83
275	80
300	79
400	77
500	75
750	71
1000	69
1500	65

Notes: Calculations are based on Federal Transit Administration 2006. Calculations do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further.

L_{eq} (1 hour) = hourly-equivalent sound level (over 1 hour).
dBA = A-weighted decibel.

Impact and/or vibratory pile-driving would result in a substantial increase in ambient noise levels at residential and recreational outdoor use areas within approximately 275 feet of pile driving sites. One residence and outdoor use areas at Stockton Golf and Country Club and Louis Park would potentially be exposed to levels over 80 dBA L_{eq} during construction. This direct impact would be significant. Implementation of Mitigation Measures NOI-MM-1a and NOI-MM-1b would reduce this impact, but it may not be practical in all cases to reduce this impact to a less-than-significant level. This impact would be, therefore, significant and unavoidable.

Mitigation Measure NOI-MM-1a: Employ Noise-Reducing Construction Practices during Construction

During construction, SJAFCA or its contractor will employ best practices to reduce construction noise at noise-sensitive land uses. Implementation of this measure will ensure that construction noise levels, as applicable, do not exceed 80 dBA (one-hour L_{eq}) during daytime hours (7:00 a.m. to 10:00 p.m.) and 65 dBA (single-event maximum) during nighttime hours (10:00 p.m. to 7:00 a.m.).

Measures used to limit construction noise include those listed below.

- Limiting above-ground noise-generating construction operations to daytime hours.
- Locating stationary equipment (e.g., generators, compressors, rock crushers, cement mixers, idling trucks) as far as possible from noise-sensitive land uses.
- Prohibiting gasoline or diesel engines from having unmuffled exhaust.
- Requiring that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation.
- Preventing excessive noise by shutting down idle vehicles or equipment.
- Using noise-reducing enclosures around noise-generating equipment.
- Selecting haul routes that affect the fewest number of people.
- Constructing barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission to noise-sensitive land uses. The barriers shall be designed to obstruct the line of sight between the noise-sensitive land use and on-site construction equipment.
- Rescheduling construction and reclamation activities to less-sensitive daytime hours when practical.
- Notifying adjacent residents in advance of construction work.

Mitigation Measure NOI-MM-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Prior to construction, SJAFCA will make a construction schedule available to residents living in the vicinity of the construction areas before construction begins, and designate a noise disturbance coordinator. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.

Impact NOI-2: Exposure of Sensitive Receptors to Groundborne Vibration during Construction (less than significant)

Operation of impact pile drivers would potentially result in high levels of groundborne vibration at nearby structures. Structures within 100 feet of pile driving activity could be exposed to vibration

levels of 0.20 inch per second PPV or greater. The nearest residence is approximately 250 feet from the gated fixed wall structure under Alternative 1. Groundborne vibration levels are not predicted to be perceptible at this location. Therefore, this direct impact would be less than significant. No mitigation is necessary.

Alternative 2: Atherton Cove Floodwall with Smith Canal Gate

Impact NOI-1: Exposure of Noise-Sensitive Land Uses to Noise during Construction of Wall Structures (significant and unavoidable)

As shown in Table 3.6-4, impact and/or vibratory pile-driving would result in a substantial increase in ambient noise levels at residential and recreational outdoor use areas within approximately 275 feet of pile driving sites. Residences facing Atherton Cove to the south and outdoor use areas at Stockton Golf Club and Louis Park would potentially be exposed to levels over 80 dBA L_{eq} during construction. A total of 18 residences, and outdoor use areas at Stockton Golf and Country Club and Louis Park would potentially be exposed to levels over 80 dBA L_{eq} during construction. This direct impact would be significant. Implementation of Mitigation Measures NOI-MM-1a and NOI-MM-1b would reduce this impact, but it may not be practical in all cases to reduce this impact to a less-than-significant level. This impact would be, therefore, significant and unavoidable.

Mitigation Measure NOI-MM-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to the discussion of Mitigation Measure NOI-MM-1a under Alternative 1, Impact NOI-1.

Mitigation Measure NOI-MM-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to the discussion of Mitigation Measure NOI-MM-1b under Alternative 1, Impact NOI-1.

Impact NOI-2: Exposure of Sensitive Receptors to Groundborne Vibration during Construction (significant and unavoidable)

Operation of impact and vibratory pile drivers would result in high levels of groundborne vibration at nearby residences. Residences facing Atherton Cove to the south would potentially be exposed to vibration levels of 0.20 inch per second PPV or greater. Therefore this direct impact would be significant.

Implementation of Mitigation Measure NOI-MM-2 would reduce this impact, but it may not be practical in all cases to reduce this impact to a less-than-significant level. This impact would be significant and unavoidable.

Mitigation Measure NOI-MM-2: Employ Vibration-Reducing Construction Practices during Construction of Water Conveyance Facilities

During construction, SJAFCA or its contractors will implement vibration-reducing construction practices where feasible such that vibration from pile driving does not exceed 0.20 inch per second PPV at nearby residences.

SJAFCA or its contractors will ensure that the following measures are implemented to reduce adverse effects and/or significant effects as described above if the measures are applicable and feasible. Not all measures listed below may be feasible or applicable to all contractors. Rather, these measures serve as an overlying mitigation framework to be used for specific construction practices. The applicability of measures listed below would vary based on the location, timing, nature, and feasibility of each activity.

- Locating equipment as far as practical from vibration-sensitive (and noise-sensitive) land uses (at least 150 feet).
- Using alternative pile driving methods such as vibratory driving, hydraulic press-in driving, or pre-drilled pile holes. Use of such alternative measures would result in lower levels of groundborne vibration than pile driving using impact methods.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact NOI-1: Exposure of Noise-Sensitive Land Uses to Noise during Construction of Wall Structures (significant and unavoidable)

As shown in Table 3.6-4, impact and/or vibratory pile-driving would result in a substantial increase in ambient noise levels at residential and recreational outdoor use areas within approximately 275 feet of pile driving sites. Residences on Atherton Island to the south and outdoor use areas at Stockton Golf Club and Louis Park would potentially be exposed to levels over 80 dBA L_{eq} during construction. A total of eight residences and outdoor use areas at Stockton Golf and Country Club and Louis Park would potentially be exposed to levels over 80 dBA L_{eq} during construction. This direct impact would be significant. Implementation of Mitigation Measures NOI-MM-1a and NOI-MM-1b would reduce this impact, but it may not be practical in all cases to reduce this impact to a less-than-significant level. This impact would be, therefore, significant and unavoidable.

Mitigation Measure NOI-MM-1a: Employ Noise-Reducing Construction Practices during Construction

Please refer to the discussion of Mitigation Measure NOI-MM-1a under Alternative 1, Impact NOI-1.

Mitigation Measure NOI-MM-1b: Prior to Construction, Initiate a Complaint/Response Tracking Program

Please refer to the discussion of Mitigation Measure NOI-MM-1b under Alternative 1, Impact NOI-1.

Impact NOI-2: Exposure of Sensitive Receptors to Groundborne Vibration during Construction (significant and unavoidable)

Operation of impact and vibratory pile drivers would result in high levels of groundborne vibration at nearby residences. Residences located on Atherton Island would potentially be exposed to vibration levels of 0.20 inch per second PPV or greater. Therefore, this direct impact would be significant.

Implementation of Mitigation Measure NOI-MM-2 would reduce this impact, but not it may not be practical in all cases to reduce this impact to a less-than-significant level. This impact would be significant and unavoidable.

Mitigation Measure NOI-MM-2: Employ Vibration-Reducing Construction Practices during Construction of Water Conveyance Facilities

Please refer to the discussion of Mitigation Measure NOI-MM-2 under Alternative 2, Impact NOI-2.

3.7 Vegetation and Wetlands

This section describes the regulatory and environmental setting for vegetation and wetland resources in the study area. It also analyzes environmental impacts on vegetation and wetlands that could result from implementing the proposed project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.7.1 Existing Conditions

3.7.1.1 Regulatory Setting

The following Federal, state, and local regulations and technical guidelines related to vegetation and wetlands may apply to implementation of the proposed project. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

Clean Water Act

The CWA is administered by the U.S. Environmental Protection Agency (EPA) and USACE. The discharge of dredged or fill material into waters of the United States is subject to permitting under CWA Section 404. Certification from the applicable Regional Water Quality Control Board also is required when a proposed activity may result in discharge into waters of the United States, pursuant to CWA Section 401 and EPA's Section 404(b)(1) guidelines.

Executive Order 11990: Protection of Wetlands

Executive Order (EO) 11990, signed May 24, 1977, directs all Federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately owned wetlands. It further requires that Federal agencies support a policy to minimize the destruction, loss, or degradation of wetlands.

Executive Order 13112: Invasive Species

EO 13112, signed February 3, 1999, directs all Federal agencies to prevent and control the introduction of invasive species in a cost-effective and environmentally sound manner. The EO requires consideration of invasive species in National Environmental Policy Act analyses, including their identification and distribution, their potential effects, and measures to prevent or eradicate them.

State

California Native Plant Protection Act

The California Endangered Species Act (CESA) defers to the California Native Plant Protection Act (CNPPA) to ensure that state-listed plant species are protected when state agencies are involved in

projects subject to CEQA. Plants listed as rare under CNPPA are not protected under CESA, but rather under CEQA.

Sections 1600–1603 of the California Fish and Game Code

Sections 1600–1603 of the California Fish and Game Code (Fish & Game Code) state that it is unlawful for any person or agency to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources, or to use any material from the streambeds without first notifying California Department of Fish and Wildlife (CDFW). A Lake and Streambed Alteration Agreement (SAA) must be obtained if effects are expected to occur.

The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports wildlife, fish, or other aquatic life. This definition includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife, extending to the tops of banks and often including the outer edge of riparian vegetation canopy cover. Riparian trees that have a diameter of 6 inches or greater also fall within CDFW's jurisdiction.

Central Valley Flood Protection Plan-Levee Vegetation Management Strategy

Under the Central Valley Flood Protection Act of 2008, the California Department of Water Resources (DWR) developed the 2012 Central Valley Flood Protection Plan (CVFPP) as the foundation for the statewide FloodSAFE California initiative (California Department of Water Resources 2012a). Part of the CVFPP is a strategy for managing levee vegetation. Based on this strategy, existing trees on levees will be allowed to live out their normal life cycles unless they pose an unacceptable threat to levee integrity.

Urban Levee Design Criteria

The Urban Levee Design Criteria (ULDC) are intended to provide engineering guidance and criteria for levees required to provide an urban level of flood protection (200-year flood) (California Department of Water Resources 2012b). The ULDC also correspond to the CVFPP levee vegetation management strategy. With regard to levee improvements, the ULDC state the following:

> In cases of levee repair or improvement, vegetation shall be removed as required to meet objectives of the specific project. Vegetation removed as part of direct construction activities may not be replaced in the vegetation management zone. However, vegetation on other sections of the levee, not affected by the construction activity may remain in place, natural revegetation may be allowed outside of the vegetation management zone, and replanting may be allowed. . . Trees and other woody vegetation may be: (1) planted, and (2) allowed to naturally revegetate on a landside planting berm. Only the portion of the landside planting berm that is both 15 feet or more from the landside levee slope and 15 feet or more from the landward top of the planting berm may be planted and allowed to naturally revegetate.

Regional and Local

San Joaquin County General Plan

The Vegetation, Fish, and Wildlife Habitat subsection of the *San Joaquin County Wide General Plan* (1992) contains objectives and policies related to protecting and improving the county's vegetation

resources that could apply to the proposed project. These policies aim to avoid cumulatively significant impacts on vegetative resources; prevent net loss of riparian or wetland habitat as a result of development and prohibit such development except under certain conditions; replace any lost vegetation with native species; and monitor and maintain habitat that is required to be protected, restored, or created as mitigation for a project's impacts in accordance with a County-approved program. The general plan also has a policy of maximizing the long-term preservation of significant oak groves, but no significant oak groves are designated in the Smith Canal area.

San Joaquin County Riparian Habitat Ordinance

The San Joaquin County riparian habitat ordinance (Chapter 9-1510 of the County Code) protects riparian habitat by requiring a mitigation plan to replace, preserve, or develop new riparian habitat for any that is removed or degraded. The required plan must show the existing habitat, the proposed removal or degradation of the habitat, and any habitat to be retained, and also describe the measures that will be used to protect retained habitat. For mitigation, either the plan must identify mitigation sites, which can be onsite or offsite, or the applicant must contribute a fee to establish and maintain off-site riparian habitat.

City of Stockton General Plan

The *2035 Stockton General Plan* (2007) includes a goal (NCR-2) for the preservation and protection of biological resources. Several policies relevant to vegetation and wetland resources potentially affected by the Smith Canal Gate Project support this goal. These policies address protecting sensitive habitats, managing wetlands and other sensitive habitats, and mitigating for impacts on sensitive habitats. The policies call for carefully reviewing development proposals and development planning to avoid conflicts with special-status habitats or species or jurisdictional wetlands, requiring that wetland delineations and biological studies be conducted during the development application process, requiring implementation of appropriate mitigation measures, and encouraging planning of native vegetation. In addition, policies aim to minimize disturbance of levee vegetation and ensure replacement of such vegetation is consistent with flood control and reclamation district constraints and call for the City to approve only those activities in the Delta and related waterways that are consistent with the sensitive environmental characteristics of these areas.

San Joaquin Multi Species Habitat Conservation and Open Space Plan

The City's policies also call for continued coordination with the San Joaquin Council of Governments in complying with the terms of the Multi Species Habitat Conservation and Open Space Plan [SJMSCP] to protect critical habitat areas in the vicinity. Until a major amendment to the existing SJMSCP is adopted to incorporate all areas of the City's proposed sphere of influence into the SJMSCP coverage area, the City also has a policy that it will use the requirements of the SJMSCP to ensure effective protection of natural resources, especially in regard to fee collection for acquisition of habitat preserves, the implementation of mitigation measures, and consultation with resource agencies for incidental take coverage.

Stockton Heritage Tree Protection

The City of Stockton Municipal Code (Chapter 16.72.245) protects heritage trees from harm, injury, defacing, destruction, or removal. Heritage trees are defined as any valley oak, coast (California) live oak, or interior live oak tree with a trunk diameter of 16 inches or more, as measured at 24 inches above grade. The diameter for trees with multiple trunks equals the combined diameter of all trunks

measuring 6 inches or more. A permit is required for removal of a heritage tree under Chapter 16.130.010 of the code, except in the case of an emergency. Permitted removal of a heritage tree requires replacement of the tree at a ratio of 3 replacement trees for each heritage tree removed. Replacements must be at least 15-gallon container stock and planted on the same parcel as the removed heritage tree, if possible. If replacement cannot be on the same parcel, it can be planted in a City park or another approved site.

3.7.1.2 Environmental Setting

The study area for vegetation and wetlands is the same as the project area, described in Chapter 1, *Introduction*, and shown in Plates 1-2 and 2-1. This area includes an approximately 100-foot-wide buffer zone around the construction area, as well as proposed staging areas, to support a full assessment of potential direct and indirect impacts on most sensitive vegetation and wetland resources (Plate 3.7-1).

The study area includes Smith Canal, Atherton Cove and the San Joaquin River. Smith Canal originates at Yosemite Lake, approximately 2 miles upstream of the study area, and drains to the San Joaquin River. The lake is surrounded by fencing, and the banks of the lake and the canal are covered with riprap for erosion control. Native and nonnative trees border most of the lake and canal.

The study area occurs within the Great Central Valley subdivision of the California Floristic Province in San Joaquin County (Baldwin 2012:41-43). The topography of the portions of the study area adjacent to the levees is relatively level, and elevations in the study area range from less than 5 feet to approximately 15 feet above mean sea level.

Resource Identification Methods

The methods used to identify vegetation and wetland resources in the study area consisted of a prefield investigation, reconnaissance-level site visits, mapping of the current vegetation cover types, arborist survey, and a delineation of waters of the United States. Each of these components is described below.

Special-status plant surveys have not yet been conducted in the study area, and the staging area located adjacent to the San Joaquin River was not accessible for the delineation of waters of the United States. Not all parcels in the study area were granted access permission, which limited the areas available for the surveys. A list of plant species observed during all surveys is provided in Appendix E.

Prefield Investigation

Prior to conducting the reconnaissance-level site visits, an ICF International (ICF) botanist/wetland ecologist reviewed existing resource information related to the project to evaluate whether sensitive species or other sensitive biological resources (e.g., protected trees, wetlands) could occur in the study area and region. The sources listed below were reviewed.

- A list of sensitive species from the California Natural Diversity Database (CNDDB) records search for the U.S. Geological Survey (USGS) 7.5-minute Stockton West, Terminous, Lodi South, Stockton East, Manteca, Waterloo, Holt, Union Island, and Lathrop quadrangles (California Department of Fish and Wildlife 2014).

- The California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Plants of California for the same USGS quadrangles listed above (California Native Plant Society 2014).
- A list of threatened and endangered species for the Stockton West quadrangle from the FWS Sacramento Field Office website (U.S. Fish and Wildlife Service 2014).

This information was used to develop lists of special-status species and sensitive vegetation communities that could be present in the project region. Species from the lists were considered if they were known to occur within an approximately 10-mile radius of the study area.

No federal, state, or local regulatory agencies were contacted prior to conducting the prefield investigation.

Reconnaissance-Level Site Visits and Vegetation Mapping

An ICF botanist and wetland ecologist conducted reconnaissance-level site visits on October 8 and 22, 2014 to evaluate existing vegetation and wetland resources and to map vegetation communities in the study area. One field visit was conducted in the parts of the study area accessible by land, and the second visit was conducted by boat. The field visits were conducted to complete the actions below.

- Identify land cover types.
- Evaluate whether potential habitat is present for special-status plant species that have been identified in the project region.
- Identify and delineate potential waters of the United States and/or state, including wetlands (see discussion below).
- Identify invasive plant species present in the study area.

The proposed staging area adjacent to the San Joaquin River was not accessible at the time of the surveys, and a complete assessment of the plant species could not be conducted. However, the general vegetation community type was identified by observation through a fence at the east end of the staging area.

Arborist Survey

An ICF certified arborist conducted tree surveys on October 21 and 22, 2014. The arborist survey methods followed standard professional practices, and all tree location data were collected with a global positioning system unit with sub-meter accuracy. For each tree in the study area with a diameter of at least 3 inches, the arborist recorded the species, number of trunks, diameter at breast height (diameter at 4.5 feet above the ground surface, unless otherwise noted, measured with a calibrated diameter-at-breast-height tape), tree height, dripline diameter, and the health and vigor of the tree.

Delineation of Waters of the United States

An ICF botanist/wetland ecologist conducted site visits throughout the accessible parts of the study area for the purpose of delineating all potential waters of the United States, including wetlands, on October 8 and 22, 2014. The primary portion of the study area that was not included in the delineation is the staging area located adjacent to the San Joaquin River and west of I-5. The delineation was conducted in accordance with guidance provided in the 1987 *U.S. Army Corps of*

Engineers Wetlands Delineation Manual (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (U.S. Army Corps of Engineers 2008), and 33 Code of Federal Regulations (CFR) 328.3(e) and 329.11(a)(1). The delineation has not yet been verified by USACE.

Land Cover Types

The study area is mostly landscaped or developed, primarily consisting of the residential areas on Atherton Island and along Atherton Cove and Smith Canal; the Stockton Golf and Country Club; Dad's Point; and Louis Park. A total of six land cover types were identified in the study area. Table 3.7-1 includes the mapped acreages for each land cover type.

Four of the land cover types are considered natural communities: nonnative riparian, tidal emergent wetland, tidal perennial drainage, and ruderal grassland. The other two land cover types, developed/landscaped and ditch, are associated with human activities. Each of the land cover types is discussed below and shown on Plate 3.7-1, with the exception of ruderal grassland, which occurs in the proposed staging area adjacent to the San Joaquin River, shown on Plate 2-1.

Table 3.7-1. Land Cover Types and Acreage in the Smith Canal Study Area

Smith Canal Project Land Cover Type	Acreage in the Study Area
Nonnative riparian woodland	1.72
Tidal emergent wetland	0.07
Tidal perennial drainage	39.40
Ditch	0.01
Ruderal grassland	42.00
Developed/landscaped	13.06
Total acreage in study area	96.26

Nonnative Riparian Woodland

Riparian communities in general are some of the richest community types in terms of structural and biotic diversity of any plant community found in California. Riparian vegetation provides important functions for wildlife habitat, wildlife movement, pollutant filtration that protects water quality, and reduction in the severity of floods by stabilizing riverbanks. Despite widespread disturbances resulting from urbanization, agricultural conversion, and grazing, riparian forests remain important wildlife resources because of their scarcity regionally and statewide and because riparian communities are used by a large variety of wildlife species.

Nonnative riparian woodland occurs as a narrow band on the bank of the San Joaquin River south of the Stockton Golf and Country Club, along the edge of Dad's Point, and on the south bank of Smith Canal (Plate 3.7-1). Riparian trees also occur in a sparse, narrow band along the edge of the proposed staging area adjacent to the San Joaquin River. At the base of the banks—and on entire banks in some areas—riprap covers the surface, and some riparian vegetation grows from between the pieces of riprap.

Although the trees are predominantly nonnative in this community, some native species also occur. The most predominant tree species are blackwood acacia (*Acacia melanoxylon*), tree of heaven

(*Ailanthus altissima*), pecan (*Carya illinoinensis*), Chinese hackberry (*Celtis sinensis*), fig (*Ficus carica*), Arizona ash (*Fraxinus velutina*), honeylocust (*Gleditsia tricanthos*), northern California black walnut (*Juglans hindsii*), Japanese privet (*ligustrum japonicum*), white mulberry (*Morus alba*), Fremont's cottonwood (*Populus fremontii* ssp. *fremontii*), holly oak (*Quercus ilex*), valley oak (*Quercus lobata*), sandbar willow (*Salix exigua*), Goodding's black willow (*Salix gooddingii*), arroyo willow (*Salix lasiolepis*), black locust (*Robinia pseudoacacia*), Siberian elm (*Ulmus pumila*), and California fan palm (*Washintonia filifera*). The shrub layer contains Virginia creeper (*Parthenocissus quinquefolia*), Himalayan blackberry (*Rubus armeniacus*), and tree saplings.

Some of the riparian trees meet the definition of heritage trees protected under the City of Stockton municipal code (see Plate 3.7-1). The San Joaquin County Riparian Habitat Ordinance also protects overall riparian habitat. CDFW has adopted a no-net-loss policy for riparian habitat values, and FWS mitigation policy identifies California's riparian habitats in Resource Category 2, for which no net loss of existing habitat value is recommended (46 FR 7644).

Tidal Emergent Wetland

One tidal emergent wetland occurs at the tip of Dad's Point in the San Joaquin River (Plate 3.7-1). Wetland vegetation in the wetland consisted of hard-stem bulrush (*Schoenoplectus acutus*). This wetland is considered a water of the United States by USACE because it is hydrologically connected to the San Joaquin River. Wetlands are protected under local, state, and Federal regulations.

Tidal Perennial Drainage

Tidal perennial drainage occurs in the study area in the San Joaquin River, Atherton Cove, and Smith Canal (Plate 3.7-1). Most of the drainage area is unvegetated, with the exception of the tidal emergent wetland that extends in the San Joaquin River, as described above, small patches of hard-stem-bulrush at several places along the base of the levee banks, and a narrow band of nonnative riparian woodland growing below the mean high water line on the south bank of Smith Canal. All slopes along the tidal perennial drainages are protected from erosion by riprap placed along the base of the slopes. The riprap extends several feet above and below the water line. Riparian vegetation also borders most of the length of the perennial drainages, as described above. Most of the perennial drainages are open water with patches of invasive weeds, such as Brazilian waterweed (*Egeria densa*) and water-milfoil (*Myriophyllum* sp.), which are rooted in the drainage beds, and water hyacinth (*Eichhornia crassipes*), which floats on the water surface. Densely covered areas of water hyacinth occur at the end of Atherton Cove and surrounding the Louis Park boat launch area. The San Joaquin River, Atherton Cove, and Smith Canal are protected under state regulations as waters of the State and under Federal regulations as waters of the United States.

Ditch

One small, 2-foot wide ditch occurs in the study area and functions to carry run-off onto Dad's Point from the adjacent boat ramp (Plate 3.7-1). The ditch primarily supports Bermudagrass (*Cynodon dactylon*) and dallisgrass (*Paspalum dilatatum*), with a small area of Himalayan blackberry (*Rubus armeniacus*), and cattail (*Typha* sp.). A drainage pipe crosses beneath this ditch connecting the Louis Park boat launch with the San Joaquin River. The ditch was excavated as a drainage feature in a nonwetland area, does not meet wetland criteria, and is not considered a wetland or other water of the United States.

Ruderal Grassland

Ruderal grassland occurs throughout most of the proposed staging area adjacent to the San Joaquin River. This area was not accessed during the vegetation mapping surveys but was viewed from the edge in order to identify the land cover as ruderal grassland. A list of plant species was not compiled for this area, but evident species seen from one edge included sparse cover of Russian thistle (*Salsola tragus*), Canadian horseweed (*Erigeron canadensis*), and annual grasses. The ruderal grassland area was most recently used as a staging area in 2007. Based on review of available aerial photographs, the staging area was in continuous use between 2002 and 2007. The site was entirely graded in 2002 and was then covered by equipment and construction materials in 2006. The current vegetation, therefore, is composed of weedy species that have established since 2007.

Developed/Landscaped

The developed/landscaped land cover type was applied to golf course, park, and residential parcels that include houses and other structures and where the vegetation consists of mostly landscaped, horticultural species. This land cover type also includes roads. This land cover type occurs throughout the study area (Plate 3.7-1).

Waters of the United States, Including Wetlands

The study area contains waters of the United States consisting of the San Joaquin River, Atherton Cove, and Smith Canal, which are traditional navigable waters (TNWs), and a tidal emergent wetland at the tip of Dad's Point. A preliminary delineation was conducted and will be submitted to USACE to determine its jurisdiction in the study area.

Special-Status Plant Species

Special-status plants are species that are legally protected under CESA, ESA, or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing. For the purposes of this Draft EIR, sensitive plants include those listed below.

- Species listed or proposed for listing as threatened or endangered under ESA (50 CFR 17.12 [listed plants] and various notices in the *Federal Register* [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under ESA (79 Federal Register 72450 December 5, 2014).
- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations [CCR] 670.5).
- Species that meet the definitions of rare or endangered under the State CEQA Guidelines Section 15380.
- Plants listed as rare under the CNPPA (Fish & Game Code Section 1900 et seq.).
- Plants considered by CNPS to be "rare, threatened, or endangered in California" (Lists 1B and 2, California Native Plant Society 2014).
- Plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4, California Native Plant Society 2014), which may be included as special-status species on the basis of local significance or recent biological information.

Special-status plant species identified with potential to occur in the study area were based on the presence of suitable habitat and microhabitat. Species presumed absent from the study area are those without suitable habitat or microhabitat.

Twenty special-status plant species were identified as occurring in the project region (California Department of Fish and Wildlife 2014; California Native Plant Society 2014; U.S. Fish and Wildlife Service 2014). The status, distribution, habitat requirements, and identification period of the twenty species are shown in Appendix E.

- Eight species occur in habitats (grasslands, vernal pools) that are not present in the study area: heartscale, San Joaquin spearscale, big tarplant, round-leaved filaree, bristly sedge, palmate-bracted bird's-beak, recurved larkspur, and caper-fruited tropidocarpum.
- Six species have habitat present in the study area, but no suitable microhabitat (seasonal wetlands, mudflats, alkaline marsh, freshwater marsh) is present and/or the habitat is too disturbed by riprap or landscaping (alkali milk-vetch, Delta button-celery, Mason's lilaeopsis, Delta mudwort, side-flowering skullcap, and saline clover).
- Six species have potential to occur at drainage edges in the study area: watershield, slough thistle, woolly rose-mallow, Delta tule pea, Sanford's arrowhead, and Suisun Marsh aster.

Field surveys were conducted in October, which is outside the primary identification period (blooming period) for watershield, slough thistle, woolly rose-mallow, and Delta tule pea. Therefore, the presence or absence of those species within the study area could not be verified.

Invasive Plant Species

Invasive plants in the study area were identified based on the California Department of Food and Agriculture *Pest Ratings of Noxious Weed Species and Noxious Weed Seed* (California Department of Food and Agriculture 2014) and the California Invasive Plant Council's California Invasive Plant Inventory (California Invasive Plant Council 2006). The list of plant species observed provided in Appendix E identifies which species are included on either of these lists. Although numerous nonnative species occur throughout the study area, the most common and invasive species observed were as follows.

- Giant reed (*Arundo donax*) in riparian habitat on Dad's Point and at Louis Park.
- Pampas grass (*Cortaderia selloana*) in riparian habitat at Louis Park and in landscaping on Atherton Island.
- Black locust in the riparian habitat on Dad's Point.
- Brazilian waterweed, water hyacinth, and water-milfoil in the tidal perennial drainages.

Of these species, water hyacinth is the most problematic species in the study area. Water hyacinth spreads both through the use of stolons, or runners, and by seed. Water hyacinth seed may remain viable for up to 20 years, making removal of the species challenging. Mats of water hyacinth over 2 acres in extent were observed in the study area at the end of Atherton Cove and in the Louis Park boat launch during the site visits on October 8 and 22, 2014. Water hyacinth reduces dissolved oxygen and has a negative impact on biological communities. The California Department of Boating and Waterways (DBW) uses herbicides as part of their Water Hyacinth Control Program but is not able to cover all parts of the Delta every year. In 2014, the Port of Stockton contracted with Aquatic Harvesting, Inc. to mechanically remove water hyacinth from the Port and the waterfront in

downtown Stockton. The removal was accomplished by using an aquatic weed harvester, and the removed vegetation was piled on land to decompose and/or be used as compost. Water hyacinth reproduces mostly vegetatively, but also produces seeds, which can remain viable for up to 20 years (Batcher 2000; DiTamaso et al. 2013). The surface area of water hyacinth mats can double in size in a week (California Department of Boating and Waterways 2009; DiTomaso et al. 2013). Eradication of water hyacinth is unlikely, but annual control of the population in the study area is feasible.

3.7.2 Environmental Impacts

This section describes the environmental impacts of the proposed project on vegetation and wetlands. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, where appropriate.

3.7.2.1 Assessment Methods

This evaluation of vegetation and wetlands is based on professional standards and information cited throughout the section. The key impacts were identified and evaluated based on the environmental characteristics of the study area and the magnitude, intensity, and duration of activities related to the construction and operation of the project. Impacts on land cover types were evaluated quantitatively. The land cover type boundaries were either mapped in the field using a handheld GPS unit (for boundaries of the tidal perennial drainages) or drawn onto 1" = 200' scale color aerial photographs (2010) and digitized into ArcMap Version10.2. Impacts were then calculated from the GIS data by identifying the areas of overlap between the permanent impact area for each alternative and the land cover type (Plates 3.7-2a through 3.7-2c). Losses of native oak and heritage trees were based on the areas of overlap between the disturbance area and the tree trunk locations. Invasive species were noted on the species observed list, and locations of substantial infestation were noted on the field maps.

Vegetation and wetland resources could be directly and indirectly affected by the project alternatives. The following types of activities could cause varying degrees of effects on these resources.

- Installation of cofferdam, channel dewatering, and installation of temporary water-pumping and storage structures.
- Vegetation removal for gate construction and compliance with ULDC levee vegetation requirements.
- Grading and fill placement during construction and installation of the project features—gate structure and control building, fixed wall, Dad's Point improvements, and culverts under Moreing Road.
- Temporary stockpiling and sidecasting of soil, construction materials, or other construction wastes.
- Soil compaction, dust, and water runoff from the construction site into adjacent areas.
- Runoff of herbicides, fertilizers, diesel fuel, gasoline, oil, raw concrete, or other toxic materials used for levee construction, operations, and maintenance into sensitive biological resource areas (e.g., riparian habitat, drainages).

- Placement of rock slope protection on the waterside of Dad's Point where the grade would be raised (Alternative 1 only).
- Operation and maintenance activities, including placement of additional fill between the dual sheet piles.

Assumptions

- There would be no indirect impacts on upstream Smith Canal and Yosemite Lake because the hydrology would not be substantially modified (see discussion in Section 3.1.2.2 in Section 3.1 *Flood Risk, Hydrology, and Geomorphology*).
- Disposal of project debris at either of the two permitted disposal sites would not cause any additional impacts on vegetation or wetland resources.
- The proposed staging area in Louis Park does not support any sensitive biological resources. The proposed staging area located adjacent to the San Joaquin River was not accessible for field surveys, but it supports weedy vegetation and has low potential to support wetlands or drainages, based on review of aerial photographs. If preconstruction surveys identify any sensitive biological resources in this area, they would be avoided and no impacts would occur.
- Access to the construction area is via existing roads and would not impact sensitive biological resources.
- Raising the grade on Dad's Point under Alternative 1 would not require placement of a sheet pile wall, concrete retaining wall, or other structures below the mean high water line.
- The developed/landscaped cover type is not a sensitive biological resource, and impacts on this cover type are not discussed in the project impacts below.
- ULDC requirements would apply to Dad's Point only under Alternative 1, which would result in Dad's Point being a flood control levee. Under Alternatives 2 and 3, ULDC requirements would apply only to the existing levees along Smith Canal.
- Native trees on Dad's Point would be retained under Alternatives 2 and 3. Under Alternative 1, however, the trees could require removal in order to comply with ULDC requirements. The tree removal has not yet been confirmed, but this analysis assumes the worst case, that the native trees on Dad's Point would be removed for Alternative 1.

3.7.2.2 Thresholds of Significance

The thresholds listed below are based on standard professional practice and on the criteria provided in State CEQA Guidelines Appendix G (14 CCR 15000 et seq.). The proposed project would be considered to have a significant impact on vegetation and wetlands if it would result in any of the following consequences.

- Have a significant impact, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by CDFW or FWS.
- Have a significant impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or FWS.

- Have a significant impact on federally protected wetlands or other waters of the United States as defined by CWA Section 404 (including, but not limited to, marshes and vernal pools) or on waters of the state regulated by the Regional Water Quality Control Board through direct removal, filling, hydrological interruption, or other means.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

3.7.2.3 Impacts and Mitigation Measures

No Project Alternative

Under the No Project Alternative, no flood risk–reduction measures would be implemented, and no construction-related impacts on vegetation or wetlands would occur. Future high-water events would temporarily inundate existing nonnative riparian vegetation and tidal emergent wetland as part of the natural conditions. However, no substantial loss of habitat or long-term impacts of flooding on vegetation or waters of the United States would be expected to occur. Similarly, no action would be taken to reduce the presence of nonnative and invasive plant species presently occurring at the project site. The consequences of levee failure and flooding are described under the No Project Alternative description in Chapter 2, *Proposed Project and Alternatives*, Section 2.4, including a summary of possible environmental effects.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact VEG-1: Loss of Special-Status Plants (less than significant with mitigation)

The construction of Alternative 1 could affect special-status plants. If special-status plants occur in the study area, they would occupy habitat at the edge of tidal perennial drainages, potentially where construction of the gated fixed wall structure would occur. Placement of the sheet pile walls could result in the removal of special-status plants, if they are present. Use of the proposed staging area that is adjacent to the San Joaquin River for receiving materials transported by barge could affect special-status plants, if any occur on the banks where barges would access the area. There is low potential for any special-status plant species in the interior of the staging area due to the levels of disturbance in the past 13 years. Although the study area has low potential to support special-status plants, surveys did not correspond to the blooming period of all special-status species with potential to occur in the study area, and not all areas were accessible; therefore, the conclusion that they are absent could not be absolutely confirmed. Loss of special-status plants would be a significant impact.

Implementation of Mitigation Measures VEG-MM-1a, VEG-MM-1b, VEG-MM-1c, VEG-MM-1d, and VEG-MM-1e would reduce this direct impact to a less-than-significant level.

Mitigation Measure VEG-MM-1a: Conduct Floristic Surveys for Special-Status Plants during Appropriate Identification Periods

SJAFCA will retain a qualified botanist to survey the study area to document the presence or absence of special-status plants before project implementation. The botanist will conduct a floristic survey that follows the CDFW botanical survey guidelines (California Department of Fish and Game 2009). All plant species observed will be identified to the level necessary to determine whether they qualify as special-status plants or are plant species with unusual or significant range extensions. The guidelines also require that field surveys be conducted when

special-status plants that could occur in the area are evident and identifiable, generally during the blooming period. To account for special-status plant identification periods, a field survey will be conducted prior to any project construction in June or July during the year of construction.

If any special-status plants are identified during the surveys, the botanist will photograph and map locations of the plants, document the location and extent of the special-status plant population on a CNDDB Survey Form, and submit the completed Survey Form to the CNDDB. The amount of compensatory mitigation required will be based on the results of these surveys, as described in Mitigation Measure VEG-MM-1b.

Mitigation Measure VEG-MM-1b: Avoid or Compensate for Effects on Special-Status Plants

If one or more special-status plants are identified in the project area during preconstruction surveys, conducted pursuant to Mitigation Measure VEG-MM-1a, SJAFCA will redesign or modify proposed project components of the project to avoid indirect or direct effects on special-status plants wherever feasible. Any special-status plants in the proposed staging area adjacent to the San Joaquin River would be avoided. If special-status plants can be avoided by redesigning the proposed project, implementation of Mitigation Measures VEG-MM-1c (exclusion fencing), VEG-MM-1d (awareness training), and VEG-MM-1e (biological monitor) will avoid significant effects on special-status plants.

If complete avoidance of special-status plants is not feasible, the effects of the proposed project on special-status plants will be compensated by off-site preservation at a minimum ratio of 1:1 (1 acre of mitigation for each acre of occupied habitat removed), but the final ratio will be negotiated with the resource agencies (CDFW and/or FWS). Suitable habitat for affected special-status plant species will be purchased within a conservation area, preserved, and managed in perpetuity. Detailed information will be provided to CDFW and FWS, if necessary, on the location and quality of the preservation area, the feasibility of protecting and managing the area in perpetuity, and the responsible parties involved. Other pertinent information will also be provided, to be determined through future coordination with CDFW and FWS, if necessary. Alternatively, credits for affected special-status plant species may be purchased at a mitigation bank.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

To clearly demarcate the project boundary and protect sensitive natural communities, SJAFCA or its contractor will install temporary exclusion fencing (i.e., minimum 4-foot tall high-visibility orange construction fencing) around sensitive biological resource areas (emergent wetland, protected trees, pond turtles, active bird nests, and occupied bat roosts) 1 week prior to the start of construction activities. SJAFCA will ensure that the temporary fencing is continuously maintained until all construction activities are completed and that construction equipment is confined to the designated work areas. Additional areas of silt fencing to prevent sediment from entering tidal perennial drainage will be installed where construction activities are occurring on the levees. The exclusion and silt fencing will be removed only after construction is entirely completed.

Signage will be placed on the exclusion fencing that will explain the nature of the sensitive resource and warn that no effect on the resource is allowed. The fencing will include a buffer zone of at least 20 feet between the resource and construction activities, where feasible. All

exclusion and silt fencing will be maintained in good condition throughout the construction period. The project's special provisions package will provide clear language regarding acceptable fencing material and prohibited construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the exclusion zone.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Before any work occurs in the project area, including grading, a qualified biologist will conduct mandatory contractor/worker awareness training for construction personnel. The awareness training will be provided to all construction personnel to brief them on the need to avoid impacts on sensitive biological resources (e.g., special-status species, wetland, protected trees, pond turtles, active nests, and occupied bat roosts) and the penalties for not complying with permit requirements. The biologist will inform all construction personnel about the life history of special-status species with potential for occurrence on site, the importance of maintaining habitat, and the terms and conditions of authorizing documents. Proof of this instruction will be submitted to FWS, CDFW, or other overseeing agencies, as appropriate.

The training will also cover the restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on sensitive biological communities and special-status species during project construction. The crew leader will be responsible for ensuring that crew members adhere to the guidelines and restrictions. Educational training will be conducted for new personnel as they are brought on the job during the construction period. General restrictions and guidelines for vegetation and wildlife that must be followed by construction personnel are listed below.

- Project-related vehicles and construction equipment will restrict off-road travel to the designated construction area.
- All food-related trash will be disposed of in closed containers and removed from the project area at least once a week during the construction period. Construction personnel will not feed or otherwise attract fish or wildlife to the project site.
- To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service vehicles or construction equipment outside designated staging areas.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

SJAFCA will retain a qualified biologist to monitor construction activities adjacent to sensitive biological resources (e.g., special-status species, wetland, protected trees, pond turtles, active nests, and occupied bat roosts). The biologist will assist the construction crew, as needed, to comply with all project implementation restrictions and guidelines. In addition, the biologist will be responsible for ensuring that SJAFCA or its contractors maintain the construction barrier fencing adjacent to sensitive biological resources.

Impact VEG-2: Loss of Nonnative Riparian Habitat (less than significant with mitigation)

Construction of Alternative 1 would require the removal of up to 0.81 acre of nonnative riparian vegetation in three locations in the project area. Approximately 0.04 acre of native and nonnative

riparian trees and shrubs would be removed at the tip of Dad's Point and on the bank of the San Joaquin River south of the Stockton Golf and Country Club for the tie-ins to the fixed wall and the existing levees. The third area of impacts on nonnative riparian habitat would be the removal of up to an additional 0.77 acre of riparian trees and invasive understory species from Dad's Point. Because Dad's Point would function as a levee under this alternative, replacement of the removed vegetation with native trees, shrubs, and grasses would only occur to the extent permitted under ULDC guidelines. All riparian trees along the edge of the proposed staging area that is adjacent to the San Joaquin River would be avoided during construction, and any loss of herbaceous riparian vegetation would be temporary and would be anticipated to reestablish after construction.

In compliance with the ULDC, future design efforts would include detailed analysis of levee stability to determine what existing native vegetation, including trees, could be allowed to remain in place on Dad's Point. This impact assumes that all riparian vegetation on Dad's Point would be removed, although these design efforts could result in the retention of the native vegetation. While riparian vegetation cannot be replanted within the levee prism, the width of Dad's Point is sufficient to likely allow riparian planting in areas adjacent to the levee prism, defined as a 20-foot minimum levee crown and side slopes at a ratio of 3:1.

Riparian communities are considered sensitive natural communities by the CNDDB (California Department of Fish and Game 2010). These woodlands and the riparian scrub would be regulated by CDFW and FWS (46 FR 7644) under no-net-loss policies for existing riparian habitat values. Although the riparian community in the study area is dominated by nonnative species, it still provides some of the functions of riparian habitat and would be considered a sensitive natural community.

Because the loss of nonnative riparian vegetation as a result of the proposed project would be substantial for the localized area around Dad's Point, the disturbance and removal of riparian habitat would be considered a significant direct impact. Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, and VEG-MM-2 would reduce permanent direct impacts to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-2: Compensate for Loss of Nonnative Riparian Habitat

SJAFCA will compensate for the permanent loss of up to 0.81 acre of nonnative riparian habitat by replanting vegetation on Dad's Point to the extent allowable under the ULDC and/or by purchasing credits at an approved mitigation bank. If a combination of these compensatory mitigation approaches is used, the total acreage will be enough to compensate for the permanent loss as follows:

- For the option to replant vegetation on Dad's Point, mitigation will be at a minimum ratio of 1:1 (1 acre of mitigation for each acre of riparian habitat removed). SJAFCA will prepare a mitigation planting plan that will include a species list and number of each species to be planted, planting locations, and maintenance requirements. Plantings will consist of cuttings taken from local plants or plants grown from local material. Planted species for both riparian woodland and riparian scrub mitigation will include native tree species, such as northern California black walnut (*Juglans hindsii*), Fremont's cottonwood (*Populus fremontii* ssp. *fremontii*), valley oak (*Quercus lobata*), sandbar willow (*Salix exigua*), Goodding's black willow (*Salix gooddingii*), and arroyo willow (*Salix lasiolepis*), with native understory shrubs and vines, such as California rose (*Rosa californica*), and California grape (*Vitis californicus*). All plantings will be fitting with exclusion cages or other suitable protection from herbivory and disturbance. Plantings will be irrigated for up to 3 years or until established. Riparian habitat restoration should occur in the same year as construction. Plantings will be monitored annually for a minimum of 3 years or as required in the project permits. If 75% of the plants survive at the end of the monitoring period, the revegetation will be considered successful. If the survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected.
- For the mitigation bank option, mitigation can be in the form of preservation and/or restoration/creation credits. If mitigation is in the form of preservation credits, the mitigation will be at a minimum ratio of 2:1 (2 acres of preserved riparian habitat for each acre of riparian habitat removed). If mitigation is in the form of restoration/creation credits, the mitigation will be at a minimum ratio of 1:1 (1 acre of restored or created riparian habitat for each acre of riparian habitat removed). The final compensation ratio will be approved by CDFW in order to result in no net loss of riparian habitat. The riparian habitat to be removed is mostly nonnative species and the habitat is, therefore, of relatively low quality but does provide riparian habitat functions, such as shading of riverine habitat and nesting and roosting sites. SJAFCA will purchase riparian habitat credits from an approved mitigation bank near the project, such as the Cosumnes Floodplain Mitigation Bank, Fremont Landing Conservation Bank, or Elsie Gridley Mitigation Bank. If no suitable mitigation bank options are available at the time of construction, SJAFCA will pay into the National Fish and Wildlife Foundation Sacramento District in-lieu fee (ILF) program.

Impact VEG-3: Loss of Tidal Emergent Wetland (less than significant with mitigation)

Construction of Alternative 1 would remove up to 0.03 acre of tidal emergent wetland at the tip of Dad's Point. A fixed wall would be installed at the west tip of the Dad's Point levee, which would occur along approximately half of the existing tidal emergent wetland and would result in the removal of the wetland vegetation. This impact is considered significant because project construction would directly remove and permanently fill a Federally protected water of the United States.

Additional temporary impacts on tidal emergent wetland would occur during the construction and installation of the fixed dual sheet pile wall. The footprint of one wall and the granular material and space between the walls would cover approximately half of the tidal emergent wetland. Construction activities, such as movement of the equipment used to install the fixed wall and the granular material, could damage the adjacent tidal emergent wetland vegetation. This would be a direct significant impact if the part of the wetland outside of the permanent impact area cannot be avoided during construction.

Mitigation Measure VEG-MM-1c would be implemented, if it is feasible to preserve and avoid the part of the tidal emergent wetland that is outside the permanent impact area. If this area cannot be avoided, additional compensatory mitigation for the loss of the entire 0.07 acre of tidal emergent wetland would be implemented. This mitigation, along with implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and VEG-MM-3 would reduce impacts on the wetland to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-3: Compensate for Loss of Tidal Emergent Wetland

SJAFCA will compensate for loss of 0.03 acre of tidal emergent wetland, if the other part of the wetland can be protected, or the entire 0.07 acre, if it cannot be protected. Compensation will be accomplished by purchasing mitigation bank credits. The mitigation ratio will be a minimum of 1:1 (1 acre of mitigation for each acre of wetland removed), if the credits are for wetland creation, or as required under the Section 404 permit in order to result in no net loss of wetland. Prior to construction, SJAFCA will purchase tidal emergent wetland habitat credits from an approved mitigation bank near the project, such as the Cosumnes Floodplain Mitigation Bank. If no suitable mitigation bank options are available at the time of construction, SJAFCA will pay into the ILF program.

Impact VEG-4: Loss of Tidal Perennial Drainage (less than significant with mitigation)

Construction of Alternative 1 would result in the loss of up to 0.54 acre of tidal perennial drainage as a result of placing structures for the single gated wall directly in the San Joaquin River bed. For the gate structure, concrete cylinder piles and a reinforced concrete floor would be formed and poured on the bed of the San Joaquin River. For the walls on either side of the gate, a fixed wall would be

driven into the channel bed by a vibratory hammer. The dual sheet pile would be installed approximately 25 feet apart and granular material would be installed between the walls to within three feet of the top of the sheet pile. The concrete floor of the gate structure, fixed wall, and granular material between the walls would have a permanent footprint of fill on the bed of tidal perennial drainage in the San Joaquin River. This direct impact is considered significant because project construction would place permanent fill in a Federally protected water of the United States. Implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and VEG-MM-4 would reduce this impact to a less-than-significant level.

The use of sheet piles to create a cofferdam for a dry work area in the drainage during construction of the gate would not create additional temporary impacts on tidal perennial drainage, because the wall would be incorporated into the permanent footprint of the gate structure.

The use of cofferdams for the installation of the culverts under Moreing Road would be considered temporary impacts on tidal perennial drainage, because they would not be part of a permanent structure after construction. This would be a potentially significant impact. However, the cofferdams would be removed after construction of the culverts, and the drainage beds would be returned to pre-project conditions. Therefore, no mitigation would be required for temporary loss of waters of the United States in that part of the project area.

Project construction could also result in impacts on water quality in tidal perennial drainage habitat. The work area inside the cofferdam would need to be dewatered prior to the excavation for the foundation of the gate structure and continuously dewatered during the construction of the gate. Procedures would be put into place to manage the silt that would likely be removed during the initial dewatering activities. The silt would be allowed to settle prior to dewatering, and would be stored on-site. Impacts on water quality and mitigation measures are described further in Section 3.2, *Water Quality and Groundwater Resources*.

Raising the grade on Dad's Point could indirectly impact adjacent tidal perennial drainage habitat. The grade on Dad's Point would be raised by installing engineered fill materials along the crown for a distance of about 700 feet from Louis Park. The fill materials would be delivered to Dad's Point by dump truck and placed by graders. Rip-rap material would be placed on the slopes of Dad's Point as needed using a backhoe. Dad's Point is a narrow land strip bordered by tidal perennial drainage on two sides. Without fencing in place, fill material and rip-rap could accidentally slide into the adjacent tidal perennial drainage during construction. The potential impacts on water quality and placement of fill in a Federally protected water of the United States would be considered a significant impact. Implementation of Mitigation Measure VEG-MM-1c would reduce this impact to a less-than-significant level.

Operation of the project would include the need to occasionally add granular material to the area between the sheet pile walls. Placement of material would need to be accomplished without spillage of the material into the open water on both sides of the walls. The potential spill would be only de minimis fill, if any, into the tidal perennial drainage, which would not be regulated, and this would be a less-than-significant impact.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG -MM-4: Compensate for Loss of Tidal Perennial Drainage

SJAFCA will compensate for loss of up to 0.54 acre of tidal perennial drainage by purchasing mitigation bank credits, which can be in the form of preservation and/or restoration/creation credits. The mitigation ratio will be a minimum of 2:1 (2 acres of mitigation for each acre of drainage removed), if credits are for preservation of drainage habitat, or 1:1 (1 acre of mitigation for each acre of drainage removed), if credits are for creation of drainage habitat. Final ratios will be as required under the Section 404 permit in order to result in no net loss of drainage habitat. Prior to construction, SJAFCA will purchase open water habitat credits from an approved mitigation bank near the project, such as Cosumnes Floodplain Mitigation Bank or Elsie Gridley Mitigation Bank. If no suitable mitigation bank options are available at the time of construction, SJAFCA will pay into the National Fish and Wildlife Foundation Sacramento District (ILF) program.

Impact VEG-5: Potential Loss of Wetlands or Other Waters of the United States (less than significant with mitigation)

The proposed staging area that is adjacent to the San Joaquin River was not accessible for the purpose of the delineation of waters of the United States. Although unlikely, due to the previous grading and disturbance of the area, there is potential for the presence of wetlands or other waters of the United States in this area. If waters of the United States are present in the staging area, movement of equipment and materials in this area during construction could result in direct impacts from alteration of, or placement of fill in, wetlands or other waters of the United States. Direct impacts on wetlands and other waters would be considered significant because project construction activities in the staging area could place permanent fill in a Federally protected water of the United States. Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, and VEG-MM-5 would reduce this impact to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-5: Conduct an Assessment of Potential Waters of the United States within Project Staging Area

Prior to use of the proposed staging area adjacent to the San Joaquin River, or any other potential staging area that is not graded or paved, SJAFCA will retain a qualified wetland delineator to assess the staging area for the presence of any potential waters of the United States. This assessment does not need to be a complete delineation according to all USACE requirements, but will be adequate for the purposes of determining the approximate boundaries of any potential wetlands or other waters of the United States so that they can be avoided. If potential wetlands or other waters are found within the staging area, they will be shown on a map, fenced, and avoided during all construction activity, including a suitable buffer to avoid any indirect impacts.

Impact VEG-6: Loss of Heritage Trees (less than significant with mitigation)

Three trees in the study area meet the criteria for heritage trees under the City of Stockton tree ordinance (valley oaks with a diameter at breast height [DBH] of 16 inches or greater). One of the 3 heritage trees would be removed for the grade adjustment on Dad's Point. If any heritage trees occur along the bank of the proposed staging area adjacent to the San Joaquin River, they would be avoided during construction. Under the tree ordinance, tree removal would require a permit from the City of Stockton, and a total of three replacement trees would be required as mitigation. Because heritage trees are protected under the tree ordinance and are considered a limited resource locally, the loss of a heritage tree would be a significant direct impact.

Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, VEG-MM-6a, and VEG-MM-6b would reduce this impact to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-6a: Protect Trees to Be Preserved in the Project Area

If necessary to avoid construction-related damage to heritage and native trees that will not be removed for project construction, SJAFCA will retain a certified arborist to perform any necessary pruning of heritage or native trees adjacent to the construction area, in accordance with International Society of Arboriculture standards.

Mitigation Measure VEG-MM-6b: Compensate for Loss of Heritage Trees

Under the ULDC, replacement trees may not be replaced in the vegetation management zone, which extends to 15 feet from the landside levee toe. Under the City of Stockton Heritage Tree Ordinance requirements, replacement trees will be planted within the same parcel as the removed tree, if feasible, or in a City park. Replacement trees will be planted on Dad's Point, if allowable under ULDC requirements, or in Louis Park, if Dad's Point cannot be planted with trees. Louis Park provides areas more than 15 feet from the landside levee toe and is in the same parcel as the heritage tree to be removed from Dad's Point. Prior to construction, SJAFCA will retain a qualified restoration ecologist, biologist, or certified arborist to prepare a valley oak tree planting plan. The plan will identify the planting locations in Louis Park for the 3 replacement valley oak trees; the tree container size, which should be at least 15-gallon size; planting, irrigation, and maintenance methods; annual monitoring requirements; and the required success criteria, which will be survival of all 3 trees at the end of 5 years of monitoring. If the survival criterion is not met at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and corrected.

Impact VEG-7: Spread of Invasive Plant Species (less than significant with mitigation)

Invasive riparian plants are already present in the Alternative 1 project area, including giant reed, pampas grass, and black locust. However, construction activities could introduce new invasive plants to the project area or contribute to the spread of existing invasive plants to un-infested areas outside the project area. Invasive plants or their seeds may be dispersed by construction equipment on land and by in-water construction if appropriate prevention measures are not implemented. The introduction or spread of invasive plants as a result of the proposed project could have significant direct and indirect effects on sensitive natural communities within and outside the project area by displacing native flora. Construction of the proposed project would include removal of invasive plants in the riparian habitat on Dad's Point as part of the project design and compliance with the ULDC. With implementation of appropriate removal methods, this would be a beneficial impact. With implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and VEG-MM-7, the proposed project would not have a significant impact on sensitive natural communities from the introduction or spread of invasive plants, and direct and indirect effects would be reduced to less-than-significant levels. Impacts due to the loss of riparian vegetation are discussed in Impact VEG-2.

Extensive floating mats of water hyacinth occupy the study area intermittently, and smaller patches of Brazilian waterweed and water-milfoil also grow along the edges of the drainages, where they are rooted in the drainage beds. After project construction, the opening between the San Joaquin River and Atherton Cove and Smith Canal would be narrower than under current conditions, with only a 50-foot opening remaining for tidal flow to move into and out of the cove and canal. The water levels would not be altered, and, therefore, no substantial change in the extent of Brazilian waterweed and water-milfoil would be expected.

Water hyacinth is currently widely present within the project area and also enters the project area from the San Joaquin River, accumulating at the end of Atherton Cove and at the Louis Park boat launch. While introduction of new plants from the San Joaquin River would decrease after project construction, water hyacinth can easily spread seasonally from the existing population within the cove and canal, as well as by seed already present. However, presence of the fixed wall would substantially decrease the width of the area where water hyacinth washes back out to the San Joaquin River and downstream, i.e., only through the 50-foot wide gate. Project-related increases in

water velocities near the gate could help reduce water hyacinth cover in the center of the channel. However, without maintenance there could be significant accumulation of hyacinth behind the walls in areas that are currently open water, as the walls may reduce water velocity in spots and prevent hyacinth from washing back into the San Joaquin River. Under Alternative 1, construction and operation of the fixed dual sheet pile wall would not result in an increase in water hyacinth in the Atherton Cove and Smith Canal due to water hyacinth removal maintenance activities described in Section 2.3.1.3, *Operations and Maintenance*. By conducting regular water hyacinth removal activities not currently conducted, implementation of Alternative 1 would have no impact on the spread of invasive plant species and would not create habitat for other invasive aquatic species as a result of water hyacinth growth and may improve the present baseline condition, resulting in a beneficial effect.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-7: Avoid and Minimize Spread or Introduction of Invasive Plant Species

SJAFCA or its contractor will implement one or more of the following actions to avoid and minimize the spread or introduction of invasive plant species. In addition, SJAFCA will coordinate with the San Joaquin County Agricultural Commissioner to ensure that the appropriate Best Management Practices (BMPs) are implemented for the duration of the construction of proposed projects.

- Educate construction supervisors and managers about the importance of controlling and preventing the spread of invasive plant infestations.
- Use eradication methods that have been approved by or developed in conjunction with the San Joaquin County Agricultural Commissioner during invasive species removal to prevent dispersal of the species and/or destroy viable plant parts or seeds. Methods may include use of herbicides approved for use in and near waterways and seasonal removal (i.e., prior to flower and fruit production).
- Minimize surface disturbance to the greatest extent feasible to complete the work.
- Use native, noninvasive species or nonpersistent hybrids in erosion-control plantings to stabilize site conditions and prevent invasive plant species from colonizing.
- Use erosion-control materials that are weed-free or contain less than 1% weed seed.

Alternative 2: Atherton Cove Floodwall with Smith Canal Gate

Impact VEG-1: Loss of Special-Status Plants (less than significant with mitigation)

The construction of Alternative 2 could affect special-status plants. If special-status plants occur in the study area, they would occupy habitat at the edge of tidal perennial drainages, potentially where construction of the gated wall in Smith Canal would occur. Placement of the sheet pile walls could result in the removal of special-status plants, if they are present. Use of the proposed staging area adjacent to the San Joaquin River for transporting materials by boat could affect special-status plants, if any occur on the banks where boats would access the area. There is low potential for any special-status plant species in the interior of the staging area due to the levels of disturbance in the past 13 years. The study area has low potential to support special-status plants, particularly in Atherton Cove, which is bordered by maintained yards and boat docks. However, because surveys did not correspond to the blooming period of all special-status species with potential to occur in the study area,, the conclusion that they are absent cannot be absolutely confirmed. Potential loss of special-status plants would be considered a potentially significant impact.

Implementation of Mitigation Measures VEG-MM-1a, VEG-MM-1b, VEG-MM-1c, VEG-MM-1d, and VEG-MM-1e would reduce this potential direct impact to a less-than-significant level.

Mitigation Measure VEG -MM-1a: Conduct Floristic Surveys for Special-Status Plants during Appropriate Identification Periods

Please refer to the discussion of Mitigation Measure VEG-MM-1a under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1b: Avoid or Compensate for Effects on Special-Status Plants

Please refer to the discussion of Mitigation Measure VEG-MM-1b under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Impact VEG-2: Loss of Nonnative Riparian Habitat (less than significant with mitigation)

Construction of Alternative 2 would require the removal of up to 0.86 acre of nonnative riparian vegetation in three locations in the project area. Approximately 0.07 acre of native and nonnative riparian trees and shrubs would be removed on both sides of Smith Canal and on the bank of the San Joaquin River south of the Stockton Golf and Country Club for the tie-ins to the fixed wall and the existing levees. This acreage includes the riparian habitat mapped below the mean high water line. The third area of impacts on nonnative riparian habitat would be the removal of up to 0.79 acre of riparian trees and invasive understory species from Dad's Point, which would be replaced with native shrubs and grasses to the extent permitted under ULDC guidelines. The impact would likely be less than the total 0.79 acre due to retention of non-invasive trees. The final acreage would be determined during final project design. All riparian trees along the edge of the proposed staging area adjacent to the San Joaquin River would be avoided during construction, and any loss of herbaceous riparian vegetation would be temporary and would be anticipated to reestablish after construction.

Riparian communities are considered sensitive natural communities by the CNDDB (California Natural Diversity Database 2010). These woodlands and the riparian scrub would be regulated by CDFW and FWS (46 FR 7644) under no-net-loss policies for existing riparian habitat values. Although the riparian community in the study area is dominated by nonnative species, it still provides some of the functions of riparian habitat and would be considered a sensitive natural community.

Because the loss of nonnative riparian vegetation as a result of the proposed project would be substantial for the localized area around Dad's Point, the disturbance and removal of riparian habitat would be considered a significant impact. Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, and VEG-MM-2 would reduce permanent direct impacts to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG -MM-2: Compensate for Loss of Nonnative Riparian Habitat

Please refer to the discussion of Mitigation Measure VEG-MM-2 under Alternative 1, Impact VEG-2.For Alternative 2, implementation of this measure would require mitigation for the loss of up to 0.86 acre of riparian habitat.

Impact VEG-3: Loss of Tidal Emergent Wetland (less than significant with mitigation)

Construction of Alternative 2 would avoid the tidal emergent wetland at the tip of Dad's Point. However, removal of invasive species from Dad's Point adjacent to the wetland could result in indirect impacts on the tidal emergent wetland. This would be an indirect significant impact. Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, and VEG-MM-1e would reduce indirect impacts on the wetland to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Impact VEG-4: Loss of Tidal Perennial Drainage (less than significant with mitigation)

Construction of Alternative 2 would result in the loss of up to 1.896 acres of tidal perennial drainage as a result of placing structures for the floodwall along the north side of Atherton Cove and the single gated wall across Smith Canal. This acreage includes the 1.890 acre of open water below the mean high water line, plus the 0.006 acre of riparian habitat below the mean high water line at the edge of Smith Canal. For the gate structure, concrete cylinder piles and a reinforced concrete floor would be formed and poured on the canal bed. For the floodwall along the cove and the walls on either side of the gate in the canal, dual sheet pile would be installed approximately 25 feet apart and granular material would be installed between the sheet piles to within three feet of the top of the sheet pile. In Atherton Cove, backfill would also be added between the outer sheet pile wall and the existing levee crown. The concrete floor of the gate structure, dual sheet pile walls, and granular material between the walls would have a permanent footprint of fill on the bed of tidal perennial drainage in Smith Canal. This impact is considered significant because project construction would place permanent fill in Federally protected waters of the United States. Implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and VEG-MM-4 would reduce this impact to a less-than-significant level.

The use of sheet pile walls to create a cofferdam for a dry work area in Smith Canal during gate construction would not create additional temporary impacts on tidal perennial drainage, because the walls would be incorporated into the permanent footprint of the gate structure.

The use of cofferdams for the installation of the culverts under Moreing Road would be considered temporary impacts on tidal perennial drainage, because they would not be part of a permanent structure after construction. This would be a potentially significant impact. However, the cofferdams would be removed after construction of the culverts, and the drainage beds would be returned to

pre-project conditions. Therefore, no mitigation would be required for temporary loss of waters of the United States in that part of the project area.

Replacement of the existing boat docks and piers would include only the placement of small-diameter piers on the channel bottom, which would not be considered fill in a water of the United States. Therefore, this would be considered a less-than-significant impact, and no mitigation would be required for loss of waters of the United States as a result of boat dock and pier construction.

Project construction could also result in impacts on water quality in tidal perennial drainage habitat. The work area inside the cofferdam would need to be dewatered prior to the excavation for the foundation of the gate structure and continuously dewatered during the construction of the gate. Procedures would be put into place to manage the silt that would likely be removed during the initial dewatering activities. The silt would be allowed to settle prior to dewatering, and would be stored on-site. Impacts on water quality and mitigation measures are described further in Section 3.2, *Water Quality and Groundwater Resources*.

Operation of the project would include the need to occasionally add granular material to the area between the sheet pile walls. Placement of material would need to be accomplished without spillage of the material into the open water on both sides of the walls. The potential spill would be only de minimis fill, if any, into the tidal perennial drainage, which would not be regulated, and this would be a less-than-significant impact.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG -MM-4: Compensate for Loss of Tidal Perennial Drainage

Please refer to the discussion of Mitigation Measure VEG-MM-4 under Alternative 1, Impact VEG-4. For Alternative 2, implementation of this measure would require mitigation for the loss of up to 1.896 acres of tidal perennial drainage.

Impact VEG-5: Potential Loss of Wetlands or Other Waters of the United States (less than significant with mitigation)

The proposed staging area adjacent to the San Joaquin River was not accessible for the purpose of the delineation of waters of the United States. Although unlikely, due to the previous grading and disturbance of the area, there is potential for the presence of wetlands or other waters of the United

States in this area. If waters of the United States are present in the staging area, movement of equipment and materials in this area during construction could result in direct impacts from alteration of, or placement of fill in, wetlands or other waters of the United States. Potential direct impacts on wetlands and other waters would be significant because project construction activities in the staging area could place permanent fill in a Federally protected water of the United States. Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, and VEG-MM-5 would reduce this impact to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG -MM-5: Conduct an Assessment of Potential Waters of the United States within Project Staging Area

Please refer to the discussion of Mitigation Measure VEG-MM-5 under Alternative 1, Impact VEG-5.

Impact VEG-6: Loss of Heritage Trees (no impact)

Three trees in the study area meet the criteria for heritage trees under the City of Stockton tree ordinance (valley oaks with a DBH of 16 inches or greater). All three trees would be avoided during construction of Alternative 2, and there would be no impact. If any heritage trees occur along the bank of the proposed staging area adjacent to the San Joaquin River, they would be avoided during construction. No compensatory mitigation is required, but implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, and VEG-MM-6a would prevent temporary and indirect impacts on heritage trees.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-6a: Protect Trees to Be Preserved in the Project Area

Please refer to the discussion of Mitigation Measure VEG-MM-6a under Alternative 1, Impact VEG-6.

Impact VEG-7: Spread of Invasive Plant Species (less than significant with mitigation)

Invasive riparian plants are already present in the Alternative 2 project area, including giant reed, pampas grass, and black locust. However, construction activities could introduce new invasive plants to the project area or contribute to the spread of existing invasive plants to un-infested areas outside the project area. Invasive plants or their seeds may be dispersed by construction equipment on land and by in-water construction if appropriate prevention measures are not implemented. The introduction or spread of invasive plants as a result of the proposed project could have significant direct and indirect effects on sensitive natural communities within and outside the project area by displacing native flora. Construction of the proposed project would include removal of invasive plants in the riparian habitat on Dad's Point as part of the project design. With implementation of appropriate removal methods, this would be a beneficial impact. With implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and VEG-MM-7, the proposed project would not have a significant effect on sensitive natural communities from the introduction or spread of invasive plants, and direct and indirect effects would be reduced to less-than-significant levels. Impacts due to the loss of riparian vegetation are discussed in Impact VEG-2.

Extensive floating mats of water hyacinth occupy the study area intermittently, and smaller patches of Brazilian waterweed and water-milfoil also grow along the edges of the drainages, where they are rooted in the drainage beds. After project construction, most of Smith Canal would be slightly more hydrologically isolated from the San Joaquin River than under current conditions, with only a 50-foot opening remaining for tidal flow to move into and out of the canal. The water levels would not be altered, and, therefore, no substantial change in the extent of Brazilian waterweed and water-milfoil would be expected.

Water hyacinth currently accumulates at the end of Atherton Cove and at the Louis Park boat launch, and it will continue to accumulate in these areas after project construction. No substantial change in the accumulation of water hyacinth is expected in these areas after construction. The area upstream of the wall on Smith Canal would not experience an increase in water hyacinth accumulation due to implementation of regular removal activities as described in Section 2.3.2.3, *Operations and Maintenance.* By conducting regular water hyacinth removal activities not currently conducted, implementation of Alternative 2 would have no impact on the spread of invasive plant species and would not create habitat for other invasive aquatic species as a result of water hyacinth growth and may improve the present baseline condition, resulting in a beneficial effect.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG -MM-7: Avoid and Minimize Spread or Introduction of Invasive Plant Species

Please refer to the discussion of Mitigation Measure VEG-MM-7 under Alternative 1, Impact VEG-7.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact VEG-1: Loss of Special-Status Plants (less than significant with mitigation)

The construction of Alternative 3 could affect special-status plants. If special-status plants occur in the study area, they would occupy habitat at the edge of tidal perennial drainages, potentially where construction of the gated walls would occur. Placement of the sheet pile walls could result in the removal of special-status plants, if they are present. Use of the proposed staging area adjacent to the San Joaquin River for transporting materials by boat could affect special-status plants, if any occur on the banks where boats would access the area. There is low potential for any special-status plant species in the interior of the staging area due to the levels of disturbance in the past 13 years. Although the study area has low potential to support special-status plants, surveys did not correspond to the blooming period of all special-status species with potential to occur in the study area, and, therefore, the conclusion that they are absent cannot be absolutely confirmed. Potential loss of special-status plants would be considered a potentially significant impact.

Implementation of Mitigation Measures VEG-MM-1a, VEG-MM-1b, VEG-MM-1c, VEG-MM-1d, and VEG-MM-1e would reduce this potential direct impact to a less-than-significant level.

Mitigation Measure VEG -MM-1a: Conduct Floristic Surveys for Special-Status Plants during Appropriate Identification Periods

Please refer to the discussion of Mitigation Measure VEG-MM-1a under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1b: Avoid or Compensate for Effects on Special-Status Plants

Please refer to the discussion of Mitigation Measure VEG-MM-1b under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Impact VEG-2: Loss of Nonnative Riparian Vegetation (less than significant with mitigation)

Construction of Alternative 3 would require the removal of up to 0.81 acre of nonnative riparian vegetation in three locations in the project area. Approximately 0.02 acre of native and nonnative riparian trees and shrubs would be removed on both sides of Smith Canal and on the bank of the San Joaquin River south of the Stockton Golf and Country Club for the tie-ins to the fixed wall and the existing levees. This acreage includes the riparian habitat mapped below the mean high water line. The third area of impacts on nonnative riparian habitat would be the removal of up to 0.79 acre of riparian trees and invasive understory species from Dad's Point, which would be replaced with native shrubs and grasses to the extent permitted under ULDC guidelines. The impact would likely be less than the total 0.79 acre due to retention of non-invasive trees. The final acreage would be determined during final project design. All riparian trees along the edge of the proposed staging area adjacent to the San Joaquin River would be avoided during construction, and any loss of herbaceous riparian vegetation would be temporary and would be anticipated to reestablish after construction.

Riparian communities are considered sensitive natural communities by the CNDDB (California Natural Diversity Database 2010). These woodlands and the riparian scrub would be regulated by CDFW and FWS (46 FR 7644) under no-net-loss policies for existing riparian habitat values. Although the riparian community in the study area is dominated by nonnative species, it still provides some of the functions of riparian habitat and would be considered a sensitive natural community.

Because the loss of nonnative riparian vegetation as a result of the proposed project would be substantial for the localized area around Dad's Point, the disturbance and removal of riparian habitat would be considered a significant impact. Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, and VEG-MM-2 would reduce permanent direct effects to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG -MM-2: Compensate for Loss of Nonnative Riparian Habitat

Please refer to the discussion of Mitigation Measure VEG-MM-2 under Alternative 1, Impact VEG-2. For Alternative 3, implementation of this measure would require mitigation for the loss of up to 0.81 acre of riparian habitat.

Impact VEG-3: Loss of Tidal Emergent Wetland (less than significant with mitigation)

Construction of Alternative 3 would avoid the tidal emergent wetland at the tip of Dad's Point. However, removal of invasive species from Dad's Point adjacent to the wetland could result in indirect impacts on the tidal emergent wetland. This would be an indirect significant impact. Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, and VEG-MM-1e would reduce indirect impacts on the wetland to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Impact VEG-4: Loss of Tidal Perennial Drainage (less than significant with mitigation)

Construction of Alternative 3 would result in the loss of up to 0.474 acre of tidal perennial drainage as a result of placing structures for the single gated walls across Smith Canal and Atherton Cove. This acreage includes the 0.472 acre of open water below the mean high water line, plus the 0.002 acre of riparian habitat below the mean high water line at the edge of Smith Canal. For each of the gate structures, concrete cylinder piles and a reinforced concrete floor would be formed and poured on the drainage bed. For the wall on either side of the gates in the canal and cove, dual sheet piles would be driven into the channel bed by a vibratory hammer. The sheet piles would be installed approximately 25 feet apart and granular material would be installed between the walls to within three feet of the top of the sheet pile. The concrete floor of the gate structures, dual sheet piles, and granular material between the walls would have permanent footprints of fill on the beds of tidal perennial drainage in Smith Canal and Atherton Cove. This impact is considered significant because project construction would place permanent fill in Federally protected waters of the United States. Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, and VEG-MM-4 would reduce this impact to a less-than-significant level.

The use of sheet piles to create cofferdams for dry work areas in the drainages during construction would not create additional temporary impacts on tidal perennial drainage, because the walls would be incorporated into the permanent footprints of the gate structures.

The use of cofferdams for the installation of the culverts under Moreing Road would be considered temporary impacts on tidal perennial drainage, because they would not be part of a permanent structure after construction. This would be a potentially significant impact. However, the cofferdams would be removed after construction of the culverts, and the drainage beds would be returned to pre-project conditions. Therefore, no mitigation would be required for temporary loss of waters of the United States in that part of the project area.

Project construction could also result in impacts on water quality in tidal perennial drainage habitat. The work area inside the cofferdams for the two gate structures would need to be dewatered prior to the excavation for the foundations of the gate structures and continuously dewatered during the construction of the gates. Procedures would be put into place to manage the silt that would likely be removed during the initial dewatering activities. The silt would be allowed to settle prior to dewatering, and would be stored on-site. Impacts on water quality and mitigation measures are described further in Section 3.2, *Water Quality and Groundwater Resources*.

Operation of the project would include the need to occasionally add granular material to the area between the sheet pile walls. Placement of material would need to be accomplished without spillage of the material into the open water on both sides of the walls. The potential spill would be only de minimis fill, if any, into the tidal perennial drainage, which would not be regulated, and this would be a less-than-significant impact.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG -MM-4: Compensate for Loss of Tidal Perennial Drainage

Please refer to the discussion of Mitigation Measure VEG-MM-4 under Alternative 1, Impact VEG-4. For Alternative 3, implementation of this measure would require mitigation for the loss of up to 0.474 acre of tidal perennial drainage.

Impact VEG-5: Potential Loss of Wetlands or Other Waters of the United States (less than significant with mitigation)

The proposed staging area adjacent to the San Joaquin River was not accessible for the purpose of the delineation of waters of the United States. Although unlikely, due to the previous grading and disturbance of the area, there is potential for the presence of wetlands or other waters of the United States in this area. If waters of the United States are present in the staging area, movement of

equipment and materials in this area during construction could result in direct impacts from alteration of, or placement of fill in, wetlands or other waters of the United States. Potential direct impacts on wetlands and other waters would be significant because project construction activities in the staging area could place permanent fill in a Federally protected water of the United States. Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, and VEG-MM-5 would reduce this impact to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG -MM-5: Conduct an Assessment of Potential Waters of the United States within Project Staging Area

Please refer to the discussion of Mitigation Measure VEG-MM-5 under Alternative 1, Impact VEG-5.

Impact VEG-6: Loss of Heritage Trees (less than significant with mitigation)

Three trees in the project area meet the criteria for heritage trees under the City of Stockton tree ordinance (valley oaks with a DBH of 16 inches or greater). One of the three heritage trees would be within the disturbance area for construction of the Smith Canal sheet pile wall, but would not be removed. Movement of construction equipment could affect the root zone of this heritage tree and indirectly cause harm or death of the tree. Because the heritage tree is protected under the tree ordinance and heritage trees are considered a limited resource locally, the loss of a heritage tree would be considered a significant impact. If any heritage trees occur along the bank of the proposed staging area adjacent to the San Joaquin River, they would be avoided during construction, and there would be no additional impact.

Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, VEG-MM-6a, and VEG-MM-6b would reduce this impact to a less-than-significant level.

One valley oak that does not meet the size criteria for a heritage tree would be removed for construction of the gated wall across Smith Canal. Because the non-heritage valley oak is not a protected tree, this would be a less-than-significant impact. The loss of riparian habitat as a result of this tree removal is described in Impact VEG-2.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-6a: Protect Trees to Be Preserved in the Project Area

Please refer to the discussion of Mitigation Measure VEG-MM-6a under Alternative 1, Impact VEG-5.

Mitigation Measure VEG -MM-6b: Compensate for Loss of Heritage Trees

Please refer to the discussion of Mitigation Measure VEG-MM-6b under Alternative 1, Impact VEG-6.

Impact VEG-7: Spread of Invasive Plant Species (less than significant with mitigation)

Invasive riparian plants are already present in the Alternative 3 project area, including giant reed, pampas grass, and black locust. However, construction activities could introduce new invasive plants to the project area or contribute to the spread of existing invasive plants to un-infested areas outside the project area. Invasive plants or their seeds may be dispersed by construction equipment on land and by in-water construction if appropriate prevention measures are not implemented. The introduction or spread of invasive plants as a result of the proposed project could have significant direct and indirect effects on sensitive natural communities within and outside the project area by displacing native flora. Construction of the proposed project would include removal of invasive plants in the riparian habitat on Dad's Point as part of the project design. With implementation of appropriate removal methods, this would be a beneficial impact. With implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and VEG-MM-7, the proposed project would not have a significant effect on sensitive natural communities from the introduction or spread of invasive plants, and direct and indirect effects would be reduced to less-than-significant levels. Impacts due to the loss of riparian vegetation are discussed in Impact VEG-2.

Extensive floating mats of water hyacinth occupy the study area intermittently, and smaller patches of Brazilian waterweed and water-milfoil also grow along the edges of the drainages, where they are rooted in the drainage beds. After project construction, the opening between the San Joaquin River and Atherton Cove and Smith Canal would be narrower than under current conditions, with only 50-foot openings at the mouths of the cove and canal remaining for tidal flow to move through. The water levels would not be altered, and, therefore, no substantial change in the extent of Brazilian waterweed and water-milfoil would be expected.

Water hyacinth is currently widely present within the project area and also enters the project area from the San Joaquin River, accumulating at the end of Atherton Cove and at the Louis Park boat launch. While introduction of new plants from the San Joaquin River would decrease after project construction, water hyacinth can easily spread seasonally from the existing population within the cove and canal, as well as by seed already present in the project site. The area upstream of the walls

on Smith Canal could experience a slight increase in water hyacinth accumulation, but this is not anticipated to be significantly greater than existing conditions. However, without regular maintenance during the growing season, presence of the dual sheet pile walls at the end of Atherton Cove would substantially decrease the width of the area where water hyacinth washes back out to the San Joaquin River and downstream, i.e., only through the 50-foot wide gate. Under Alternative 3, construction and operation of the fixed dual sheet pile walls would not result in an increase in water hyacinth in the Atherton Cove and Smith Canal due to water hyacinth removal maintenance activities described in Section 2.3.3.3, *Operations and Maintenance*. By conducting regular water hyacinth removal activities not currently conducted, implementation of Alternative 3 would have no impact on the spread of invasive plant species and would not create habitat for other invasive aquatic species as a result of water hyacinth growth and may improve the present baseline condition, resulting in a beneficial effect.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e under Alternative 1, Impact VEG-1.

Mitigation Measure VEG -MM-7: Avoid and Minimize Spread or Introduction of Invasive Plant Species

Please refer to the discussion of Mitigation Measure VEG-MM-7 under Alternative 1, Impact VEG-6.

3.8 Fish and Aquatic Resources

This section describes the regulatory and environmental setting for fish and aquatic resources in the study area. It also analyzes environmental impacts on fish and aquatic resources that could result from implementing the proposed project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.8.1 Existing Conditions

3.8.1.1 Regulatory Setting

The following Federal, state, and regional and local regulations and technical guidelines related to fish and aquatic resources may apply to implementation of the proposed project. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

Endangered Species Act

The Endangered Species Act (ESA) protects fish and wildlife species and their habitats that have been identified by the National Marine Fisheries Service (NMFS) or U.S. Fish and Wildlife Service (FWS) as threatened or endangered. *Endangered* refers to species, subspecies, or distinct population segments (DPSs) that are in danger of extinction through all or a significant portion of their range. *Threatened* refers to species, subspecies, or DPSs that are likely to become endangered in the near future. ESA is administered by FWS and NMFS. In general, NMFS is responsible for protection of ESA-listed marine species and anadromous fish, and FWS is responsible for other listed species.

As defined in ESA Section 3, c*ritical habitat* is the specific area within the geographic area occupied by a species, at the time it is listed in accordance with ESA, on which are found those biological features essential to the conservation of the species, and may require special management considerations or protection. Critical habitat also includes specific areas outside the geographic area occupied by a species at the time it is listed upon a determination that such areas are essential for the conservation of the species.

State

California Endangered Species Act

The California Endangered Species Act (CESA) [California Fish and Game Code (Fish & Game Code) Sections 2050–2116] states that all native species or subspecies of a fish, amphibian, reptile, mammal, or plant and their habitats that are threatened with extinction and those experiencing a significant decline that, if not halted, would lead to a threatened or endangered designation, will be protected or preserved.

Under Section 2081 of the Fish & Game Code, a permit from the California Department of Fish and Wildlife (CDFW) is required for projects that could result in take of a species that is state-listed as threatened or endangered.

Regional and Local

San Joaquin County General Plan

The Water Resources and Quality subsection of the *San Joaquin 2010 County Wide General Plan* (1992) contains objectives and policies related to water quality relevant to aquatic resources that could apply to the project. These objectives and policies aim to ensure adequate quantity and quality of water resources for municipal and industrial uses, agriculture, recreation, and fish and wildlife; prevent and eliminate contamination of surface water and groundwater supplies; and protect the environmental and scenic values of the county's surface waters as a state and national resource.

City of Stockton General Plan

The Public Facilities and Services section of the *2035 Stockton General Plan* (2007) contains goals and policies related to water quality relevant to aquatic resources that could apply to the project. These goals and policies aim to manage stormwater in a manner that is safe and environmentally sensitive to protect people and property and to maintain the quality of receiving waters, including implementing best management practices (BMPs) to reduce pollutants to the maximum extent practicable as part of the City's watershed drainage plan.

3.8.1.2 Environmental Setting

The study area for fish and aquatic resources consists of the project area, defined in Chapter 1, *Introduction*, and shown in Plate 1-2, and the adjacent San Joaquin River channel extending from the project area boundaries to the limits of water quality effects that may occur during construction activities (see Section 3.2, *Water Quality and Groundwater Resources*).

Aquatic Habitat

Smith Canal does not provide ideal habitat for native fish species. The canal is connected to the San Joaquin River on the northeast side and receives stormwater from the surrounding urban area along its entire extent, starting at its eastern limit at Yosemite Lake (Plate 1-1). The canal is lined with riprap in many places. Private residences, many with docks on the north levee, follow the length of the canal, which originates approximately 2 miles from the project site and drains to the San Joaquin River. The water column of the canal is infested with water hyacinth, a nonnative floating aquatic plant (Plate 3.10-2). While the canal is not hospitable for native species, some fish may stray into the canal.

Fish Species in the Study Area

The San Joaquin River channel adjacent to the project area provides migratory and seasonal rearing habitat for anadromous fish such as Chinook salmon, steelhead, river lamprey, and green sturgeon. Other migratory species, such as Sacramento splittail, delta smelt, and longfin smelt may occur in the San Joaquin River within the study area.

Appendix F lists all the fish species that may occur in the study area (SWCA Environmental Consultants 2009).

Special-Status Fish Species

Special-status fish species that could occur in Smith Canal include fall-run Chinook salmon, Central Valley steelhead, delta smelt, longfin smelt, and green sturgeon. Special-status fish species that are known to occur or have the potential to occur in the study area are listed below.

- Chinook salmon—Central Valley fall-/late fall–run ESU (*O. tshawytscha*)
- Steelhead—Central Valley DPS (*O. mykiss*)
- Delta smelt (*Hypomesus transpacificus*)
- Sacramento splittail (*Pogonichthys macrolepidotus*)
- Longfin smelt (*Spirinchus thaleichthys*)
- North American green sturgeon—Southern DPS (*Acipenser medirostris*)
- River lamprey (*Lampetra ayresi*)

The status, distribution, and relevant life history information for each species is presented below, and summarized in Appendix F. Table 3.8-1 summarizes the primary periods of species and life stage occurrence in the study area.

Table 3.8-1. Life Stage Timing and Distribution of Selected Species Potentially Affected by Proposed Project

Species/ESU/Life Stage	Distribution	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Fall-Run Chinook Salmon													
Adult migration/holding	San Joaquin River Tributaries												
Juvenile rearing	San Joaquin River Tributaries												
Juvenile movement	San Joaquin River Tributaries to San Francisco Bay												
Steelhead													
Adult migration	San Joaquin River Tributaries												
Juvenile rearing	San Joaquin River Tributaries to San Francisco Bay												
Juvenile movement	San Joaquin River Tributaries to San Francisco Bay												
Delta Smelt													
Adult migration	Delta												
Spawning	Delta, Suisun Marsh												
Larval/early juvenile rearing	Delta, Suisun Marsh												
Sacramento Splittail													
Adult migration	San Joaquin River												
Spawning	San Joaquin River												
Larval/early juvenile rearing/movement	San Joaquin River												
Longfin Smelt													
Adult migration	San Joaquin River/Delta												
Spawning	San Joaquin River/Delta												
Egg incubation	San Joaquin River/Delta												
Juvenile rearing	San Joaquin River/Delta												
Juvenile movement/rearing	San Joaquin River/Delta												
Green Sturgeon													
Adult migration	Delta												
Juvenile rearing	Delta												
River Lamprey													
Adult migration/spawning	San Joaquin River												
Juvenile rearing	San Joaquin River												

Chinook Salmon

Chinook salmon is an anadromous fish, meaning that the fish are born in fresh water, spend most of their lives in marine waters, and return to natal freshwater streams to spawn. Juveniles rear in fresh water for a period of up to 1 year until smoltification takes place (i.e., a physiological preparation for survival in the marine environment), after which they migrate to the ocean.

One distinct run of Chinook salmon currently occurs in the San Joaquin River system: fall-run. The runs are named for the season of adult migration, with each run having a distinct combination of adult migration, spawning, juvenile residency, and smolt migration periods. In general, fall- and late fall-run Chinook salmon spawn soon after entering their natal streams in October and November.

Central Valley fall-run and late fall-run Chinook salmon are designated as Federal species of concern. Fall- and late fall-run Chinook salmon are recognized as distinct runs but are managed as a single environmentally significant unit (ESU) by NMFS because of their close genetic affinities. Chinook salmon in the San Joaquin River follow a fall-run life history (Newcomb and Pierce 2010).

Fall-run Chinook salmon are the most abundant and widely distributed run in the Central Valley, with populations in most of the accessible reaches of the Sacramento and San Joaquin Rivers and their tributaries. Because of their abundance, due in part to hatchery production, fall-run Chinook salmon continue to support commercial and recreational fisheries of significant economic importance.

Fall-run Chinook salmon migrate into the San Joaquin River and its tributaries from September through January, with peak immigration occurring in October and November (Table 3.8-1). Spawning occurs soon after arriving on the spawning grounds, primarily from October through December. Fall-run Chinook salmon emigrate from their natal streams as fry soon after emergence or rear for up to several months before emigrating as parr or smolts. Fry (juvenile fish), parr (older juvenile fish that develop spotting and barring), and smolts may be present in the San Joaquin River from March through June (Newcomb and Pierce 2010).

Central Valley Steelhead

Central Valley steelhead is listed as threatened under ESA. Critical habitat for steelhead has been designated in the San Joaquin River (70 FR 52596). Steelhead, an anadromous variant of rainbow trout, is closely related to Chinook salmon. The species was once abundant in California coastal and Central Valley drainages. However, population numbers have declined significantly in recent years, especially in the tributaries of the San Joaquin River (U.S. Bureau of Reclamation 2013). Steelhead typically migrate to marine waters after spending 1 year or more in fresh water. In the marine environment, they typically mature for 1 to 3 years before returning to their natal streams to spawn as 3- or 4-year-olds. Unlike Pacific salmon, steelhead are capable of spawning more than once before they die. Immigration of adult steelhead in the San Joaquin River occurs early August to mid-October (Cuthbert et al 2010; National Marine Fisheries Service 2009a; Yoshiyama et al 1998). The steelhead spawning season typically stretches from December through April. After several months, fry emerge from the gravel and begin to feed. Juveniles rear in fresh water from 1 to 4 years (usually 2 years), then migrate to the ocean as smolts in the spring (March through June). (National Marine Fisheries Service 2008.)

Delta Smelt

Delta smelt are listed as threatened under ESA and CESA. Critical habitat is designated from the Delta into the Sacramento River and San Joaquin River. *Critical habitat* is the specific geographic area that contains features essential for the conservation of a threatened or endangered species and may require special management and protection (U.S. Fish and Wildlife Service 2014). Delta smelt have been collected in wide array of estuarine areas, including deep channels, open-water flooded islands, brackish bays, and higher order marsh channels (Moyle 2002; Bennett 2005; Sommer and Mejia 2013), but like most pelagic fishes, its habitat is best defined by the water it occupies (Bennett 2005; Feyrer et al. 2007; Nobriga et al. 2008; Sommer and Mejia 2013). Delta smelt habitat has been best described by an interaction of turbidity, water temperature, and salinity (Feyrer et al. 2007; Nobriga et al. 2008; Grimaldo et al. 2009; Sommer and Mejia 2013). Depth, velocity, substrate, and other water quality parameters (e.g., presence of harmful algal blooms, dissolved oxygen) do not appear to have an effect on delta smelt habitat; however, this could be due to the paucity of available data on these parameters or because they have effects at shorter time scales unobserved in monthly monitoring programs (Sommer and Mejia 2013).

Adult delta smelt begin spawning migration into the upper Delta in December or January (Table 3.8-1). Migration may continue over several months. Spawning occurs between January and July, with peak spawning during April through mid-May (Moyle 2002) (Table 3.8-1). Spawning occurs along the channel edges in the upper Delta, including the Sacramento River above Rio Vista, Cache Slough, Lindsey Slough, and Barker Slough. In the San Joaquin River, spawning is restricted to the reach near Antioch (Grimaldo pers. comm.). Spawning has been observed in the Sacramento River up to Garcia Bend during drought conditions, possibly attributable to adult movement farther inland in response to saltwater intrusion (Wang and Brown 1993). Eggs are broadcast over the river bottom where they attach to firm substrate, woody material, and vegetation. Hatching takes approximately 9 to 13 days, and larvae begin feeding 4 to 5 days later. Newly hatched larvae contain a large oil globule and are semi-buoyant. Larval smelt feed on rotifers and other zooplankton. As their fins and swim bladder develop, they move higher into the water column. Larvae and juveniles gradually move downstream toward rearing habitat in the estuarine mixing zone (Wang 1986).

Sacramento Splittail

Sacramento splittail is an endemic California minnow that was once widely distributed in lakes and rivers throughout the Central Valley, including the Sacramento River upstream to Redding, the San Joaquin River to river kilometer 218.5, and the American River as far east as Folsom (Moyle 2002). Present distribution includes Suisun Bay, the Napa and Petaluma Rivers (Sommer et al. 1997), the Sacramento River as far north as the Red Bluff Diversion Dam, portions of the Sacramento–San Joaquin River Delta (Delta), and the San Joaquin River upstream of its confluence with the Tuolumne River (Moyle 2002). Sacramento splittail is a California species of special concern.

Adult splittail usually reach sexual maturity in their second year. Sacramento splittail migrate upstream in late fall to early winter before spawning. Spawning occurs from approximately late February to July in water temperatures between 8.9°C (48°F) and 20°C (68°F) (Wang 1986). Eggs acquire adhesive properties following exposure to water and adhere to vegetation or other benthic substrates (Wang 1986). Spawning generally occurs on flooded habitats, including on floodplains and submerged vegetation. Fertilized eggs generally hatch in 3 to 5 days, and larvae begin feeding on plankton soon thereafter. Juvenile splittail inhabit shallow areas with abundant vegetation that are

devoid of strong currents (Wang 1986) as they travel downstream from the spawning grounds to the Delta.

Mature splittail generally are found in the shallows of sloughs in edgewater habitat by emergent vegetation. They feed primarily on benthic invertebrates and aquatic insect larvae (Moyle 2002).

Longfin Smelt

Longfin smelt are listed as threatened under CESA. Adults and juveniles typically occur in open waters of estuaries but range from coastal marine waters and bays to the upper freshwater reaches of estuaries (Moyle 2002). In the San Francisco estuary, the population is concentrated in San Pablo and San Francisco Bays during the spring and summer and begins a gradual upstream shift in distribution in the fall and winter as yearlings begin to move upstream to spawn. Spawning occurs mainly from February through April below Medford Island in the San Joaquin River and below Rio Vista in the Sacramento River. Longfin smelt are believed to spawn at or near the mixing zone between fresh and brackish water, but spawning habitat probably includes freshwater portions of the Sacramento River, eastern Suisun Bay, and Suisun Marsh; some spawning appears to occur upstream of Rio Vista in years with low outflow (Rosenfield 2010). Longfin smelt eggs are adhesive, and it is inferred from other smelt species that eggs are deposited on sandy substrates. After spawning, the embryos hatch in 40 days and newly hatched larvae are transported downstream into more brackish parts of the estuary. Metamorphosis into juveniles probably begins 30 to 60 days after hatching, depending on temperature.

Green Sturgeon

NMFS has divided sturgeon into two distinct population segments (DPSs): the southern and northern DPS. The northern DPS comprises sturgeon from the Eel River northward; the southern DPS comprises populations below the Eel River, specifically the Sacramento River population. The southern DPS, which occurs in the study area, is Federally listed as threatened. Green sturgeon is known to occur in the lower reaches of large rivers, including the Klamath, Eel, and Smith Rivers, from the Delta northward (Moyle 2002). Spawning populations have been identified in the Sacramento (Beamesderfer et al. 2006) and Klamath Rivers (Moyle 2002). Virtually all green sturgeon spawning occurs upstream of Hamilton City and as far upstream as Keswick Dam (Adams et al. 2002). Green sturgeon are thought to spawn upstream of the Red Bluff Diversion Dam following modifications to the operation of that facility (Adams et al. 2002). There is no historical or current evidence that green sturgeon are present in the San Joaquin River upstream of the Delta (Beamesderfer et al. 2004). No spawning habitat is present in the San Joaquin River for green sturgeon.

The preferred spawning substrate for green sturgeon is thought to be large cobble, although the substrate type may range from clean sand to bedrock. Eggs are broadcast and fertilized in relatively fast-flowing water where depths typically exceed 10 feet. In the Sacramento River, green sturgeon presumably spawn at temperatures ranging from 8°C (46°F) to 14°C (57°F) (Moyle 2002).

Green sturgeon eggs hatch in approximately 8 days at 13°C (55°F) (Moyle 2002). Larvae begin feeding 10 days after hatching. Metamorphosis to the juvenile stage is complete within 45 days of hatching. Juveniles spend 1 to 4 years in fresh and estuarine waters and migrate to salt water at lengths of 300 to 750 millimeters (mm) (National Marine Fisheries Service 2005). Little is known about movements, habitat use, and feeding habits of green sturgeon. Green sturgeon have been

salvaged at the state and Federal fish collection facilities in every month, indicating that they are present in the Delta year-round.

River Lamprey

River lamprey is a state species of special concern. River lamprey are relatively small (averaging 6.7 inches long) and highly predaceous (Moyle 2002). They are anadromous and will attack other fishes in both fresh and saltwater (Moyle 2002). A great deal of what is known about the species is based on populations in British Columbia. There, adults migrate from the Pacific Ocean into rivers and streams in September and spawn in winter. Adults excavate a saucer-shaped depression in sand or gravel riffles where eggs are deposited. After spawning, the adults perish. Juvenile river lamprey, called ammocoetes, remain in backwaters for several years where they feed on algae and microorganisms (Moyle et al. 1986). The metamorphosis from juvenile to adult begins in July and is complete by the following April. From May through July, following completion of metamorphosis, river lamprey aggregate in the Delta before entering the ocean.

River lamprey is distributed in streams and rivers along the eastern Pacific Ocean from Juneau, Alaska, to the San Francisco Bay. They may be most abundant in the Sacramento and San Joaquin River systems, although they are only rarely observed (Moyle et al. 1986).

Factors That Affect Fish Abundance

Information regarding the relationship between fish abundance and environmental conditions is most available for listed species, especially Chinook salmon. The following section focuses on factors that potentially have affected the abundance of listed species in the Central Valley. Although not all species are discussed, factors affecting the listed species are assumed also to affect the abundance of other native species in similar fashion.

Many factors have contributed to historical declines of Central Valley Chinook salmon and steelhead. One of the major causes has been the construction of mainstem dams that have blocked salmon and steelhead from accessing much of their historical spawning and rearing habitat. Downstream of these dams, major factors that contributed to declines, and that currently limit salmon and steelhead populations, include altered flows and water temperatures from dam operations and water diversions, losses of suitable spawning substrate, channel alterations (e.g., channelization, levees) associated with navigation and flood risk–reduction, and associated losses of riparian, floodplain, and wetland habitat. The loss of floodplain and estuarine rearing habitat has had an unknown effect, but there is growing evidence that such habitats were once of major importance for the growth and survival of juvenile salmon (Moyle 2002; National Marine Fisheries Service 2009b; Moyle et al. 2008; Lindley et al. 2007).

Migration Habitat Conditions

The San Joaquin River provides a migration pathway between freshwater and ocean habitats for adult and juvenile steelhead and fall-run Chinook salmon that spawn and rear in the San Joaquin River system.

Flow in the San Joaquin River has been highly altered, and a large reach of the river above the project site is dewatered. Brandes and McLain (2001) found that juvenile Chinook salmon survival increased from the San Joaquin River to Chipps Island (Suisun Bay) when they remained in the San Joaquin River as opposed to moving through Old River and interior Delta. However, in lower flow

years, survival through the lower San Joaquin River is only about 2% due to high predation mortality (Buchanan et al. 2013). Very little is known about steelhead survival through the lower San Joaquin River, but it is likely they also incur high predation mortality during low flows.

Very little is known about delta smelt survival and growth during upstream migration periods to spawning habitats. However, delta smelt that move up the San Joaquin River have an increased chance of getting entrained at the State Water Project (SWP) and Central Valley Project (CVP) pumps (Grimaldo et al. 2009). Rearing larval and early juvenile delta smelt typically move from freshwater to low salinity water when water temperatures increase (Nobriga et al. 2008). Larvae and juvenile smelt on the lower San Joaquin River and in Old River have a higher vulnerability to SWP and CVP entrainment than those found on the Sacramento River.

Adult splittail gradually move upstream during the winter and spring months to spawn. Year-class success of splittail is positively correlated with wet years, high Delta outflow, and floodplain inundation (Sommer et al. 1997; Moyle 2002). Low flow impedes access to floodplain areas that support rearing and spawning. Juvenile splittail emigrating down the San Joaquin River have high exposure to SWP and CVP entrainment and likely incur high predation mortality.

Water Temperature

Fish species have different responses to water temperature conditions, depending on their physiological adaptations. Salmonids in general have evolved under conditions in which water temperatures need to be relatively cool. Delta smelt and splittail can tolerate warmer temperatures up to approximately 22 (71°F) to 25°C (77°F). In addition to species-specific thresholds, different life stages have different water temperature requirements. Eggs and larval fish, for example, are the most sensitive to warm water temperature.

Unsuitable water temperatures for adult salmonids (such as Chinook salmon and steelhead) during upstream migration lead to delayed migration and the potential for lower reproduction rates. Warm water temperature and low dissolved oxygen also increase egg and fry mortality. U.S Fish and Wildlife Service (FWS) (1995) cited elevated water temperatures as limiting factors for fall- and late fall–run Chinook salmon.

Water temperature affects juvenile salmonid survival, growth, and vulnerability to disease. In addition, water temperature affects prey species abundance and predator occurrence and activity. Juvenile salmonids alter their behavior depending on water temperature, including movement to take advantage of cooler local water temperature refugia (e.g., movement into stratified pools, shaded habitat, subsurface flow) and in warmer water temperatures, improved feeding efficiency (e.g., movement into riffles).

Water temperature in Central Valley rivers frequently exceeds the tolerance of Chinook salmon and steelhead life stages. For example, adult fall-run Chinook salmon have been observed to stop their upstream migration when water temperatures exceed 66°F (Hallock et al. 1970). For Chinook salmon eggs and larvae, survival during incubation is assumed to decline with increasing temperature between 54 (12°C) and 61°F (16°C) (Myrick and Cech 2001). For juvenile Chinook salmon, survival is assumed to decline as temperature warms from 64 (18°C) to 75°F (24° C) (Myrick and Cech 2001). Relative to rearing, Chinook salmon require cooler temperatures to complete the parr–smolt transformation and maximize their saltwater survival. Successful smolt transformation is assumed to deteriorate at temperatures ranging from 63 (17°C) to 73°F (23°C) (Marine 1997 in Myrick and Cech 2001; Baker et al. 1995).

For steelhead, successful adult migration and holding are assumed to deteriorate as water temperature warms between 52 (11°C) and 70°F (21°C). Adult steelhead appear to be much more sensitive to thermal extremes than are juveniles (National Marine Fisheries Service 1996; McCullough 1999). Conditions supporting steelhead spawning and incubation are assumed to deteriorate as temperature warms between 52(11°C) and 59°F (15°C) (Myrick and Cech 2001). Juvenile rearing success is assumed to deteriorate at water temperatures ranging from 63(17°C) to 77°F (25°C) (Raleigh et al. 1984; Myrick and Cech 2001). Relative to rearing, smolt transformation requires cooler temperatures, and successful transformation occurs at temperatures ranging from 43(6°C) to 50°F (10°C). Juvenile steelhead, however, have been captured at Chipps Island in June and July at water temperatures exceeding 68°F (20°C) (Nobriga and Cadrett 2001). Juvenile Chinook salmon also have been observed to migrate at water temperatures warmer than expected based on laboratory experimental results (Baker et al. 1995).

As opposed to salmonids, delta smelt and splittail populations are adapted to warmer water temperature conditions in the Delta. Delta smelt may spawn at temperatures as high as 72°F (22°C) (U.S. Fish and Wildlife Service 1995) and can rear and migrate at temperatures as warm as 82°F (Swanson et al. 2000). Splittail may withstand temperatures as warm as 91°F (33°C) but prefer temperatures between 66 (19°C) and 75°F (24°C) (Young and Cech 1996).

Contaminants

In the Sacramento and San Joaquin River basins, industrial and municipal discharge and agricultural runoff transport contaminants into rivers and streams that ultimately flow into the Delta. Principal pollutants in the Delta are agricultural chemicals and their derivatives (Herbold et al. 1992). Organophosphate insecticides, such as carbofuran, chlorpyrifos, and diazinon, are present throughout the Central Valley and dispersed in agricultural and urban runoff. The “first-flush” storm event or the “dormant spray” storm event is of most concern because of the higher concentration of contaminants in the runoff. In particular, diazinon and chlorpyrifos are applied to control wood-boring insects in dormant stone fruit orchards from December to February (Zamora et al. 2003). These contaminants enter rivers in winter runoff and enter the estuary in concentrations that can be toxic to invertebrates (CALFED Bay-Delta Program 2000). Unlike severe bioaccumulants (toxic substances that increase in concentrations in living organisms) such as organochlorine pesticides, organophosphate pesticides typically are metabolized by most invertebrates. However, some organophosphate pesticides do not bioaccumulate, and some do bioaccumulate. In particular, diazinon has a solubility of 68.9 milligrams per liter (mg/L) (at 68°F [20°C]) but should not bioaccumulate in aquatic organisms (Zamora et al. 2003). Chlorpyrifos, on the other hand, is more persistent in the environment and tends to be hydrophobic to the water column. Chlorpyrifos has a lower solubility than diazinon (1.12 mg/L at 75°F [24°C]) and has a significant potential to bioaccumulate in aquatic organisms (Zamora et al. 2003). Because some organophosphates may accumulate in living organisms, they may become toxic to fish species, especially those life stages that remain in the system year-round and spend considerable time there during the early stages of development, such as Chinook salmon, steelhead, splittail, green sturgeon, and delta smelt.

Mercury contamination from historical mining activities is extensive on both sides of the Central Valley and occurs primarily from widely scattered hydraulic mining debris along eastside tributaries and active abandoned mines and associated debris piles on the west side. These sources continue to deposit significant amounts of mercury into the Bay-Delta system. Mercury occurs in several forms, including pure elemental mercury and toxic methylmercury. Mercury is mobile in aquatic systems as

aqueous mercury or when attached to suspended particulate matter. Methylmercury is a significant water quality concern because small amounts can bioaccumulate in fish to levels that are toxic to humans and wildlife. In the Delta, mercury concentrations were highest in largemouth bass (*Micropterus salmoides*), common carp (*Cyprinus carpio*) and Sacramento suckers *(Catostomus occidentalis)* (Melwani et al. 2008).

Other contaminants of particular concern in the Bay-Delta system include high concentrations of trace elements such as selenium, copper, cadmium, and chromium; however, their effects on higher trophic levels are poorly understood, in part as a result of the complex distribution of high concentrations in both time and space (Herbold et al. 1992). In general, it appears that the highest concentrations occur in areas where human activity adjacent to the bay is also the highest. Although these trace elements also occur naturally, concentrations of these trace elements have been found to be high enough to adversely affect the growth and reproduction of aquatic animals in laboratory experiments (Herbold et al. 1992).

Further discussion on water quality constituents of concern can be found in Section 3.2, *Water Quality and Groundwater Resources*.

Predation

Nonnative species cause substantial predation mortality on native species. Predatory fish, including striped bass, have been found to accumulate at high numbers in Clifton Court Forebay. Studies at Clifton Court Forebay estimated that approximately 60% to more than 95% of hatchery-reared fall-run Chinook salmon mortality is due to predation. Although the predation contribution to mortality is uncertain, the estimated mortality suggests that striped bass and other predatory fish, primarily nonnative, pose a threat to juvenile Chinook salmon moving downstream. Turbulence from water passing over dams and other structures may disorient juvenile Chinook salmon and steelhead, increasing their vulnerability to predators. Predators not only prey on salmon and steelhead; species such as striped bass, largemouth bass, and catfish also prey on delta smelt and splittail (U.S. Fish and Wildlife Service 1995).

Food

Food type and availability affect survival of fish species. Competition for food with species such as threadfin shad and wakasagi may affect delta smelt survival. Introduction of nonnative food organisms also may have an effect on delta smelt and other species' survival. For example, nonnative zooplankton species are more difficult for small smelt and striped bass to capture, increasing the likelihood of larval starvation (Moyle 2002). Splittail has also been affected by the introduction of nonnative species; the abundance of opossum shrimp has gone down as a result of the reduced abundance of native copepods upon which they feed, and this reduction of native copepods has been potentially attributable to the introduction of nonnative zooplankton and the Asiatic clam (*Potamorcorbula amurensis)*. In addition, flow affects the abundance of food in rivers, the Delta, and Suisun Bay. In general, higher flows result in higher productivity, including a higher input of nutrients from channel margins and floodplain inundation and higher production when low salinity occurs in the shallows of Suisun Bay. Higher productivity, in turn, results in an increase in the availability of food for delta smelt and other fish species.

3.8.2 Environmental Impacts

This section describes the environmental impacts of the proposed project on fish and aquatic resources. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, where appropriate.

3.8.2.1 Assessment Methods

Project impacts on fish and aquatic resources were identified and evaluated based on the regulatory and professional standards described below; existing environmental conditions in the study area; relevant information on the life history, habitat requirements, and ecology of the key evaluation species; location, timing, magnitude, intensity, and duration of activities related to the construction and operation of the project; and proposed effect mechanisms linking the environmental effects of these activities with the predicted responses of the evaluation species. The key evaluation species selected for this assessment are Chinook salmon and steelhead because of their special status, occurrence in the study area, sensitivity to anticipated project effects, and general utility as indicators of the response of other native fishes to potential project effects and mitigation measures. These species generally capture the full range of project effects on native fishes and their habitat in the project area. When project effects on other fish species are not adequately captured by these key evaluation species, the specific effects on the other species are described.

3.8.2.2 Thresholds of Significance

The thresholds listed below are based on professional opinion and the criteria provided in State CEQA Guidelines Appendix G (14 California Code of Regulations 15000 et seq.). The project would be considered to have a significant impact on fish and aquatic resources if it would result in any of the consequences listed below.

- 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 CDFW or FWS.
- Substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Substantially reduce the habitat of a fish population.
- Cause a fish population to drop below self-sustaining levels.
- Threaten to eliminate an animal community.
- Reduce the number or restricts the range of a rare or endangered fish species.

3.8.2.3 Impacts and Mitigation Measures

No Project Alternative

The No Project Alternative represents the continuation of existing deficiencies in the project area's flood control structures. No flood risk–reduction measures would be implemented, and no construction-related impacts related to fish and aquatic resources would occur. The consequences

of levee failure and flooding are described under the No Project Alternative description in Chapter 2, *Proposed Project and Alternatives*, Section 2.4, including a summary of possible environmental effects.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact AQU-1: Temporary Disturbance of Fish and Degradation of Aquatic Habitat during Construction Activities (less than significant with mitigation)

Construction activities would result in temporary water quality effects that may cause injury to fish by disrupting normal behaviors and potentially increasing the susceptibility of some individuals to predation. Increases in turbidity and suspended sediment associated with in-water and ground-disturbing activities are likely to extend beyond the immediate construction area and could result in short- to long-term effects of fish and aquatic resources depending on the effectiveness of the proposed erosion control and in-water turbidity control measures.

The proposed activities that could increase turbidity and sedimentation are those that disturb in-water sediments (e.g., installing cofferdam sheet piles and fishing pier piles) or soils on the adjacent bank or levee where they can be carried by surface runoff to the river (e.g., invasive plant and tree removal and construction of structure control building).

Elevated concentrations of fine sediment and turbidity in the aquatic environment can have both direct and indirect impacts on fish. The severity of these impacts depends on the concentration and duration of exposure and the sensitivity of the species and life stage. Juvenile salmonids are expected to be the most sensitive species and life stage in the study area.

Increases in turbidity and suspended sediment can affect adult and juvenile salmonids by displacing them from preferred habitat. Migrating adults have been reported to avoid high silt loads or cease migration when avoidance is not possible (Cordone and Kelley 1961). Juveniles tend to avoid streams that are chronically turbid (Lloyd 1985) or move laterally or downstream to avoid turbidity plumes (Sigler et al. 1984). Juvenile coho salmon have been reported to avoid turbidities exceeding 70 Nephelometric Turbidity Units (NTUs) (Bisson and Bilby 1982) and cease territorial behavior when exposed to a pulse of turbidity of 60 NTU (Berg 1983). Displacement of juveniles from preferred habitat may reduce growth and survival of juveniles by affecting feeding success or increasing their susceptibility to predation.

Laboratory studies have demonstrated that chronic or prolonged exposure to high turbidity and suspended sediment levels can lead to reduced growth rates. For example, Sigler et al. (1984) found that juvenile coho salmon and steelhead trout exhibited reduced growth rates and higher emigration rates in turbid water (25 to 50 NTU) compared to clear water. Reduced growth rates have generally been attributed to an inability of fish to effectively feed in turbid water (Waters 1995). Chronic exposure to high turbidity and suspended sediment may also affect growth and survival by impairing respiratory function, reducing tolerance to disease and contaminants, and causing physiological stress (Waters 1995). High suspended sediment concentrations can also indirectly affect feeding and growth by burying stream substrates and degrading the quality of the substrate for aquatic invertebrates, an important food source for juvenile salmonids and other fishes.

Other species may be affected in similar ways although their tolerance levels vary depending on the species and life stage. For example, NMFS (2008) noted that short-term increases in suspended

sediments or turbidity were unlikely to affect the foraging success of green sturgeon because this species uses olfactory cues as opposed to vision to locate prey. The species most sensitive to turbidity, sedimentation, and other physical disturbances are those that spawn in the project area. For example, spawning adults, eggs, and larvae of delta smelt may be present from February through July. Therefore, in-water construction activities during this period could have significant adverse direct and indirect impacts on these special-status species.

Under Alternative 1, the magnitude and duration of exposure would be well below levels associated with injury or reduced growth of juvenile salmonids but would be expected to temporarily disrupt normal feeding, sheltering, and migratory behavior. Some individuals may respond by moving away from protective cover, increasing their susceptibility to predation. However, with implementation of a required stormwater pollution prevention plan (SWPPP), as discussed in Section 3.2, *Water Quality and Groundwater Resources,* to control erosion and sedimentation, and implementation of Mitigation Measure AQU-MM-1, these impacts would be reduced to a less-than-significant level.

Mitigation Measure AQU-MM-1: Limit In-Water Construction Activity to Periods of the Year That Minimize Impacts on Fish and Fish Habitat

In-water construction activities will be limited to the period mid-July to mid-October to avoid the primary juvenile migration periods of state- and Federally listed salmon and steelhead and the primary spawning, egg, and larval stages of state- and Federally listed delta smelt and state-listed longfin smelt. SJAFCA or its contractor may conduct in-water activities as early as July 1 if FWS and DFW determine that delta smelt are not likely to be present in the project area in the year of construction (spawning, egg, and larval life stages of longfin smelt occur earlier than July 1). SJAFCA must obtain written permission from FWS and DFW before allowing the contractor to begin in-water work before July 1.

Impact AQU-2: Temporary Noise Disturbance to Fish during Construction Activities (less than significant with mitigation)

Construction activities would result in temporary noise and physical disturbance that may cause injury or death of fish by disrupting normal behaviors and potentially increasing the susceptibility of some individuals to predation. Noise and other disturbances from general construction activities (i.e. bank work, placing sheet piles for cofferdams) would be limited to the immediate construction area, affecting only small numbers of individuals. Installation of piles for the gate structure and fishing and wildlife viewing platforms will generate more noise at a greater distance and is discussed below.

Under Alternative 1, the proposed activities that are most likely to cause noise and physical disturbance are the installation of sheet piles for the cofferdam, wooden piles for the fishing and wildlife viewing platforms on Dad's Point, and impact driving of concrete piles during the construction of the gate structure. The proposed project includes the installation of sheet piles for the cofferdams and fixed sheet pile walls. The sheet piles would be driven into the river bed by a vibratory hammer. For the gated fixed wall structure, 24- inch diameter concrete cylinder piles would be driven with an impact pile driver inside of the dewatered cofferdam, which will dampen the noise and vibration. The fishing and wildlife viewing platforms would be constructed with 12-inch diameter wood piles that would also be driven with an impact pile driver.

Pile driving in water or nearby on shore produces underwater sound that can affect fish. The *Caltrans Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving*

on Fish (Caltrans Technical Guidance) (2009) provides a thorough discussion of this issue, including detailed definitions of terminology and measurement metrics.

The following three metrics are commonly used in evaluating hydroacoustic impacts on fish and are expressed in terms of decibels relative to 1 micro-pascal. Refer to the Caltrans Technical Guidance for definitions of these terms.

- Peak sound pressure level (Lpeak).
- Root mean square (RMS).
- Sound exposure level (SEL).

The concept of cumulative SEL is used in pile driving noise impact analysis as well. The cumulative SEL is calculated by taking 10 times the logarithm of the number of pile strikes that are expected to occur in one day and adding that value to the single strike SEL. For example, if it takes 1,000 strikes to install a pile or several piles in one day and the single strike SEL is 175 dB, the cumulative SEL is calculated as follows.

$$SEL_{cumulative} = 175 + 10\log(1{,}000) = 175 + 30 = 205 \text{ dB}$$

Over the last 10 years, criteria for evaluating potential effects on fish from sound generated by pile driving have evolved as a result of work conducted by the Fisheries Hydroacoustic Working Group (FHWG). This group includes representatives from the Federal Highway Administration (FHWA), departments of transportation in Oregon and Washington, National Marine Fisheries Service (NMFS) (Northwest and Southwest), FWS, the CDFW, and the U.S. Army Corps of Engineers. Technical fisheries and noise experts also participate in the FHWG.

A meeting of FHWG in June 2008 resulted in the *Agreement in Principal for Interim Criteria for Injury to Fish from Pile Driving Activities* (Fisheries Hydroacoustic Working Group 2008). The agreed upon criteria identify sound pressure levels of 206 dB peak and 187 dB cumulative SEL for all listed fishes except those weighing less than 2 grams. For such fishes, the criterion for the cumulative SEL is 183 dB. These criteria are for impact pile driving only.

NMFS also uses 150 dB-RMS as a threshold for behavioral effects. Although this threshold is commonly evaluated, to date NMFS has not required implementation of attenuation systems where exceedance of 150 dB-RMS is indicated.

Sound attenuates as it travels over distance from the pile. The rate that sound attenuates can vary widely depending many factors including the type of pile, type of hammer, substrate conditions, etc. NMFS recommends a rate of attenuation of 4.5 dB per doubling of distance unless data supporting other rates can be provided.

Source levels are typically expressed as a sound level at a distance of 10 m. If sound attenuates at a rate of 4.5 dB per doubling of distance, and a pile driver produces a sound level of 180 dB at 10 m, the sound level at 20 m would be 175.5 dB, at 40 m it would be 171 dB, and so on.

The impact analysis is done by determining the distance within which the injury criteria are expected to be exceeded. This is calculated based on the rate of sound attenuation and the source level.

The attenuation rate discussed above is generally typical for an open water situation such as in a bay. In a shallow river setting, such as the setting for the proposed project, sound generally

attenuates at a greater rate. Attenuation data for 48-inch CISS steels installed in the Russian River near Geyserville indicates attenuation rate of about 5 dB per doubling of distance between 10 and 45 m. Beyond 45 m the attenuation rate increases to about 10 dB per doubling of distance. To accommodate this, source levels at a reference distance of 45 m have been developed from the 10 m reference levels using 5 dB per doubling of distance. Sound levels beyond 45 m are then calculated using 10 dB per doubling of distance.

Underwater noise source levels were developed from empirical data from other projects reported in the Caltrans Technical Guidance. For this project, sounds levels from the Port of Oakland were used for 24-inch octagonal concrete piles. (Caltrans 2014)

Data from the Caltrans Technical Guidance for 12- 14-inch timber driven in water at Ballena Bay in Alameda, CA indicates the following sources levels at 10 m.

Peak=195 dB, SEL=170 dB, RMS=180 dB

Using an attenuation rate of 5 dB per doubling of distance this converts to the following source levels at 45 m for pile driving in water.

Peak=185 dB, SEL=160 dB, RMS=170 dB

Table 3.8-2 summarizes the results of the analysis. All piles are driven in one day. The table shows the distances within which the injury criteria are expected to be exceeded under these two scenarios.

Table 3.8-2. Summary of Pile Driving Noise Levels for Alternative 1

Pile Type	Location	Total Installed/ Number per Day Installed	Number of Strikes/ Day	Cumulative SEL at 10 m	Cumulative SEL dB (187 dB) for Fish >= 2 Grams	Cumulative SEL dB (183 dB) for Fish < 2 Grams
14-inch diameter concrete (without attenuation)	In water	70/8	1,200	197	45 m to threshold	83 m to threshold
12-inch diameter wood (without attenuation)	In water	100/15	1,125	191	17 m to threshold	32 m to threshold
14-inch diameter concrete (with attenuation)	In water	70/8	1,200	192	21 m to threshold	39 m to threshold
12-inch diameter wood (with attenuation)	In water	100/15	1,125	186	<10 m to threshold	15 m to threshold

m = meters.
SEL = sound exposure level.
dB = decibels.

The cumulative SEL 10 meters (m) away from pile driving for the concrete piles is 197 dB without attenuation and 192 dB with attenuation. These numbers exceed the threshold of 187 dB for fish >= 2 grams and 183 dB for fish < 2 grams. Estimation of the cumulative SEL requires an estimate of the duration of pile driving activities in a single day. Project engineers estimate that eight piles would be driven per day (8 hours) during pile driving operations, with the number of strikes at 1,200 per day. The spreadsheet model calculates a cumulative SEL of 187 dB without attenuation at a distance of 45 m (fish >= 2 grams) and a distance of 83 m (fish < 2 grams) from the pile and a maximum distance of 541 m where the potential injury of fish would occur, assuming that fish remain in this zone for an entire day of pile driving. In this case, the maximum distance of 541 m is limited by the distance to the *effective quiet* SEL, which is the distance at which the single-strike SEL attenuates to 150 dB. Beyond this distance, no physical injury is expected regardless of the number of strikes.

The cumulative SEL 10 meters (m) away from pile driving (12-inch wood piles) is 191 dB without attenuation and 186 dB with attenuation. Without attenuation, these numbers exceed the threshold of 187 dB for fish >= 2 grams and 183 dB for fish < 2 grams. With attenuation, 186 dB falls within the acceptable range for fish >= 2 grams (187 dB). Estimation of the cumulative SEL requires an estimate of the duration of pile driving activities in a single day. Project engineers estimate that 15 piles would be driven per day (8 hours) during pile driving operations, with the number of strikes at 1,125 per day. The spreadsheet model calculates a cumulative SEL of 187 dB without attenuation at

a distance of 17 m (fish >= 2 grams) and a distance of 32 m (fish < 2 grams) from the pile and a maximum distance of 215 m where the potential injury of fish would occur, assuming that fish remain in this zone for an entire day of pile driving. In this case, the maximum distance of 215 m is limited by the distance to the *effective quiet* SEL, which is the distance at which the single-strike SEL attenuates to 150 dB. Beyond this distance, no physical injury is expected regardless of the number of strikes.

Based on these computations, peak sound levels generated by pile driving activities would be outside of the established thresholds for the protection of fish. Cumulative sound levels sufficient to cause potential injury to fish would occur within 45 m of pile driving activities. This assumes that fish would remain in this zone for an entire day of pile driving operations, which is the worst case scenario. Pile driving could adversely affect special- status fish species, should they be present in pile driving. With implementation of Mitigation Measure AQU-MM-1, which is outside the time frame for special-status fish species presence, and Mitigation Measures AQU-MM-2a and AQU-MM-2b, which minimize noise impacts, direct noise impacts on special-status fish species from pile driving would be reduced to a less-than-significant level.

Mitigation Measure AQU-MM-1: Limit In-Water Construction Activity to Periods of the Year That Minimize Effects on Fish

Please refer to the discussion of Mitigation Measure AQUA-MM-1 under Alternative 1, Impact AQU-1.

Mitigation Measure AQU-MM-2a: Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving to Minimize Effects on Fish

Potential injury and mortality associated with pile driving, which may be required for the concrete pile installation for the fixed wall and the new fishing platforms on Dad's Point, will be minimized by implementing the following measures.

SJAFCA will require the contractor to implement the following measures, developed in coordination with project design engineers, to minimize the exposure of listed fish species to potentially harmful underwater sounds.

- If feasible, the contractor will vibrate all piles to the maximum depth possible before using an impact hammer.
- During impact driving, the contractor will limit the number of strikes per day to the minimum necessary to complete the work and will limit the total number of hammer strikes to 1,200 strikes per day.
- The smallest pile driver and minimum force necessary will be used to complete the work.
- During impact driving, SJAFCA will require the contractor to use a bubble ring or similar device to minimize the extent to which the interim peak and cumulative SEL thresholds are exceeded.
- All work will occur inside a dewatered cofferdam, except for the fishing platforms.
- No pile driving activity will occur at night.

Mitigation Measure AQU-MM-2b: Develop and Implement a Hydroacoustic Monitoring Plan to Minimize Noise Effects on Fish

SJAFCA and/or its contractor will develop and implement a hydroacoustic monitoring plan. The monitoring plan will be submitted to the resource agencies (CDFW, NMFS, FWS) for approval at least 60 days before the start of project activities. The plan will include the following requirements.

- SJAFCA and/or its contractor will monitor underwater noise levels during all impact pile driving activities on land and in water to ensure that that peak and cumulative SELs do not exceed estimated values (Table 3.8-2).
- The monitoring plan will describe the methods and equipment that will be used to document the extent of underwater sounds produced by pile driving, including the number, location, distances, and depths of the hydrophones and associated monitoring equipment.
- The monitoring plan will include a reporting schedule that includes provision of daily summaries of the hydroacoustic monitoring results to the resource agencies and more comprehensive reports on a monthly basis during the pile driving season.
- The reports will include the number of piles installed per day, the number of strikes per pile, the interval between strikes, the peak sound pressure level (Lpeak), SEL, RMS per strike, and accumulated SEL per day at each monitoring station.

Impact AQU-3: Adverse Effects on Fish Health and Survival Associated with Potential Discharge of Contaminants during Construction Activities (less than significant with mitigation)

Accidental spills or leakage of contaminants such as gasoline, lubricants, other petroleum-based products, and concrete could kill or injure fish in the project area, as well as making them more susceptible to disease and other sources of mortality (National Marine Fisheries Service 2006). Direct and indirect impacts related to contaminant spills and leaks are potentially significant. Implementation of Mitigation Measure HAZ-MM-1 would reduce this impact to a less-than-significant level.

Mitigation Measure HAZ-MM-1: Prepare and Implement a Spill Prevention, Control and Countermeasure Plan

Please refer to the discussion of Mitigation Measure HAZ-MM-1 in Section 3.13, *Public Health and Environmental Hazards*, under Alternative 1, Impact HAZ-1.

Impact AQU-4: Adverse Effects on Special-Status Fish Species Associated with Potential Stranding during Dewatering (less than significant with mitigation)

Due to Smith Canal's connection to the San Joaquin River, there is a potential for special-status fish species to be present in Smith Canal during dewatering activities after cofferdam placement. If stranded, fish could die in the dewatered areas. This would have a significant direct impact on special-status fish species. However, it isn't expected that a large number of fish will be present during in-water construction as discussed under Mitigation Measure AQU-MM-1. Also, implementation of Mitigation Measure AQU-MM-4, would reduce the impact to a less-than-significant level.

Mitigation Measure AQU-MM-4: Hire a Qualified Fisheries Biologist during Dewatering Activities to Minimize Fish Mortality

To avoid or minimize potential injury and mortality of special-status fish species, SJAFCA proposes to implement the following fish protection measures during cofferdam construction and dewatering.

- SJAFCA and/or its contractor will ensure that a qualified fish biologist is on site during cofferdam construction and dewatering to supervise fish rescue activities and document any occurrences of stressed, injured, or dead fish.
- The biologist will be responsible for (1) identifying the appropriate capture or exclusion measures; (2) overseeing the monitoring, handling, and release of all captured salmonids; and (3) maintaining detailed records of fish rescue activities, including species, numbers, life stages, and size classes of listed species observed, collected, relocated, injured, and killed, and environmental conditions (e.g., water temperature) under which fish rescue activities are conducted.
- Potential capture methods include seines, dip nets, electrofishing, or other methods that minimize the risk of injury. If electrofishing is used, all techniques will be consistent with NMFS Electrofishing Guidelines (National Marine Fisheries Service 2000).

Alternative 2: Atherton Cove Floodwall with Smith Canal Gate

Impact AQU-1: Temporary Disturbance of Fish and Degradation of Aquatic Habitat during Construction Activities (less than significant with mitigation)

Construction activities would increase the potential for erosion and discharge of fine sediment into Atherton Cove and possibly into the San Joaquin River, potentially affecting sensitive fish and aquatic habitat. Removal and reinstallation of the existing boat docks in Atherton Cove would also increase discharge of fine sediment into Atherton Cove and would increase noise impacts on fish. The general effects of turbidity and suspended sediment and noise on the key evaluation species and life stages are described under Alternative 1, Impact AQU-1.

The potential magnitude of project impacts on water quality and aquatic habitat in the San Joaquin River is greater than that associated with Alternative 1 because of the larger area that would be exposed to surface water from construction of the floodwall, and the removal and replacement of existing docks that would result in direct contact of substrates to flowing water.

Under Alternative 2, project activities that could increase turbidity and sedimentation in the San Joaquin River include construction of the floodwall, and excavation of borrow material and other ground-disturbing activities within the offset area. The impact would be a temporary increase in turbidity and suspended sediment during construction; however, under Alternative 2, the magnitude and duration of exposure would be well below levels associated with injury or reduced growth of juvenile salmonids but would be expected to temporarily disrupt normal feeding, sheltering, and migratory behavior. Some individuals may respond by moving away from protective cover, increasing their susceptibility to predation.

Potential increases in turbidity and suspended sediment associated with Alternative 2 would be limited by implementation of a required SWPPP that would include erosion control measures, and turbidity compliance monitoring that would occur in accordance with the Clean Water Act 401

water quality certification, as described in Section 3.2, *Water Quality and Groundwater Resources.* The implementation of the SWPPP, turbidity compliance monitoring, and implementation of Mitigation Measure AQU-MM-1 would reduce this significant direct impact to a less-than-significant level.

Mitigation Measure AQU-MM-1: Limit In-Water Construction Activity to Periods of the Year That Minimize Effects on Fish

Please refer to the discussion of Mitigation Measure AQU-MM-1 under Alternative 1, Impact AQU-1.

Impact AQU-2: Temporary Noise Disturbance to Fish during Construction Activities (less than significant with mitigation)

The potential magnitude of project impacts for Alternative 2 on sensitive fish species from noise and pile driving in the San Joaquin River is greater than Alternative 1. The concrete pile driving for the gates and the wood piles for the fishing and wildlife viewing platforms will have the same impacts as Alternative 1, but the wood piles for the reinstallation of the boat docks will result in greater noise impacts (Table 3.8-3). Potential increases in noise associated with construction of Alternative 2 due to increased pile driving of 100 wood piles, would result in significant direct and indirect impacts.

Table 3.8-3. Summary of Pile Driving Noise Levels for Alternative 2

Pile Type	Location	Total Installed/ Number per Day Installed	Number of Strikes/ Day	Cumulative SEL at 10m	Cumulative SEL dB (187 dB) for Fish >= 2 Grams	Cumulative SEL dB (183 dB) for Fish < 2 Grams
12-inch diameter wood (without attenuation)	In water	100/15	1,125	191	17 m to threshold	32 m to threshold
12-inch diameter wood (with attenuation)	In water	100/15	1,125	186	<10 m to threshold	15 m to threshold

m = meters.
SEL = sound exposure level.
dB = decibels.

The cumulative SEL 10 meters (m) away from pile driving (12-inch wood piles) is 191 dB without attenuation and 186 dB with attenuation. Without attenuation, these numbers exceed the threshold of 187 dB for fish >= 2 grams and 183 dB for fish < 2 grams. With attenuation, 186 dB falls within the acceptable range for fish >= 2 grams (187 dB). Estimation of the cumulative SEL requires an estimate of the duration of pile driving activities in a single day. SJAFCA estimates that 15 piles would be driven per day (8 hours) during pile driving operations, with the number of strikes at 1,125 per day. The spreadsheet model calculates a cumulative SEL of 187 dB without attenuation at a distance of 17 m (fish >= 2 grams) and a distance of 32 m (fish < 2 grams) from the pile and a maximum distance of 215 m where the potential injury of fish would occur, assuming that fish

remain in this zone for an entire day of pile driving. In this case, the maximum distance of 215 m is limited by the distance to the *effective quiet* SEL, which is the distance at which the single-strike SEL attenuates to 150 dB. Beyond this distance, no physical injury is expected regardless of the number of strikes.

Based on these computations, peak sound levels generated by pile driving activities would be outside of the established thresholds for the protection of fish. Cumulative sound levels sufficient to cause potential injury to fish would occur within 32 m of pile driving activities. This assumes that fish would remain in this zone for an entire day of pile driving operations, which is the worst case scenario. Pile driving could adversely impact special- status fish species, should they be present during pile driving. With implementation of Mitigation Measure AQU-MM-1 which is outside the time frame for special-status fish species presence, and Mitigation Measures AQU-MM-2a and AQU-MM-2b, which minimize noise impacts, noise impacts on special-status fish species would be reduced to a less-than-significant level.

Mitigation Measure AQU-MM-1: Limit In-Water Construction Activity to Periods of the Year That Minimize Effects on Fish

Please refer to the discussion of Mitigation Measure AQU-MM-1 under Alternative 1, Impact AQU-1.

Mitigation Measure AQU-MM-2a: Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving to Minimize Effects on Fish

Please refer to the discussion of Mitigation Measure AQU-MM-2a under Alternative 1, Impact AQU-2.

Mitigation Measure AQU-MM-2b: Develop and Implement a Hydroacoustic Monitoring Plan to Minimize Noise Effects on Fish

Please refer to the discussion of Mitigation Measure AQU-MM-2b under Alternative 1, Impact AQU-2.

Impact AQU-3: Adverse Effects on Fish Health and Survival Associated with Potential Discharge of Contaminants during Construction Activities (less than significant with mitigation)

The general effects of contaminants and other hazardous construction materials on the key evaluation species and life stages are described under Alternative 1, Impact AQU-3. Based on similarities in project features and construction activities, direct and indirect effects of Alternative 2 on fish resources and aquatic habitat related to potential contaminant spills or leaks are expected to be similar to that of Alternative 1. Adverse effects related to contaminant spills are potentially significant but would be reduced to a less-than-significant level through implementation of Mitigation Measure HAZ-MM-1

Mitigation Measure HAZ-MM-1: Prepare and Implement a Spill Prevention, Control and Countermeasure Plan

Please refer to the discussion of Mitigation Measure HAZ-MM-1 in Section 3.13, *Public Health and Environmental Hazards*, under Alternative 1, Impact HAZ-1.

Impact AQU-4: Adverse Effects on Special-Status Fish Species Associated with Potential Stranding during Dewatering (less than significant with mitigation)

The impacts of dewatering are described under Alternative 1, Impact AQU-4, would be the same as described under Alternative 1. This would have a significant direct impact on special-status fish species. However, it is not expected that a large number of fish would be present during in-water construction, as discussed under Mitigation Measure AQU-MM-1. Also, implementation of Mitigation Measure AQU-MM-4 would reduce this impact to less-than-significant level.

Mitigation Measure AQU-MM-4: Hire a Qualified Fisheries Biologist during Dewatering Activities to Minimize Fish Mortality

Please refer to the discussion of Mitigation Measure AQU-MM-4 under Alternative 1, Impact AQU-4.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact AQU-1: Temporary Disturbance of Fish and Degradation of Habitat during Construction Activities (less than significant with mitigation)

Based on similarities in project features and construction activities, direct and indirect impacts of Alternative 3 on fish resources and aquatic habitat related to increases in suspended sediment and turbidity are expected to be similar to that of Alternative 1. Therefore, in-water construction activities during this period could have significant adverse direct and indirect impacts on these special-status species. These impacts would be reduced by implementation of a SWPPP that would include erosion control measures as described in Section 3.2, *Water Quality and Groundwater Resources.* The implementation of the SWPPP and Mitigation Measure AQU-MM-1 would reduce the impact to a less-than-significant level.

Mitigation Measure AQU-MM-1: Limit In-Water Construction Activity to Periods of the Year That Minimize Effects on Fish

Please refer to the discussion of Mitigation Measure AQU-MM-1 under Alternative 1, Impact AQU-1.

Impact AQU-2: Temporary Noise Disturbance to Fish during Construction Activities (less than significant with mitigation)

The potential magnitude of project effects on sensitive fish species from noise in the San Joaquin River resulting from construction of two gated fixed wall structures is greater than that associated with Alternative 1 because of the larger area needed for both gated fixed wall structures. Potential increases in noise associated with construction of Alternative 3 would be twice that of Alternative 1 because there would be two gates and 140 piles driven rather than 70 piles for one gate (Table 3.8-2). This would result in significant direct and indirect impacts; however, implementation of Mitigation Measure AQU-1, Mitigation Measure AQU-MM-2a, and AQU-MM-2b would reduce these impacts to a less-than-significant level.

Mitigation Measure AQU-MM-1: Limit In-Water Construction Activity to Periods of the Year That Minimize Effects on Fish

Please refer to the discussion of Mitigation Measure AQU-MM-1 under Alternative 1, Impact AQU-1.

Mitigation Measure AQU-MM-2a: Minimize Exceedance of Interim Threshold Sound Levels during Pile Driving to Minimize Effects on Fish

Please refer to the discussion of Mitigation Measure AQU-MM-2a under Alternative 1, Impact AQU-2.

Mitigation Measure AQU-MM-2b: Develop and Implement a Hydroacoustic Monitoring Plan to Minimize Noise Effects on Fish

Please refer to the discussion of Mitigation Measure AQU-MM-2b under Alternative 1, Impact AQU-2.

Impact AQU-3: Adverse Effects on Fish Health and Survival Associated with Potential Discharge of Contaminants during Construction Activities (less than significant with mitigation)

The general effects of contaminants and other hazardous construction materials on the key evaluation species and life stages are described under Alternative 1, Impact AQU-3. Based on similarities in project features and construction activities, direct and indirect impacts of Alternative 3 on fish resources and aquatic habitat related to potential contaminant spills or leaks are expected to be similar to that of Alternative 1. Adverse effects related to contaminant spills are potentially significant but would be reduced to a less-than-significant level through implementation of Mitigation Measure HAZ-MM-1.

Mitigation Measure HAZ-MM-1: Prepare and Implement a Spill Prevention, Control and Countermeasure Plan

Please refer to the discussion of Mitigation Measure HAZ-MM-1 in Section 3.13, *Public Health and Environmental Hazards*, under Alternative 1, Impact HAZ-1.

Impact AQU-4: Adverse Effects on Special-Status Fish Species Associated with Potential Stranding during Dewatering (less than significant with mitigation)

The effects of dewatering are described under Alternative 1, Impact AQU-4 and would be greater than described under Alternative 1. Two gated fixed wall structures are proposed, and dewatering would occur at both sites. This would have a significant direct impact on special-status fish species. However, it is not expected that a large number of fish will be present during in-water construction, as discussed under Mitigation Measure AQU-MM-1. Implementation of the Mitigation Measure AQU-MM-4 this would reduce the impact to a less-than-significant level.

Mitigation Measure AQU-MM-4: Hire a Qualified Fisheries Biologist during Dewatering Activities to Minimize Fish Mortality

Please refer to the discussion of Mitigation Measure AQU-MM-4 under Alternative 1, Impact AQU-4.

3.9 Wildlife

This section describes the regulatory and environmental setting for wildlife in the study area. It also analyzes environmental impacts on wildlife that could result from implementing the proposed project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.9.1 Existing Conditions

3.9.1.1 Regulatory Setting

The following Federal, state, and local regulations and technical guidelines related to terrestrial wildlife may apply to implementation of the proposed project. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

Endangered Species Act

The Endangered Species Act (ESA) protects species and their habitats that have been identified by the National Marine Fisheries Service (NMFS) or U.S. Fish and Wildlife Service (FWS) as threatened or endangered. ESA is administered by NMFS and FWS. In general, NMFS is responsible for protection of ESA-listed marine species and anadromous fish, and FWS is responsible for other listed species.

Under Section 7, the Federal agency conducting, funding, or permitting an action (the lead Federal agency) must consult with NMFS or FWS, as appropriate, to ensure that the project would not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. *Critical habitat* is specific geographic areas that contain features essential to the conservation of an endangered or threatened species and that require management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery.

Section 9 of ESA prohibits the take of any fish or wildlife species listed under ESA as endangered. Take of threatened species also is prohibited under Section 9, unless otherwise authorized by Federal regulations. *Take*, as defined by ESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Harm* is defined as "any act that kills or injures the species, including significant habitat modification."

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union (now Russia). The MBTA prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase, or barter any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11). EO 13186 (January 10, 2001) directs each Federal agency taking actions that have or may have a negative effect on migratory bird populations to work with FWS to

develop a memorandum of understanding (MOU) that will promote the conservation of migratory bird populations.

Marine Mammal Protection Act

The Marine Mammal Protection Act of 1972 (MMPA) (16 USC 31) is implemented by NMFS and prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. Under MMPA, "*take*" is defined as to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.

State

California Endangered Species Act

The California Endangered Species Act (CESA) (California Fish and Game Code [Fish & Game Code] Sections 2050–2116) states that all native species or subspecies of a fish, amphibian, reptile, mammal, or plant and their habitats that are threatened with extinction and those experiencing a significant decline that, if not halted, would lead to a threatened or endangered designation, will be protected or preserved.

Section 2090 of Fish & Game Code requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. California Department of Fish and Wildlife (CDFW) administers the act and authorizes take through Fish & Game Code Section 2081, incidental take agreements, (except for species designated as fully protected) and Section 2080.1, consistency determinations.

Under Section 2081 of Fish & Game Code, a permit from CDFW is required for projects that could result in the take of a species that is state listed as threatened or endangered. Under CESA, *take* is defined as an activity that would directly or indirectly kill an individual of a species. The definition of *tak*e includes: hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture, or kill. As a result, the threshold for take under CESA is higher than that under ESA. For example, habitat modification is not necessarily considered take under CESA.

California Fish and Game Code

Lake and Streambed Alteration Agreement (Sections 1600–`603)

Sections 1600–1603 of the Fish & Game Code state that it is unlawful for any person or agency to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources, or to use any material from the streambeds without first notifying CDFW. A Lake and Streambed Alteration Agreement (SAA) must be obtained if effects are expected to occur. (Additional details on the regulatory definitions of Section 1600 can be found in Section 3.8, *Vegetation and Wetlands*.)

California Fully Protected Species (Sections 3511, 3513, 4700, 5050)

Fish & Game Code Sections 3511, 3513, 4700, and 5050 pertain to fully protected wildlife species (birds in Sections 3511 and 3513, mammals in Section 4700, and reptiles and amphibians in Section 5050) and strictly prohibit the take of these species. CDFW cannot issue a take permit for fully

protected species, except under narrow conditions for scientific research or the protection of livestock, or if a Natural Communities Conservation Plan (NCCP) has been adopted.

Avian Species and their Nests (Sections 3503, 3503.5, 3513)

These Fish & Game Code sections protect all native birds, birds of prey, and all nongame birds, including eggs and nests, that are not already listed as fully protected and that occur naturally within the state. Eggs and nests of all birds are protected under Section 3503, while Fish & Game Code 3503.5 protects all birds of prey as well as their eggs and nests. Migratory non-game birds are protected under Section 3513. Except for take related to scientific research, take as described above is prohibited.

Nongame Mammals (Sections 4150–55)

Fish & Game Code section 4150 protects native nongame mammals from take, except in specific circumstances related to "pest" mammals as described in the code. The Fish & Game Code defines *take* as to "hunt, pursue, capture, or kill, or attempt to hunt, pursue, catch, capture or kill." (Fish & Game Code Section 86).

Regional and Local

The study area is subject to City of Stockton regulations and San Joaquin County regulations. General plan policies that apply to both vegetation and wetlands and wildlife resources are described in Section 3.7, *Vegetation and Wetlands*. Additional policies related specifically to wildlife resources are described below.

San Joaquin County General Plan

The Vegetation, Fish, and Wildlife Habitat subsection of the *San Joaquin 2010 County Wide General Plan* (1992) contains objectives and policies related to protecting and improving the county's wildlife resources that could apply to the proposed project. These policies aim to avoid cumulatively significant impacts on wildlife resources; protect and improve the county's vegetation, fish, and wildlife resources; and provide undeveloped open space for nature study, protection of threatened and endangered species, and preservation of wildlife habitat; prevent net loss of riparian or wetland habitat as a result of development and prohibit such development except under certain conditions; replace any lost vegetation with native species; and monitor and maintain habitat that is required to be protected, restored, or created as mitigation for a project's impacts in accordance with a County-approved program.

City of Stockton General Plan

The *2035 Stockton General Plan* (2007) includes goals (NCR-1 and NCR-2) for the preservation and protection of natural and biological resources. Several policies relevant to wildlife resources applicable to the proposed project support this goal. These policies address protecting fish and wildlife habitat; preserving open space; preserving, restoring, and enhancing designated habitat of state or Federally listed threatened, endangered, or other special-status species; and mitigating for impacts on sensitive habitats. The policies call for carefully reviewing development proposals and development planning to avoid conflicts with special-status habitats or species or jurisdictional wetlands, requiring that biological studies be conducted during the development application process, requiring implementation of appropriate mitigation measures, and encouraging planting of native vegetation. In addition, policies aim to minimize disturbance of levee vegetation and ensure

replacement of such vegetation is consistent with flood control and reclamation district constraints and call for the City to approve only those activities in the Sacramento–San Joaquin River Delta and related waterways that are consistent with the sensitive environmental characteristics of these areas.

San Joaquin Multi Species Habitat Conservation and Open Space Plan

The City's policies also call for continued coordination with the San Joaquin Council of Governments in complying with the terms of the San Joaquin Multi Species Habitat Conservation and Open Space Plan (SJMSCP) to protect critical habitat areas in the vicinity. Until a major amendment to the existing SJMSCP is adopted to incorporate all areas of the City's proposed sphere of influence into the SJMSCP coverage area, the City also has a policy that it will use the requirements of the SJMSCP to ensure effective protection of natural resources, especially in regard to fee collection for acquisition of habitat preserves, the implementation of mitigation measures, and consultation with resource agencies for incidental take coverage.

3.9.1.2 Environmental Setting

The project area is described in Chapter 1, *Introduction*, and shown in Plate 1-2. The study area includes the project area and a minimum 100-foot-wide buffer zone around the construction area to support a full assessment of potential direct and indirect effects on most wildlife species. In specific cases, mitigation measures for specific species or species groupings will involve a broader impact zone (up to 0.25 mile) as appropriate to the species. This broader study area is addressed on a case-by-case basis in the impacts analysis and mitigation sections in Section 3.9.2.3.

The study area includes Smith Canal, Atherton Cove, and the adjacent portion of the San Joaquin River. Smith Canal originates at Yosemite Lake, approximately 2 miles upstream of the project area, and drains to the San Joaquin River. The lake is surrounded by fencing, and the banks of the lake and the canal are covered with riprap for erosion control. Native and nonnative trees border most of the lake and canal.

Resource Identification Methods

The methods used to identify wildlife resources in the study area consisted of a prefield investigation, reconnaissance-level site visits, and review of project maps depicting current vegetation cover types and results of an arborist survey.

Prefield Investigation

Prior to conducting the reconnaissance-level site visits, an ICF wildlife biologist reviewed existing resource information related to the project to evaluate whether sensitive species or other protected wildlife could occur in the study area and region. The sources listed below were reviewed.

- A list of sensitive species from the California Natural Diversity Database (CNDDB) records search for the following nine U.S. Geological Survey (USGS) 7.5-minute quadrangles, which form an approximate 10-mile buffer around the study area: Stockton West, Terminous, Lodi South, Stockton East, Manteca, Waterloo, Holt, Union Island, and Lathrop (California Department of Fish and Wildlife 2014) (Appendix G).
- A list of threatened and endangered species for the Stockton West quadrangle from the FWS Sacramento Field Office website (U.S. Fish and Wildlife Service 2014) (Appendix G).

- Aerial maps of the study area accessed on Google Earth Pro (Google 2014).

This information, coupled with professional judgment, was used to develop lists of special-status species that could be present in the study area and region. Species from the lists were considered if they were known to occur within an approximately 10-mile radius of the study area. No Federal, state, or local regulatory agencies were contacted prior to conducting the prefield investigation.

Reconnaissance-Level Site Visit

An ICF wildlife biologist conducted a reconnaissance-level field survey of the study area on October 8, 2014, to evaluate habitat available for wildlife species in all accessible areas. Because the wildlife biologist did not have complete access during the October 8 survey, a follow-up survey was conducted by a ICF biologist of the remainder of the study area by boat on October 22, 2014 with a focus on suitable roosting habitat for birds and bats. The wildlife biologist also reviewed the vegetation cover types mapped by the ICF botanist during previous reconnaissance–level site visits (Section 3.7, *Vegetation and Wetlands*). A list of wildlife species observed during initial reconnaissance surveys is provided in Table F-1 in Appendix G.

Both CDFW (Spurr pers. comm.) and FWS (Swinney pers. comm.) were contacted following the reconnaissance-level surveys to determine potential for state- and Federally listed species to be present within the study area. Species expert Eric Hansen (pers. comm.) was also contacted to discuss the suitability of habitats within the study area for giant garter snake.

Wildlife Habitat–Land Cover Type Associations

This section describes the relationship between land cover types and wildlife habitats and identifies common and special-status wildlife species associated with each land cover type. Although land cover types emphasize floristic composition, structure, and other physical attributes, each land cover type provides a specific function and value for wildlife species.

The study area is mostly landscaped or developed, primarily consisting of the residential areas on Atherton Island and along Atherton Cove and Smith Canal; the Stockton Golf and Country Club; and Louis Park, including Dad's Point. A total of five land cover types were identified in the study area. Table 3.9-1 includes the mapped acreages for each land cover type.

Three of the land cover types are considered natural communities: nonnative riparian, tidal emergent wetland, and tidal perennial drainage. The other two land cover types, developed/landscaped and ditch, are associated with human activities and are combined below because they provide similar function for wildlife. Each of the land cover types is discussed below and shown in Plate 3.7-1.

Table 3.9-1. Land Cover Types and Acreage in the Smith Canal Study Area

Smith Canal Project Land Cover Type	Acreage in the Study Area
Nonnative riparian woodland	1.72
Tidal emergent wetland	0.07
Tidal perennial drainage	39.40
Ditch	0.01
Developed/landscaped	13.06
Total acreage in study area	54.26

Nonnative Riparian Woodlands

Nonnative riparian woodland occurs on the bank of the San Joaquin River south of the Stockton Golf and Country Club, along the edge of Dad's Point, and on the south bank of Smith Canal. Riparian habitats are considered to be among the most productive wildlife habitats in California and typically support diverse wildlife. In addition to providing important nesting and foraging habitat, riparian habitats function as wildlife movement corridors. Riparian habitat in the study area provides some habitat function for wildlife species but is highly disturbed from recreational activities.

Overstory riparian trees may be used for nesting and roosting by numerous raptors, including red-tailed hawk (*Buteo jamaicensis),* red-shouldered hawk (*Buteo lineatus*) and special status species such as white-tailed kite (*Elanus leucurus)* and Swainson's hawk (*Buteo swainsoni*). Riparian woodland provides suitable nesting habitat for a variety of non-raptor bird species, including green heron (*Butorides virescens),* yellow-rumped warbler (*Dendroica coronata*), and white-breasted nuthatch (*Sitta carolinensis),* and important cover and foraging habitat for resident, migratory, and wintering birds. Riparian trees can provide maternity roosting habitat for both common and special-status bat species, such as California myotis (*Myotis californicus)* and Western red bat (*Lasiurus blossevillii)*, and riparian woodland is an important foraging resource for a number of bat species. Understory vegetation of riparian woodlands provides habitat for mammals, including various species of rodents, raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*). Riparian woodlands also provide cover and foraging habitat for reptiles and amphibians, such as terrestrial garter snake (*Thamnophis elegans*) and Pacific tree frog (*Pseudacris regilla*). Suitable areas in the understory may be used as nesting habitat for western pond turtles (*Emys marmorata*).

Tidal Emergent Wetland

One small patch of tidal emergent wetland occurs at the tip of Dad's Point in the San Joaquin River. The hard-stem bulrush available in the patch of tidal emergent wetland in the study area provides a limited and marginal patch of emergent vegetation and limited foraging and cover habitat for various birds such as great egret (*Ardea alba*).

Tidal Perennial Drainage

Tidal perennial drainage occurs in the study area in the San Joaquin River, Atherton Cove, and Smith Canal. This landcover type provides breeding, foraging, and migratory habitat for numerous wildlife species. Waterways provide movement corridors for aquatic species such as western pond turtle, California sea lion (*Zalophus californianus*), and other species such as double crested cormorant (*Phalacrocorax auritus*) and belted kingfisher (*Megaceryle alcyon*). Mammal species commonly known to use perennial aquatic open water habitats include river otter (*Lontra canadensis*), which uses these areas for foraging and escape cover, and muskrat (*Ondatra zibethicus*), which may use deepwater areas as migration corridors between suitable foraging areas. These areas also provide foraging habitat and water sources for bat species such as Yuma myotis (*Myotis yumanensis*). Open water areas also provide essential foraging habitat for numerous waterfowl species, including mallard (*Anas platyrhynchos*) and bufflehead (*Bucephala albeola*); other water birds, including pied-billed grebe (*Podilymbus podiceps*), and double-crested cormorants (*Phalacrocorax auritus*); and land birds, including belted kingfisher (*Megaceryle alcyon*). These areas also provide rearing habitat, escape cover, and foraging habitat for reptiles and amphibians, including common garter snake (*Thamnophis sirtalis*), Pacific tree frog, and western toad (*Anaxyrus boreas*). Tidal perennial drainages in the study area are considered to have low potential for the state- and Federally listed giant garter snake because of the surrounding urban environment (Louis Park, golf course, and

residential development), which lacks the sufficient habitat components (e.g., grassy banks and emergent vegetation for basking and areas of undisturbed high ground protected from human disturbance and flooding during winter).

Developed/Landscaped and Ditch

The developed/landscaped land cover type occurs throughout the study area, including the golf course, park, and residential parcels that include houses and other structures. This land cover type also includes roads. The small, 2-foot-wide ditch at Dad's Point is the only instance of ditch land cover type that occurs in the study area.

These areas likely support common wildlife species, including house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), American robin (*Turdus migratorius)*, American crow (*Corvus brachyryhnchos),* western fence lizard (*Sceloporus occidentalis)*, and California ground squirrel (*Spermophilus beecheyi*). Trees, shrubs and other vegetation associated with these areas may provide roosting and foraging habitat for both common and special-status bat species, such as California myotis and Western red bat, and nesting and foraging habitat for a range of bird species. Scattered landscape trees associated with this area may provide nesting habitat for common and special-status raptors such as American kestrel (*Falco sparverius),* Cooper's hawk *(Accipiter cooperii)* and Swainson's hawk, and other bird species such as Bullock's oriole (*Icterus bullockii*).

Barren areas provide primary habitat for ground-nesting habitat for common avian species such as killdeer (*Charadrius vociferus)*.

Buildings, boat houses, and other anthropogenic structures in the study area may provide crevice and cavity maternity roost habitat for a number of bat species, including the special-status pallid bat (*Antrozous pallidus*), and nesting habitat for a range of bird species such as barn swallow (*Hirundo rustica*), mourning dove (*Zenaida macroura)*, and black phoebe (*Sayornis nigricans*).

Special-Status Wildlife Species

Special-status wildlife species are defined for the purpose of this Environmental Impact Report as animals that are legally protected under ESA, CESA, or other regulations and species that are considered sufficiently rare by the scientific community to qualify for conservation actions. The following criteria define special-status species.

- Species that are listed or proposed for listing as threatened or endangered under ESA (50 CFR 17.11 for listed animals, and various notices in the *Federal Register* [FR] for proposed species).
- Species that are candidates for possible future listing as threatened or endangered under ESA (75 FR 69222, November 10, 2010).
- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations [CCR] 670.5).
- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines Section 15380).
- Animals that are California species of special concern (California Department of Fish and Game 2011; Shuford and Gardali 2008 [birds]; Williams 1986 [mammals]; and Jennings and Hayes 1994 [amphibians and reptiles]).

- Animals fully protected in California (California Fish and Game Code 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
- Bat species identified by the Western Bat Working Group as high-priority in its conservation priority matrix for western bat species (Western Bat Working Group 2014). The matrix is intended to provide state and Federal land management agencies and interested organizations and individuals with a better understanding of the overall status of individual bat species throughout their western North American ranges.

Twenty-one special-status wildlife species were identified as having potential to occur in the study area and surrounding region (Appendix G, Table G.1-2). The special-status species potential for occurrence is ranked none, low, moderate to high in Table G.1-2. This focus list of species was based on the FWS (2014) list for Stockton West quadrangle, a review of CNDDB (California Department of Fish and Wildlife 2014) occurrences within an approximately 10-mile radius of the study area, and an evaluation of available habitat and known species associations. Of these 21 species, 10 were excluded from further consideration either because the study area is outside the species' known range or suitable habitat is minimal to absent including: vernal pool fairy shrimp, valley elderberry longhorn beetle, vernal pool tadpole shrimp, California red-legged frog, California tiger salamander, riparian brush rabbit, yellow-headed blackbird, tricolored blackbird, California black rail, and American badger.

The state- and Federally-listed giant garter snake is not expected to occur in the study area. The nearest giant garter snake record is from over one hundred years ago in 1880 in the vicinity of Rough and Ready Island (California Department of Fish and Wildlife 2014). Based on existing conditions, the likelihood of occurrence near Rough and Ready Island is exceptionally low, especially in the San Joaquin River, Atherton Cove, and the mouth of Smith Canal where there is little habitat aside from developed banks and open water (Hansen pers. comm.). Upstream reaches of Smith Canal may have more potential for giant garter snakes, but these areas would not be affected by the proposed project.

Biologists observed several indications of nesting bird activity during the October 2014 survey including remnant nests. A raptor-style stick nest was observed in tree on the golf course, a mud and grass cup nest was observed in a tree in Louis Park (appropriate material and size for a robin), as well as acorn woodpecker (*Melanerpes formicivorus*) granary holes observed in trees in the study area.

Biologists observed a western pond turtle in aquatic habitat in Atherton Cove during reconnaissance field work. The study are supports aquatic and basking habitat. There is limited, if any, suitable undisturbed upland habitat that could be used for nesting in the study area.

Additionally, California sea lions were observed basking on the eastern side of Rough and Ready Island in the San Joaquin River adjacent to the project area during reconnaissance field work. This species and any other marine mammal occurring in the San Joaquin River and other U.S. waters in the study area would be protected from take under the Marine Mammal Protection Act.

The study area does not contain critical habitat for any terrestrial wildlife species. Federally listed fish species are discussed in Section 3.9, *Fish and Aquatic Resources*.

3.9.2 Environmental Impacts

This section describes the environmental impacts of the proposed project on wildlife. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) potentially significant impacts are provided, where appropriate.

3.9.2.1 Assessment Methods

This evaluation of wildlife is based on professional standards and information cited throughout the section. The key effects were identified and evaluated based on the environmental characteristics of the study area and the magnitude, intensity, and duration of activities related to the construction and operation of the proposed project.

Impacts on special-status wildlife species were quantitatively and qualitatively evaluated based on the potential for species occurrence in suitable habitat/land cover types located in the study area. The project alternatives were overlaid onto a map showing land cover types using GIS applications. Acreages of direct impacts were then calculated for each alternative and are presented below in Table 3.9-2. The analysis of potential indirect impacts on wildlife is qualitative in nature (i.e., noise disturbance, dust accumulation) and was determined based on the proximity of project activities to known species locations or potential habitat (e.g., nesting areas). See Plates 3.7-2a, 3.7-2b, and 3.7-2c for impact maps for each alternative.

Table 3.9-2. Acreages of Direct Impacts on Land Cover Types for Alternatives 1–3

Land Cover Types	Alternative 1	Alternative 2	Alternative 3
Nonnative riparian woodland	0.81	0.86	0.81
Tidal emergent wetland	0.03	0	0
Tidal perennial drainages	0.54	1.90	0.47
Developed/landscaped	0.02	0.81	0.26
Total acreage	1.4	3.57	1.54

For wildlife movement, existing and accessible drainage corridors were qualitatively assessed with respect to their relative function to facilitate wildlife movement through the landscape.

Wildlife resources could be directly and indirectly impacted by the proposed project. The following types of activities could cause varying degrees of impacts on wildlife.

- Installation of cofferdam, channel dewatering and installation of temporary water-pumping and storage structures.
- Vegetation removal for gate construction and compliance with ULDC levee vegetation requirements for the grade raise on Dad's Point (Alternative 1 only) and the floodwall along Atherton Cove (Alternative 2 only).
- Grading and fill placement during construction and installation of the project features—gate structure and control building, fixed dual sheet pile wall, Dad's Point improvements, and culverts under Moreing Road.

- Temporary stockpiling and sidecasting of soil, construction materials, or other construction wastes.
- Dust and water runoff from the construction site into adjacent areas.
- Runoff of herbicides, fertilizers, diesel fuel, gasoline, oil, raw concrete, or other toxic materials used for levee construction, operations, and maintenance into sensitive biological resource areas (e.g., riparian habitat, drainages).
- Placement of vegetated rock slope protection on the slopes of Dad's Point as needed (Alternative 1 only).
- Operation and maintenance activities, including placement of additional fill between the fixed dual sheet pile walls.

The following assumptions were made for this analysis of wildlife for the proposed project.

- There would be no impacts on upstream habitat within Smith Canal and Yosemite Lake, because the hydrology would not be substantially modified (see Section 3.1, *Flood Risk, Hydrology, and Geomorphology*).
- Disposal of project debris at either of the two permitted disposal sites would not cause any additional impacts on wildlife resources.
- The proposed staging areas will be located in developed areas, however, they could still support sensitive biological resources such as burrowing owl or nesting birds.
- Access to the construction area is via existing roads and will not impact sensitive biological resources.
- Raising the grade on Dad's Point under Alternative 1 would not require placement of a sheet pile wall, concrete retaining wall, or other structures below the mean high water line.

3.9.2.2 Thresholds of Significance

The thresholds listed below are based on standard professional practice and on the criteria provided in State CEQA Guidelines Appendix G (14 CCR 15000 et seq.). The project would be considered to have a significant impact on wildlife if it would result in any of the following consequences.

- Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by CDFW or FWS.
- Substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources.
- Conflict with the provisions of an adopted habitat conservation plan (HCP), NCCP, or other approved local, regional, or state habitat conservation plan.
- Contribute to a substantial reduction or elimination of species diversity or abundance.

3.9.2.3 Impacts and Mitigation Measures

No Project Alternative

The No Project Alternative represents the continuation of existing deficiencies in the project area's flood control structures. No flood risk-reduction measures would be implemented, and no construction-related impacts on wildlife resources would occur. Future high-water events would temporarily inundate existing nonnative riparian vegetation and tidal emergent wetland as part of the natural conditions. However, no substantial loss of wildlife habitat or long-term impacts of flooding on wildlife resources would be expected. The consequences of levee failure and flooding are described under the No Project Alternative description in Chapter 2, Section 2.4, including a summary of possible environmental effects.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact WILD-1: Loss or Disturbance of Western Pond Turtles and Their Habitat (less than significant with mitigation)

A western pond turtle was observed on the shoreline in Atherton Cove during the October 8, 2014 field survey. Turtles could occur in aquatic habitat throughout the study area and nest in suitable upland habitats on Dad's Point and the Stockton Golf and Country Club.

Direct impacts on this species include temporary disturbance to upland nesting or basking habitat and the potential for loss of individual pond turtles. Western pond turtles could be crushed and killed during project construction that takes place in or adjacent to suitable aquatic habitat. In addition, western pond turtles and nests containing hatchlings or eggs could be crushed and killed during the movement of construction equipment in upland habitat within 1,200 feet of suitable aquatic habitat.

Indirect impacts on western pond turtles could also result from adverse project impacts on surface water quality.

Impacts on western pond turtles under Alternative 1 would be significant. However with implementation of the SWPPP to control erosion and turbidity compliance monitoring (Section 3.2, *Water Quality and Groundwater Resources*), as well as Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, and WILD-MM-1, these direct and indirect impacts would be reduced to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure WILD-MM-1: Conduct a Preconstruction Survey and Monitor for Western Pond Turtle during Instream Water Work

To avoid and minimize effects on western pond turtles, SJAFCA or its contractor will retain a qualified wildlife biologist to conduct preconstruction surveys and monitor during in-water construction and construction in riparian habitat areas.

The qualified biologist will conduct a preconstruction survey within 24 hours of disturbance in aquatic and riparian habitats. The survey objectives are to determine presence or absence of pond turtles in the construction work area, identify basking and nesting sites, and ensure no turtles are trapped during construction in or adjacent to aquatic habitats.

If possible, the surveys will be timed to coincide with the time of day and year when turtles are most likely to be active (during the cooler part of the day 8:00 a.m.–12:00 p.m. during spring, summer, and late summer). Prior to conducting presence/absence surveys, the biologist will locate the microhabitats for turtle basking (logs, rocks, brush thickets) and determine a location to quietly observe turtles. Each survey will include a 30-minute wait time after arriving on site to allow startled turtles to return to open basking areas. The survey will consist of a minimum 15-minute observation time per area where turtles could be observed.

The biological monitor will ensure that turtles do not move into the construction area. If a turtle is trapped it will be hand-captured and relocated outside the construction area to appropriate aquatic habitat by a biologist with a valid memorandum of understanding from CDFW and as determined during coordination with CDFW.

Impact WILD-2: Loss of Swainson's Hawk Nesting Habitat (less than significant with mitigation)

Direct impacts on Swainson's hawks include the loss of nesting habitat (including riparian woodland and landscaped/developed habitats with large trees) associated with project construction as well as the potential for disturbance of actively nesting Swainson's hawks if an active nest is present in or near the construction areas. There would be no loss of foraging habitat because no suitable foraging areas are present in the study area. Impacts on nesting habitat are discussed below, and impacts on active nests are described under Impact WILD-4 for nesting birds.

Alternative 1 would result in permanent loss of 0.81 acre of nonnative riparian woodland that represents potential Swainson's hawk nesting habitat. Numerous CNDDB records for nesting Swainson's hawk have been documented within a 10-mile radius around the study area. The closest recorded Swainson's hawk nest is from 2000 in a redwood tree on the 6th fairway of the Stockton Golf and Country Club, approximately 300 feet northwest of the study area (California Department of Fish and Wildlife 2014). While the CNDDB (California Department of Fish and Wildlife 2014) information provides important data on historic habitat use and indicates that there is a high prevalence of nesting Swainson's hawk in the study area and project vicinity, it does not provide an indicator of the number of active Swainson's hawk nests within a given year. SJAFCA is committed to minimizing impacts on nesting Swainson's hawk. During development of the final grading plan, trees would be identified as potential nest trees and would be avoided to the extent feasible. However, the

loss of nesting habitat is considered a direct significant impact because it could result in a substantial decrease in the local population of Swainson's hawks.

Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, VEG-MM-2, VEG-MM-6b, and WILD-MM-2 would reduce these direct impacts to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-2: Compensate for the Loss of Nonnative Riparian Habitat

Please refer to the discussion of Mitigation Measure VEG-MM-2 in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-2.

Mitigation Measure VEG-MM-6b: Compensate for Loss of Heritage Trees

Please refer to the discussion of Mitigation Measure VEG-MM-6b in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-6.

Mitigation Measure WILD-MM-2: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys

To avoid and minimize effects on nesting special-status and non–special-status migratory birds and raptors, SJAFCA will implement the appropriate surveys and restrictions.

- To avoid removing or disturbing any active Swainson's hawk nests, other special-status birds' nests, or non–special-status migratory bird nests, tree and shrub removal will be conducted during the nonbreeding season (generally between September 1 and January 31) or after a qualified biologist determines that fledglings have left an active nest. If this is not feasible, it is likely that there will be nesting birds in the project area, which will require a buffer and avoidance during construction until the birds have fledged. This could seriously constrain construction and result in project delays.
- If construction or vegetation removal will occur during the breeding season (February 1 through August 31), a qualified wildlife biologist (with knowledge of the species to be surveyed) will be retained to conduct surveys for nesting birds for all trees and shrubs and

ground-nesting habitat located within 500 feet (0.25 mile for Swainson's hawk) of construction activities, including grading, vegetation removal, and in-stream water work.

- The following focused nesting surveys will take place prior to the start of construction and in the appropriate habitat.
    - Swainson's hawk surveys will rely on the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000), with appropriate modifications based on annual differences in site conditions and the timing of Swainson's hawk arrival and nesting.

      For Swainson's hawk, surveys will be conducted within the project area and within 0.25 mile of the project area where access from public roads is available and where there are no significant barriers, such as the San Joaquin River. The guidelines recommend that surveys be completed for at least the two survey periods immediately prior to a project's initiation. The survey dates may be adjusted depending on when birds return to the area. The survey periods include Period I: January–March 20, consisting of one survey to identify potential nest sites; Period II: March 20–April 5, consisting of three surveys to identify nesting territories; Period III: April 5–April 20, consisting of three surveys when active nest locations are most easily identified; Period IV: April 21–June 10, only surveys of known nest sites are recommended during this period when birds are laying and incubating eggs; and Period V: Jun 10–July 30, consisting of surveys to observe post-fledging success at the nests. At least one survey will be conducted no more than 48 hours prior to the start of construction to confirm the presence or absence of active nests.
    - Other nesting bird surveys (within 250 feet of construction activities) can be conducted concurrent with Swainson's hawk surveys with at least one survey to be conducted no more than 48 hours from the initiation of project activities to confirm the presence or absence of active nests.
- If the biologist determines that the area surveyed does not contain any active bird or raptor (including Swainson's hawk) nests, construction activities, including removal or pruning of trees and shrubs, can commence without any further mitigation.
- If an active bird or raptor nest is located in the proposed disturbance area, the wildlife biologist will coordinate with CDFW and/or USFWS to establish a suitable buffer zone. If it is determined the nest is of a listed species, CDFW will be contacted for further avoidance measures. At a minimum, all work within sight of an active Swainson's hawk nest will be halted until coordination with CDFW. A qualified wildlife biologist will monitor all active nests to determine when the young have fledged and submit the final results in a report to CDFW and/or USFWS. The biological monitor will have the authority to cease construction if there is any sign of distress to any raptor or migratory bird. Reference to this requirement and the MBTA will be included in the construction specifications.

Impact WILD-3: Loss or Disturbance of Western Burrowing Owls and Their Habitat (less than significant with mitigation)

Direct impacts on burrowing owls from Alternative 1 include the potential for disturbance of nesting birds and injury or mortality of birds if they are present in or adjacent to the construction area. The

presence of residential houses and recreational activities reduces the potential for burrowing owls to be present in the study area.

Although no burrowing owls were observed in the project area during field surveys, at least 27 burrowing owl occurrences have been documented within a 10-mile radius of the project area (California Department of Fish and Wildlife 2014). Approximately 0.02 acre of landscaped/developed habitat and ditch habitat would be removed as part of Alternative 1, which is considered low quality for burrowing owl; however, burrowing owls could be affected if they are present in habitat that is adjacent to construction. Construction activities could result in the removal of an occupied burrowing owl breeding or wintering burrow site and loss of burrowing owl adults, young, or eggs, which would be a violation of the MBTA and Fish & Game Code.

Direct impacts on nesting would result in a significant impact on burrowing owl populations in the region. However, implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, WILD-MM-3a, and WILD-MM-3b would reduce the direct impacts on burrowing owls to a less-than-significant level and avoiding violation of the MBTA and Fish & Game Code.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure WILD-MM-3a: Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the 2012 California Department of Fish and Game Guidelines for Burrowing Owl Mitigation, if Necessary

A preconstruction survey for burrowing owl will be completed, in accordance with CDFW guidelines described in the 2012 *Staff Report on Burrowing Owl Mitigation*, prior to the start of construction (including excavation of borrow sites) (California Department of Fish and Game 2012). The appropriate survey area will be determined by a qualified biologist coordinating with SJAFCA and CDFW to cover any project areas where potentially breeding or non-breeding burrowing owls could be disturbed by project activities. Surveys will be conducted during the nonbreeding season (September 1 through January 31) and breeding season (February 1 through August 31). Surveys will be conducted from 2 hours before sunset to 1 hour after, or from 1 hour before or 2 hours after sunrise. At least one survey will occur within 48 hours of the start of construction. If no burrowing owls are located during these surveys, no additional action is warranted. However, if breeding or resident owls are located on or immediately adjacent to the site, the following measures will be implemented.

- No burrowing owls will be evicted from burrows during the breeding season (February 1 through August 31). Eviction outside the breeding season may be permitted pending evaluation of eviction plans and receipt of formal written approval from CDFW authorizing the eviction.

- If owls must be moved away from the project site during the nonbreeding season, passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used instead of trapping, as described in CDFW guidelines. At least 1 week will be necessary to complete passive relocation and allow owls to acclimate to alternate burrows.
- When destruction of occupied burrows is unavoidable during the nonbreeding season (September 1–February 1), unsuitable burrows will be enhanced (enlarged or cleared of debris) or new burrows created (by installing artificial burrows) at a ratio of 2:1 on protected lands approved by CDFW. Newly created burrows will follow guidelines established by CDFW.
- A no-disturbance buffer, within which no new activity would be permissible, will be maintained between project activities and nesting burrowing owls. Buffers will be determined by a qualified biologist, coordinating with CDFW, and will depend on one or more of the following factors: season of activity, level of noise or construction activity, level of ambient noise in the vicinity, and line-of-sight. This protected area will remain in effect until September 1, or at CDFW's discretion and based on monitoring evidence, until the young owls are foraging independently.
- If accidental disturbance, injury, or death of owls occurs, the CDFW will be notified immediately.

Mitigation Measure WILD-MM-3b: Compensate for Loss of Burrowing Owl Habitat

Following implementation of Mitigation Measure WILD-MM-3a, SJAFCA will compensate for any unavoidable loss of burrowing owl habitat. Compensation will include purchase of mitigation credits at a CDFW-approved mitigation bank prior to construction. Final compensation requirements and mitigation ratios for the project will be determined through consultation with CDFW before project initiation.

Impact WILD-4: Loss or Disturbance of Tree-, Shrub- and Ground-Nesting Special-Status and Non-Special–Status Migratory Birds and Raptors (less than significant with mitigation)

Direct impacts on both special-status and non-special-status birds and raptors from Alternative 1 include the loss of nesting habitat associated with project construction and the potential for disturbance of actively nesting birds if an active nest is present in or near the construction areas. There would be no loss of foraging habitat because suitable foraging areas are not limiting in the study area.

Alternative 1 would result in permanent loss of 0.81 acre of nonnative riparian woodland and 0.02 acre of developed/landscaped and ditch habitat that represents potential nesting habitat. Biologists observed several indications of nesting bird activity during the fall 2014 survey, including a raptor-style stick nest observed in tree on the golf course, a mud and grass cup nest observed in a tree in Louis Park (appropriate material and size for robin), as well as acorn woodpecker granary holes observed in trees in the study area. Trees and shrubs in the project area also can provide nesting habitat for several common migratory birds and raptors, including western bluebird (*Sialia Mexicana)*, western kingbird (*Tyrannus verticalis*), Anna's hummingbird (*Calypte anna*), lesser goldfinch (*Spinus psaltria*), American goldfinch (*Spinus tristis*), red-shouldered hawk, and red-tailed hawk.

If construction takes place during the breeding season (generally between February 1 and August 31), project activities (e.g., tree and shrub removal, excavation, grading) in the construction area could disturb or remove occupied nests of special-status or non-special-status birds and raptors. These disturbances could cause nest abandonment and subsequent loss of eggs or of developing young at active nests located in or near the construction area. All migratory birds and raptors are protected under the MBTA and Fish & Game Code Sections 3503 and 3503.5.

These direct impacts would be significant, but implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and WILD-MM-2 would reduce these impacts to a less-than-significant level and avoid violation of the MBTA and Fish & Game Code.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure WILD-MM-2: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys

Please refer to the discussion of Mitigation Measure WILD-MM-2 under Alternative 1, Impact WILD-2.

Impact WILD-5: Loss or Disturbance of Bats and Bat Roosts (less than significant with mitigation)

Special-status bats with potential to occur in the project area employ varied roost strategies, from solitary roosting in foliage of trees to colonial roosting in trees and artificial structures, such as buildings. Various roost strategies could include night roosts, maternity roosts, migration stopover, or hibernation. Potential bat roosting and foraging habitat within the study area includes riparian woodland, developed lands, and landscaped areas. Potential foraging habitat also includes aquatic habitat associated with tidal perennial drainages and tidal emergent wetland.

Bat roosts of special-status species and non–special-status species are highly sensitive to disturbance and are considered a sensitive resource by CDFW. Alternative 1 would result in sustained and disruptive construction activities, such as tree removal and trimming and construction activities resulting in noise and vibration, such as pile driving and grading. These activities could result in direct impacts on roosting bats, including the destruction of active roosts, the loss of individuals, or roost failure. These direct impacts would be significant because the subsequent population decline could affect the viability of the local bat populations. Implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and WILD-MM-5 would reduce this impact to a less-than-significant level.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure WILD-MM-5: Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures

To avoid and minimize impacts on roosting special-status and non–special-status bats, SJAFCA will implement the following surveys and restrictions, as appropriate based on the location and timing of activities.

- Retain qualified biologists with knowledge of the natural history of the species that could occur in the study area and experience using full-spectrum acoustic equipment. During surveys, biologists will avoid unnecessary disturbance of occupied roosts.
- Identify potential roosting habitat within and adjacent to the construction area.
- Conduct daytime search for bats and bat sign in and around identified habitat.
- Conduct evening emergence surveys at potential day-roost sites, using night-vision goggles and/or active full-spectrum acoustic monitoring where species identification is sought.
- Conduct passive full-spectrum acoustic monitoring and analysis to detect bat use of the area from dusk to dawn over multiple nights.
- Conduct additional onsite night surveys as needed following passive acoustic detection of special-status bats to determine nature of bat use of the structure in question (e.g., use of structure as night roost between foraging bouts).

Preconstruction Structure Surveys

Before work begins on or near a structure, qualified biologists will conduct a daytime search for bat sign and evening emergence surveys to determine whether the structure is being used as a roost. Biologists conducting daytime surveys will listen for audible bat calls and use naked eye, binoculars, and a high-powered spotlight to structures that could house bats. The ground around the structure will be surveyed for bat sign, such as guano, staining, and prey remains.

Evening emergence surveys will consist of at least one biologist stationed on each side of the structure watching for emerging bats from a half hour before sunset to 1–2 hours after sunset for a minimum of two nights within the season that construction would be taking place. Night-vision goggles and/or full-spectrum acoustic detectors will be used during emergence surveys to assist in species identification. All emergence surveys will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted).

Additionally, passive monitoring with full-spectrum bat detectors will be used to assist in determining species present. A minimum of four nights of acoustic monitoring surveys will be

conducted within the season that the construction would be taking place. If site security allows, detectors should be set to record bat calls for the duration of each night. To the extent possible, all monitoring will be conducted during favorable weather conditions (calm nights with temperatures conducive to bat activity and no precipitation predicted). The biologists will analyze the bat call data using appropriate software and prepare a report with the results of the surveys. If acoustic data suggest that bats may be using the structure as a night roost, biologists will conduct a night survey from 1–2 hours past sunset up to 6 hours past sunset to determine if the structure is serving as a colonial night roost.

If suitable roost structures would be removed, additional surveys may be required to determine how the structure is used by bats, whether it is as a night roost, maternity roosts, migration stopover, or for hibernation.

Preconstruction Tree Surveys

If tree removal or trimming is necessary, qualified biologists will examine trees to be removed or trimmed for suitable bat roosting habitat. High-quality habitat features (large tree cavities, basal hollows, loose, or peeling bark, larger snags, palm trees with intact thatch, etc.) will be identified and the area around these features searched for bats and bat sign (guano, culled insect parts, staining, etc.). Riparian woodland and stands of mature broadleaf trees within developed and landscaped areas will be considered potential habitat for solitary foliage roosting bat species.

If bat sign is detected, biologists will conduct evening visual emergence survey of the source habitat feature, from a half hour before sunset to 1–2 hours after sunset for a minimum of two nights within the season that construction would be taking place. Methodology will follow that described above for the structure emergence survey.

Additionally, if suitable tree roosting habitat is present, acoustic monitoring with a bat detector will be used to assist in determining species present. These surveys will be conducted in coordination with the acoustic monitoring conducted for the structure surveys.

Protective Measures for Bats using Structures and Trees

Avoidance and minimization measures may be necessary if it is determined bats are using onsite structures or trees as roost sites or sensitive bats species are detected during acoustic monitoring. Appropriate measures will be determined in coordination with CDFW and may include any combination of the measures listed below.

- If a maternity roost is located, whether solitary or colonial, disturbance of the roost will be avoided between April 15 and September 15 (the maternity period), or until a qualified biologist has determined the roost is no longer active, to avoid impacts on reproductively active females and dependent young.
- If a non-maternity roost is found, that roost will be avoided, and an appropriate buffer established in coordination with CDFW. If the roost cannot be avoided, eviction will be attempted and procedures designed in coordination with CDFW to reduce the likelihood of mortality of evicted bats.
- Exclusion devices will be installed from March 1 through April 14 or September 15 through October 30 to preclude bats from occupying onsite structures likely to be inhabited during

construction. Exclusionary devices will only be installed by or under the supervision of an experienced bat biologist.

- Trees will be removed in pieces, rather than felling the entire tree. All tree removal will be conducted between September 15 and October 30, which corresponds to a time period when bats would not likely have entered winter hibernation and would not be caring for flightless young. If weather conditions remain conducive to regular bat activity beyond October 30, later tree removal may be considered in consultation with CDFW.

Impact WILD-6: Loss or Disturbance of Protected Marine Mammals (less than significant with mitigation)

California sea lions were observed in fall 2014 on Rough and Ready Island adjacent to the San Joaquin River, outside the study area. It is assumed in this analysis that the contractor may utilize the Port of Stockton, across the river from the study area, as a staging area, though a specific location within the Port is not identified in this EIR. Should the Port of Stockton be used as a staging area, it is assumed the contractor may move materials and equipment by truck or via a barge across the river to the construction area.

There would be no impact on California sea lions from barge operations during construction or operations under Alternative 1 because the Port of Stockton and the Stockton Deep Water Ship Channel (DWSC) operations and barge traffic are not expected to differ from existing conditions as a result of this project. However, there is potential for disturbance to sea lions if a staging area is placed in the vicinity of where the sea lions haul out onto Rough and Ready Island or its vicinity. This direct impact would be significant, but implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and WILD-MM-6 would reduce this impact to a less-than-significant level and avoid violation of The Marine Mammal Protection Act of 1972, which prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas.

Mitigation Measure WILD-MM-6: Ensure Staging Area are Located away from California Sea Lions

SJAFCA would ensure that if a staging area is necessary at the Port of Stockton that it is located in an area that is not used by California sea lions and in an area that would not interfere with their movement from land to water.

Impact WILD-7: Disruption of Wildlife Movement Corridors or Nurseries (less than significant)

In the study area, aquatic habitats adjacent to the San Joaquin River are considered to be a major wildlife movement corridor. Alternative 1 would reduce flood risk by constructing a gated fixed wall structure to isolate Atherton Cove and Smith Canal from the San Joaquin River during high flow and tide events (Plate 2-2). The gate would be closed only as needed for flood control, remaining open to allow for recreation, navigation, and tidal movement in Smith Canal. Based on an evaluation of the 30-year period from 1983–2013 shown in Table 2-3, it is assumed that there would be two closures per year on average for flood control purposes.

Alternative 1 would not result in the creation of permanent barriers to wildlife movement. During construction of flood risk–reduction measures, aquatic wildlife species movements through the study area would not be completely impeded during construction. In addition, the estimated two

times a year the gate would be operated are not expected to significantly affect wildlife movement in aquatic habitat. Therefore, disruption of movement through the study area would be a less-than-significant direct impact. No mitigation is necessary.

Alternative 2: Atherton Cove Floodwall with Smith Canal Gate

Impact WILD-1: Loss or Disturbance of Western Pond Turtles and Their Habitat (less than significant with mitigation)

A western pond turtle was observed on the shoreline in Atherton Cove during the October 8, 2014 field survey. Turtles could occur in aquatic habitat throughout the study area and nest in suitable upland habitats on Dad's Point and the Stockton Golf and Country Club.

Direct impacts on this species include temporary disturbance to upland nesting or basking habitat and the potential for loss of individual pond turtles. Western pond turtles could be crushed and killed during project construction activities that take place in or adjacent to suitable aquatic habitat. In addition, western pond turtles and nests containing hatchlings or eggs could be crushed and killed during the movement of construction equipment in upland habitat within 1,200 feet of suitable aquatic habitat.

Indirect impacts on western pond turtles could also result from adverse project impacts on surface water quality.

Direct impacts on western pond turtles under Alternative 2 would be significant. However with implementation of the SWPPP to control erosion and turbidity compliance monitoring (Section 3.2, *Water Quality and Groundwater Resources*), as well as Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, and WILD-MM-1, these impacts would be reduced to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure WILD-MM-1: Conduct a Preconstruction Survey for Western Pond Turtle during Instream Water Work

Please refer to the discussion of Mitigation Measure WILD-MM-1 under Alternative 1, Impact WILD-1.

Impact WILD-2: Loss of Swainson's Hawk Nesting Habitat (less than significant with mitigation)

Direct impacts on Swainson's hawks include the loss of nesting habitat (including riparian woodland and landscaped/developed habitats with large trees) associated with project construction as well as the potential for disturbance of actively nesting Swainson's hawks if an active nest is present in or near the construction areas. There would be no loss of foraging habitat because no suitable foraging areas are present in the study area. Impacts on nesting habitat are discussed below, and impacts on active nests are described under Impact WILD-4 for nesting birds.

Alternative 2 would result in permanent loss of 0.86 acre of nonnative riparian woodland that represents potential Swainson's hawk nesting habitat. Numerous CNDDB records for nesting Swainson's hawk have been documented within a 10-mile radius around the study area. The closest recorded Swainson's hawk nest is from 2000 in a redwood tree on the 6th fairway of the Stockton Golf and Country Club approximately 300 feet northwest of the study area (California Department of Fish and Wildlife 2014). While the CNDDB (California Department of Fish and Wildlife 2014) information provides important data on historic habitat use and indicates that there is a high prevalence of nesting Swainson's hawk in the study area and project vicinity, it does not provide an indicator of the number of active Swainson's hawk nests within a given year. SJAFCA is committed to minimizing impacts on nesting Swainson's hawk. During development of the final grading plan, trees would be identified as potential nest trees and would be avoided to the extent feasible. However, the loss of nesting habitat is considered a direct significant impact because it could result in a substantial decrease in the local population of Swainson's hawks.

Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, VEG-MM-2, VEG-MM-6b, and WILD-MM-2 would reduce impacts to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-2: Compensate for the Loss of Nonnative Riparian Habitat

Please refer to the discussion of Mitigation Measure VEG-MM-2 in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-2.

Mitigation Measure VEG-MM-6b: Compensate for Loss of Heritage Trees

Please refer to the discussion of Mitigation Measure VEG-MM-6b in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-6.

Mitigation Measure WILD-MM-2: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys

Please refer to the discussion of Mitigation Measure WILD-MM-2 under Alternative 1, Impact WILD-2.

Impact WILD-3: Loss or Disturbance of Western Burrowing Owls and Their Habitat (less than significant with mitigation)

Direct impacts on burrowing owls from Alternative 2 include the potential for disturbance of nesting birds and injury or mortality of birds if they are present in or adjacent to the construction area. The presence of residential houses and recreational activities reduces the potential for burrowing owls to be present in the study area.

Although no burrowing owls were observed in the project area during field surveys, at least 27 burrowing owl occurrences have been documented within a 10-mile radius of the project area (California Department of Fish and Wildlife 2014). Approximately 0.81 acre of landscaped/developed habitat and ditch habitat would be removed as part of Alternative 2, which is considered low quality for burrowing owl; however, burrowing owls could be affected if they are present in habitat that is adjacent to construction. Construction activities could result in the removal of an occupied burrowing owl breeding or wintering burrow site and loss of burrowing owl adults, young, or eggs, which would be a violation of the MBTA and Fish & Game Code.

Direct impacts on nesting would result in a significant impact on burrowing owl populations in the region. However, implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, WILD-MM-3a, and WILD-MM-3b would reduce the direct impacts on burrowing owls to a less-than-significant level and avoiding violation of the MBTA and Fish & Game Code.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure WILD-MM-3a: Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the 2012 California Department of Fish and Game Guidelines for Burrowing Owl Mitigation, if Necessary

Please refer to the discussion of Mitigation Measure WILD-MM-3a under Alternative 1, Impact WILD-3.

Mitigation Measure WILD-MM-3b: Compensate for Loss of Burrowing Owl Habitat

Please refer to the discussion of Mitigation Measure WILD-MM-3b under Alternative 1, Impact WILD-3.

Impact WILD-4: Loss or Disturbance of Tree-, Shrub- and Ground-Nesting Special-Status and Non-Special–Status Migratory Birds and Raptors (less than significant with mitigation)

Direct impacts on both special-status and non-special-status birds and raptors from Alternative 2 include the loss of nesting habitat associated with project construction as well as the potential for disturbance of actively nesting birds if an active nest is present in or near the construction areas. There would be no loss of foraging habitat because suitable foraging areas are not limiting in the study area.

Alternative 2 would result in permanent loss of 0.86 acre of nonnative riparian woodland and 0.81 acre of developed/landscaped and ditch habitat that represents potential nesting habitat. Biologists observed several indications of nesting bird activity during the fall 2014 survey including a raptor-style stick nest observed in tree on the golf course, a mud and grass cup nest observed in a tree in Louis Park (appropriate material and size for robin), as well as acorn woodpecker granary holes observed in trees in the study area. Trees and shrubs in the project area also can provide nesting habitat for several common migratory birds and raptors, including western bluebird (*Sialia Mexicana)*, western kingbird (*Tyrannus verticalis*), Anna's hummingbird (*Calypte anna*), lesser goldfinch (*Spinus psaltria*), American goldfinch (*Spinus tristis*), red-shouldered hawk, and red-tailed hawk.

If construction takes place during the breeding season (generally between February 1 and August 31), project activities (e.g., tree and shrub removal, excavation, grading) in the construction area could disturb or remove occupied nests of special-status or non-special-status birds and raptors. These disturbances could cause nest abandonment and subsequent loss of eggs or of developing young at active nests located in or near the construction area. All migratory birds and raptors are protected under the MBTA and Fish & Game Code Sections 3503 and 3503.5.

These direct impacts would be significant, but implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and WILD-MM-2 would reduce these impacts to a less-than-significant level and avoid violation of the MBTA and Fish & Game Code.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure WILD-MM-2: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys

Please refer to the discussion of Mitigation Measure WILD-MM-2 under Alternative 1, Impact WILD-2.

Impact WILD-5: Loss or Disturbance of Bats and Bat Roosts (less than significant with mitigation)

Special-status bats with potential to occur in the project area employ varied roost strategies, from solitary roosting in foliage of trees to colonial roosting in trees and artificial structures, such as buildings. Various roost strategies could include night roosts, maternity roosts, migration stopover, or hibernation. Potential bat roosting and foraging habitat within the study area includes riparian woodland, developed lands, and landscaped areas. Potential foraging habitat also includes aquatic habitat associated with tidal perennial drainages and tidal emergent wetland.

Bat roosts of special-status species and non–special-status species are highly sensitive to disturbance and are considered a sensitive resource by CDFW. Alternative 2 would result in sustained and disruptive construction activities, such as tree removal and trimming and construction activities resulting in noise and vibration, such as pile driving and grading. These activities could result in direct impacts on roosting bats, including the destruction of active roosts, the loss of individuals, or roost failure. These direct impacts would be significant because the subsequent population decline could affect the viability of the local bat populations. Implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and WILD-MM-5 would reduce this impact to a less-than-significant level.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure WILD-MM-5: Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures

Please refer to the discussion of Mitigation Measure WILD-MM-5 under Alternative 1, Impact WILD-5.

Impact WILD-6: Loss or Disturbance of Protected Marine Mammals (less than significant with mitigation)

California sea lions were observed in fall 2014 on Rough and Ready Island adjacent to the San Joaquin River, outside the study area. It is assumed in this analysis that the contractor may utilize the Port of Stockton, across the river from the study area, as a staging area, though a specific location within the Port is not identified in this EIR. Should the Port of Stockton be used as a staging area, it is

assumed the contractor may move materials and equipment by truck or via a barge across the river to the construction area.

There would be no impact on California sea lions from barge operations during construction or operations under Alternative 2 because the Port of Stockton and the DWSC operations and barge traffic are not expected to differ from existing conditions as a result of this project. However there is potential for disturbance to sea lions if a staging area is placed in the vicinity of where the sea lions haul out onto Rough and Ready Island or its vicinity. This direct impact would be significant, but implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and WILD-MM-6 would reduce this impact to a less-than-significant level and avoid violation of The Marine Mammal Protection Act of 1972, which prohibits, with certain exceptions, the take" of marine mammals in U.S. waters and by U.S. citizens on the high seas.

Mitigation Measure WILD-MM-6: Ensure Staging Areas are Located away from California Sea Lions

SJAFCA would ensure that if a staging area is necessary at the Port of Stockton that it is located in an area that is not used by California sea lions and in an area that would not interfere with their movement from land to water.

Impact WILD-7: Disruption of Wildlife Movement Corridors or Nurseries (less than significant)

In the study area, aquatic habitats adjacent to the San Joaquin River are considered to be a major wildlife movement corridor. Alternative 2 would reduce flood risk by constructing a gated fixed wall structure across Smith Canal to isolate Smith Canal from the San Joaquin River during high flow events, extending 225 feet across Smith Canal from Louis Park to Moreing Road (Plate 2-3). The gate would be closed only as needed for flood control, remaining open to allow for recreation, navigation, and tidal movement in Smith Canal. Based on an evaluation of the 30-year period from 1983–2013 shown in Table 2-3, it is assumed that there would be two closures per year on average for flood control purposes.

Alternative 2 would not result in the creation of permanent barriers to wildlife movement. During construction of flood risk–reduction measures, aquatic wildlife species movements through the study area would not be completely impeded during construction. In addition, the estimated two times a year the gate would be operated are not expected to significantly affect wildlife movement in aquatic habitat. Therefore, disruption of movement through the study area would be a less-than-significant direct impact. No mitigation is necessary.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact WILD-1: Loss or Disturbance of Western Pond Turtles and Their Habitat (less than significant with mitigation)

A western pond turtle was observed on the shoreline in Atherton Cove during the October 8, 2014 field survey. Turtles could occur in aquatic habitat throughout the study area and nest in suitable upland habitats on Dad's Point and the golf course.

Direct impacts on this species include temporary disturbance to upland nesting or basking habitat and the potential for loss of individual pond turtles. Western pond turtles could be crushed and

killed during project construction that takes place in or adjacent to suitable aquatic habitat. In addition, western pond turtles and nests containing hatchlings or eggs could be crushed and killed during the movement of construction equipment in upland habitat within 1,200 feet of suitable aquatic habitat.

Indirect impacts on western pond turtles could also result from adverse project impacts on surface water quality.

Potential impacts on western pond turtles under Alternative 3 would be significant. However with implementation of the SWPPP to control erosion and turbidity compliance monitoring (Section 3.2, *Water Quality and Groundwater Resources*), as well as Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, and WILD-MM-1, these impacts would be reduced to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure WILD-MM-1: Conduct a Preconstruction Survey for Western Pond Turtle during Instream Water Work

Please refer to the discussion of Mitigation Measure WILD-MM-1 under Alternative 1, Impact WILD-1.

Impact WILD-2: Loss of Swainson's Hawk Nesting Habitat (less than significant with mitigation)

Direct impacts on Swainson's hawks include the loss of nesting habitat (including riparian woodland and landscaped/developed habitats with large trees) associated with project construction as well as the potential for disturbance of actively nesting Swainson's hawks if an active nest is present in or near the construction areas. There would be no loss of foraging habitat because no suitable foraging areas are present in the study area. Impacts on nesting habitat are discussed below, and impacts on active nests are described under Impact WILD-4 for nesting birds.

Alternative 3 would result in permanent loss of 0.81 acre of nonnative riparian woodland that represents potential Swainson's hawk nesting habitat. Numerous CNDDB records for nesting Swainson's hawk have been documented within a 10-mile radius around the study area. The closest recorded Swainson's hawk nest is from 2000 in a redwood tree on the 6th fairway of the Stockton Golf and Country Club approximately 300 feet northwest of the study area (California Department of

Fish and Wildlife 2014). While the CNDDB (2014) information provides important data on historic habitat use and indicates that there is a high prevalence of nesting Swainson's hawk in the study area and project vicinity, it does not provide an indicator of the number of active Swainson's hawk nests within a given year. SJAFCA is committed to minimizing impacts on nesting Swainson's hawk. During development of the final grading plan, trees would be identified as potential nest trees and would be avoided to the extent feasible. However, the loss of nesting habitat is considered a direct significant impact because it could result in a substantial decrease in the local population of Swainson's hawks.

Implementation of Mitigation Measure VEG-MM-1c, to install exclusion fencing, Mitigation Measure VEG-MM-1d to conduct training for construction personnel, Mitigation Measure VEG-MM-1e to retain a biological monitor, VEG-MM-2 to compensate for the loss of riparian habitat, VEG-MM-6b to compensate for the loss of heritage trees, and WILD-MM-2 would avoid, minimize, and/or compensate for direct impacts on Swainson's hawks' nesting habitat, thereby reducing them to a less-than-significant level.

Implementation of Mitigation Measures VEG-MM-1c, VEG-MM-1d, VEG-MM-1e, VEG-MM-2, VEG-MM-6b, and WILD-MM-2 would reduce these direct impacts to a less-than-significant level.

Mitigation Measure VEG-MM-1c: Install Exclusion Fencing around Sensitive Resource Areas

Please refer to the discussion of Mitigation Measure VEG-MM-1c in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-2: Compensate for the Loss of Nonnative Riparian Habitat

Please refer to the discussion of Mitigation Measure VEG-MM-2 in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-2.

Mitigation Measure VEG-MM-6b: Compensate for Loss of Heritage Trees

Please refer to the discussion of Mitigation Measure VEG-MM-6b in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-6.

Mitigation Measure WILD-MM-2: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys

Please refer to the discussion of Mitigation Measure WILD-MM-2 under Alternative 1, Impact WILD-2.

Impact WILD-3: Loss or Disturbance of Western Burrowing Owls and Their Habitat (less than significant with mitigation)

Direct impacts on burrowing owls from Alternative 3 include the potential for disturbance of nesting birds and injury or mortality of birds if they are present in or adjacent to the construction area. The presence of residential houses and recreational activities reduces the potential for burrowing owls to be present in the study area.

Although no burrowing owls were observed in the project area during field surveys, at least 27 burrowing owl occurrences have been documented within a 10-mile radius of the project area (California Department of Fish and Wildlife 2014). Approximately 0.26 acre of landscaped/developed habitat and ditch habitat would be removed as part of Alternative 3, which is considered low quality for burrowing owl; however, burrowing owls could be affected if they are present in habitat that is adjacent to construction. Construction activities could result in the removal of an occupied burrowing owl breeding or wintering burrow site and loss of burrowing owl adults, young, or eggs, which would be a violation of the MBTA and Fish & Game Code.

Direct impacts on nesting would result in a significant impact on burrowing owl populations in the region. However, implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, WILD-MM-3a, and WILD-MM-3b would reduce the direct impacts on burrowing owls to a less-than-significant level and avoiding violation of the MBTA and Fish & Game Code.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure WILD-MM-3a: Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the 2012 California Department of Fish and Game Guidelines for Burrowing Owl Mitigation, if Necessary

Please refer to the discussion of Mitigation Measure WILD-MM-3a under Alternative 1, Impact WILD-3.

Mitigation Measure WILD-MM-3b: Compensate for Loss of Burrowing Owl Habitat

Please refer to the discussion of Mitigation Measure WILD-MM-3b under Alternative 1, Impact WILD-3.

Impact WILD-4: Loss or Disturbance of Tree-, Shrub- and Ground-Nesting Special-Status and Non-Special–Status Migratory Birds and Raptors (less than significant with mitigation)

Direct impacts on both special-status and non-special-status birds and raptors from Alternative 3 include the loss of nesting habitat associated with project construction as well as the potential for disturbance of actively nesting birds if an active nest is present in or near the construction areas. There would be no loss of foraging habitat because suitable foraging areas are not limiting in the study area.

Alternative 3 would result in permanent loss of 0.81 acre of nonnative riparian woodland and 0.26 acre of developed/landscaped and ditch habitat that represents potential nesting habitat. Biologists observed several indications of nesting bird activity during the fall 2014 survey including a raptor-style stick nest observed in tree on the golf course, a mud and grass cup nest observed in a tree in Louis Park (appropriate material and size for robin), as well as acorn woodpecker granary holes observed in trees in the study area. Trees and shrubs in the project area also can provide nesting habitat for several common migratory birds and raptors, including western bluebird (*Sialia Mexicana)*, western kingbird (*Tyrannus verticalis*), Anna's hummingbird (*Calypte anna*), lesser goldfinch (*Spinus psaltria*), American goldfinch (*Spinus tristis*), red-shouldered hawk, and red-tailed hawk.

If construction takes place during the breeding season (generally between February 1 and August 31), project activities (e.g., tree and shrub removal, excavation, grading) in the construction area could disturb or remove occupied nests of special-status or non-special-status birds and raptors. These disturbances could cause nest abandonment and subsequent loss of eggs or of developing young at active nests located in or near the construction area. All migratory birds and raptors are protected under the MBTA and Fish & Game Code Sections 3503 and 3503.5.

These direct impacts would be significant, but implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and WILD-MM-2 would reduce these impacts to a less-than-significant level and avoid violation of the MBTA and Fish & Game Code.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure WILD-MM-2: Avoid Disturbance of Tree-, Shrub-, and Ground-Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors and Conduct Preconstruction Nesting Bird Surveys

Please refer to the discussion of Mitigation Measure WILD-MM-2 under Alternative 1, Impact WILD-2.

Impact WILD-5: Loss or Disturbance of Bats and Bat Roosts (less than significant with mitigation)

Special-status bats with potential to occur in the project area employ varied roost strategies, from solitary roosting in foliage of trees to colonial roosting in trees and artificial structures, such as buildings. Various roost strategies could include night roosts, maternity roosts, migration stopover, or hibernation. Potential bat roosting and foraging habitat within the study area includes riparian woodland, developed lands, and landscaped areas. Potential foraging habitat also includes aquatic habitat associated with tidal perennial drainages and tidal emergent wetland.

Bat roosts of special-status species and non–special-status species are highly sensitive to disturbance and are considered a sensitive resource by CDFW. Alternative 3 would result in sustained and disruptive construction activities, such as tree removal and trimming and construction activities resulting in noise and vibration, such as pile driving and grading. These activities could result in direct impacts on roosting bats, including the destruction of active roosts, the loss of individuals, or roost failure. These direct impacts would be significant because the subsequent population decline could affect the viability of the local bat populations. Implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and WILD-MM-5 would reduce this impact to a less-than-significant level.

Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel

Please refer to the discussion of Mitigation Measure VEG-MM-1d in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure VEG-MM-1e: Retain a Biological Monitor

Please refer to the discussion of Mitigation Measure VEG-MM-1e in Section 3.7, *Vegetation and Wetlands*, under Alternative 1, Impact VEG-1.

Mitigation Measure WILD-MM-5: Conduct Preconstruction Surveys for Roosting Bats and Implement Protective Measures

Please refer to the discussion of Mitigation Measure WILD-MM-5 under Alternative 1, Impact WILD-5.

Impact WILD-6: Loss or Disturbance of Protected Marine Mammals (less than significant with mitigation)

California sea lions were observed in fall 2014 on Rough and Ready Island adjacent to the San Joaquin River, outside the study area. It is assumed in this analysis that the contractor may utilize the Port of Stockton, across the river from the study area, as a staging area, though a specific location within the Port is not identified in this EIR. Should the Port of Stockton be used as a staging area, it is assumed the contractor may move materials and equipment by truck or via a barge across the river to the construction area.

There would be no impact on California sea lions from barge operations during construction or operations under Alternative 3 because the Port of Stockton and the DWSH operations and barge traffic are not expected to differ from existing conditions as a result of this project. However there is potential for disturbance to sea lions if a staging area is placed in the vicinity of where the sea lions

haul out onto Rough and Ready Island or its vicinity. This direct impact would be significant, but implementation of Mitigation Measures VEG-MM-1d, VEG-MM-1e, and WILD-MM-6 would reduce this impact to a less-than-significant level and avoid violation of The Marine Mammal Protection Act of 1972 which prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas.

Mitigation Measure WILD-MM-6: Ensure Staging Areas are Located away from California Sea Lions

SJAFCA would ensure that if a staging area is necessary at the Port of Stockton that it is located in an area that is not used by California sea lions and in an area that would not interfere with their movement from land to water.

Impact WILD-7: Disruption of Wildlife Movement Corridors or Nurseries (less than significant)

In the study area, aquatic habitats adjacent to the San Joaquin River are considered to be a major wildlife movement corridor. Alternative 3 would reduce flood risk by constructing two gated fixed wall structures across Smith Canal and Atherton Cove to isolate Atherton Cove and Smith Canal from the San Joaquin River (Plate 2-6) during high flow flood events. The gate would be closed only as needed for flood control, remaining open to allow for recreation, navigation, and tidal movement in Smith Canal. Based on an evaluation of the 30-year period from 1983–2013 shown in Table 2-3, it is assumed that there would be two closures per year on average for flood control purposes.

Alternative 3 would not result in the creation of permanent barriers to wildlife movement. During construction of flood risk–reduction measures, aquatic wildlife species movements through the study area would not be completely impeded during construction. In addition, the estimated two times a year the gate would be operated are not expected to significantly affect wildlife movement in aquatic habitat. Therefore, disruption of movement through the study area would be a less-than-significant direct impact. No mitigation is necessary.

3.10 Visual Resources

This section describes the regulatory and environmental setting for visual resources in the study area. It also analyzes environmental impacts on visual resources that could result from implementing the proposed project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.10.1 Concepts and Terminology

Identifying a project area's visual resources and conditions involves three steps.

1. Objective identification of the visual features (visual resources) of the landscape.
2. Assessment of the *character* and *quality* of those resources relative to overall regional visual character.
3. Determination of the importance to people, or *sensitivity*, of views of visual resources in the landscape.

The aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area (Federal Highway Administration 1988:26–27, 37–43, 63–72). Scenic or visual quality can best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area (U.S. Bureau of Land Management 1980:18; U.S. Bureau of Land Management 1986:2). Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of views seen, distance of the viewers, and viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular viewshed. These terms and criteria are described in detail below.

Scenic vistas generally encompass a wide area with long-range views to the middleground and background of surrounding elements in the landscape. Scenic vistas are typically visible from: elevated vantages (e.g., hilltops, high points, and slopes higher than the surrounding area); flat landscapes, such as out and over open agricultural lands; and roadways with cleared rights-of-way on hilly and flat terrain that run through or near the study area. In addition, vistas have a directional range. Some areas have scenic vistas with a 360-degree view in all directions, while others may be limited in one direction in a manner that reduces the line-of-sight angle and amount of vista that is visible for a narrower vista view. Scenic vista viewsheds provide expansive views of a highly valued landscape for the benefit of the general public.

3.10.1.1 Visual Character

Natural and artificial landscape features contribute to the visual character of an area or view. Visual character is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Urban features include those associated with landscape settlements and development, including roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character can vary significantly seasonally, even hourly, as weather, light, shadow, and elements that compose the viewshed change. The basic components used to describe visual character for most visual assessments are the elements of form, line, color, and texture of the

landscape features (USDA Forest Service 1995:28–34, 1-2–1-15; Federal Highway Administration 1988:37–43). The appearance of the landscape is described in terms of the dominance of each of these components.

3.10.1.2 Visual Quality

Visual quality is evaluated using the well-established approach to visual analysis adopted by Federal Highway Administration (FHWA), employing the concepts of vividness, intactness, and unity (Federal Highway Administration 1988:46–59; Jones et al. 1975:682–713), which are described below.

- *Vividness* is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns.
- *Intactness* is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes, and in natural settings.
- *Unity* is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape.

Visual quality is evaluated based on the relative degree of vividness, intactness, and unity, as modified by its visual sensitivity. High-quality views are highly vivid, relatively intact, and exhibit a high degree of visual unity. Low-quality views lack vividness, are not visually intact, and possess a low degree of visual unity.

3.10.1.3 Visual Exposure and Sensitivity

The measure of the quality of a view must be tempered by the overall sensitivity of the viewer. Viewer sensitivity or concern is based on the visibility of resources in the landscape, proximity of viewers to the visual resource, elevation of viewers relative to the visual resource, frequency and duration of views, number of viewers, and type and expectations of individuals and viewer groups.

The importance of a view is related in part to the position of the viewer to the resource; therefore, visibility and visual dominance of landscape elements depend on their placement within the viewshed. A *viewshed* is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (Federal Highway Administration 1988:26–27). To identify the importance of views of a resource, a viewshed must be broken into distance zones of foreground, middleground, and background. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer. Although distance zones in a viewshed may vary between different geographic region or types of terrain, the standard foreground zone is 0.25–0.5 mile from the viewer, the middleground zone from the foreground zone to 3–5 miles from the viewer, and the background zone from the middleground to infinity (Litton 1968:3).

Visual sensitivity depends on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and viewing duration. For example, visual sensitivity is generally higher for views seen by people who are driving for pleasure, people engaging in recreational activities such as hiking, biking or camping, and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (USDA Forest Service 1995:3-3–3-

13; Federal Highway Administration 1988:63–72; U.S. Soil Conservation Service 1978:3, 9, 12). Commuters and non-recreational travelers have generally fleeting views and tend to focus on commute traffic, not on surrounding scenery; therefore, they are generally considered to have low visual sensitivity. Residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes; therefore, they are generally considered to have high visual sensitivity. Viewers using recreation trails and areas, scenic highways, and scenic overlooks are usually assessed as having high visual sensitivity.

Judgments of visual quality and viewer response must be made based in a regional frame of reference (U.S. Soil Conservation Service 1978:3). The same landform or visual resource appearing in different geographic areas could have a different degree of visual quality and sensitivity in each setting. For example, a small hill may be a significant visual element on a flat landscape but have very little significance in mountainous terrain.

3.10.2 Existing Conditions

3.10.2.1 Regulatory Setting

The following Federal, state, and regional and local regulations and technical guidelines related to visual resources may apply to implementation of the project. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

There are no roadways within or near the project area that are designated in Federal plans as a scenic highway or route worthy of protection for maintaining and enhancing scenic viewsheds.

State

There are no roadways within or near the project area that are designated in Federal or state plans as a scenic highway or route worthy of protection for maintaining and enhancing scenic viewsheds (California Department of Transportation 2015).

Regional and Local

San Joaquin County General Plan

The Community Organization and Development Pattern element of the *San Joaquin 2010 County Wide General Plan* (County General Plan) (1992) includes several objectives, goals, and policies related to visual resources that could apply to the project. The County General Plan has an overall goal to "balance social, environmental, economic, cultural, and aesthetic concerns to provide a quality living environment."

In the Community Development element of the County General Plan, objectives and policies related to aesthetics that could apply to the project aim to ensure that the County make aesthetic factors a consideration during development; to encourage that stormwater management be done in a manner that least inconveniences the public, reduces potential water-related damage, and enhances the natural features of a site; to protect the scenic value of the landscape from inappropriately located utility lines and underground utility lines for all new development in urban communities; to protect waterways, marsh lands, wildlife habitats, unique land and scenic features, and historical and

cultural sites upon which recreation is based; preserve and provide access to natural features and settings in recreation areas such as bank fishing, picnicking, and nature study; to protect the natural beauty, wildlife, riparian vegetation, and the navigability of the waterways; and to protect scenic trail corridors from unsightly development.

In the Resources element of the County General Plan, objectives and policies related to aesthetics that could apply to the project aim to protect views of waterways from public lands and roadways; preserve and provide public access to outstanding scenic vistas; protect scenic resources from air pollution; and protect the scenic value of surface waters in the county that are significant state and national resources.

In the County General Plan, Interstate 5 (I-5) is designated as a County scenic route, starting at the Stockton Deepwater Ship Channel (San Joaquin River) and continuing north to the county line. This falls outside of the study area (study area) and would not be affected by the project. The project falls within the Stockton Planning Area; however, there are no policies related to visual resources for the planning area.

City of Stockton General Plan

The *2035 Stockton General Plan* (2007) includes policies related to aesthetic and visual resources that may apply to the project. These policies address community design that incorporates and provides visual access to and complements open space features; protects cultural resources; ensures that new infrastructure respects the image and character of historic neighborhoods and districts; incorporated historic and natural features in site and development planning; includes art in public buildings and parks; supports urban design objectives for roadways, public works projects, and stormwater design; prevents light pollution, and complies with City design policies, plans, and guidelines through the design review processes.

The project area is located in area J, the West Channel District, and policies address how new infrastructure should be compatible with the existing neighborhood character and new urban development should be aesthetically pleasing within this district.

The City General Plan policies also address recreation and waterways by incorporating the San Joaquin River and other local waterways into the design of parks and trails to preserve and restore their natural values, improving riparian corridors, and designing waterway and trail corridors to maximize public safety and access concerns. In addition, natural and cultural resource policies strive to protect natural resources, space areas, parks, and other cultural/historic resources from encroachment or destruction by incompatible development; preserve, enhance, and restore public access to recreational areas; encourage the planting native vegetation to preserve the visual integrity of the landscape; minimize lighting pollution; incorporate open space areas to promote community identity; and create landscaped roadway corridors.

3.10.2.2 Environmental Setting

The study area for visual resources is comprised of the project area, described in Chapter 1, *Introduction* and shown in Plate 1-2, and a 0.5-mile area surrounding the project area. Key views (KV) associated with the study area are identified on Plate 3.10-1, and the corresponding photos are shown in Plates 3.10-2 and 3.10-3.

Regional Character

The *project region*, defined by a 30-mile radius around the project area, is in the Central Valley of California. The dominant landform in the region is the flat valley floor. Residential, commercial, industry, and agriculture are the primary land uses. The project area is located within the city of Stockton and San Joaquin County, west of I-5 (Plate 1-2). The cities of Lathrop, Lodi, and Manteca also are located within the region. Most regional development occurs along transportation corridors, such as I-5, I-205, and State Route 99. The project area falls within the eastern boundary of the Sacramento–San Joaquin River Delta (Delta), which is an integral part of the region's visual character. Connected to the Delta are many rivers, creeks, sloughs, and bays, which strongly influence local land use patterns. East of the Delta, open agricultural land is dotted with rural development that becomes increasingly urbanized nearing the city limits of Stockton and other smaller cities and towns in the region.

A mix of agricultural, developed, and natural landscapes characterize the project region. The landscape pattern is influenced by encroaching development extending out from city centers and major roadways in the region. The region's visual quality is considered moderate in vividness, intactness, and unity.

Study Area Character

The *study area* is defined as a 0.5-mile area surrounding the project area, because views of the project area are limited to the foreground and are not available beyond this distance due to intervening development and vegetation, along with waterway curvature and intervening land masses. The study area largely supports recreational, industrial, and residential land uses. It is bounded on the north by the Stockton Golf and Country Club and residential development. It is bounded on the east by residential development, Louis Park, the All Star Sports training facility, Stockton Rod & Gun Club, and the San Joaquin County Juvenile Probation Project 654 facility. To the south and west, the study area is bounded by industrial uses and its associated offloading facilities that are located on Rough and Ready Island, along the Stockton Deepwater Ship Channel/San Joaquin River (river). Rough and Ready Island is a part of the Port of Stockton (Port).

The San Joaquin River, Atherton Cove, and Smith Canal make up a large visual component of the study area, which are enjoyed for providing views of the water and water-based recreational opportunities. The surrounding land is at a higher elevation than the waterways and its banks are leveed and slope down to the water's edge. The San Joaquin River is the widest channel in the study area, ranging from approximately 470 to 770 feet wide; Atherton Cove is approximately 270 feet wide; and Smith Canal ranges from approximately 120 to 200 feet wide. The narrow Dad's Point separates Atherton Cove and Smith Canal from the San Joaquin River and creates a sense of enclosure, away from the river, for residents, park users, and boaters. Water-based views offer the most direct views of the project while in proximity to the project area. Views can be seen from the Louis Park boat launch near Dad's Point and from portions of the San Joaquin River, Atherton Cove, and Smith Canal that are in the direct line of sight of the project area (Plate 3.10-2, Photos 1–4). Views of the project area from portions of the river that are beyond 0.5 mile of the project area are generally not present because waterway curvature and intervening land, vegetation, and development prevent views. Similarly, available views of the project area from around the bend and towards the end of Atherton Cove are not available because waterway curvature and intervening land, vegetation, and development prevent views. During the time of ICF International's site visit in October 2014, water hyacinth blooms in Atherton Cove and Smith Canal were prominent, creating a

carpet of green over the much of the water's surface, and large blooms were also present along the edges of the San Joaquin River. The blooms are restrictive of boat travel, acting to limit up-close visual access to the shoreline, and the presence or absence of blooms alters views of the water surface from being vegetated to free of vegetative weed cover. Water hyacinth also has pale purple flowers that can be seen when in bloom, contributing to seasonal variations in views.

Residential areas in the affected area are comprised of mid- to large-scale homes that are well-kempt and often include formal landscaping and appurtenance structures. Landscaping and vegetation surrounding these homes range from sparse, providing a more open landscape, to dense, providing more screening and privacy. Views of the project area from residential areas along Atherton Cove and Smith Canal are primarily available from only those homes lining the water's edge and in closer proximity to the project area. Views from homes that are around the bend, towards the end of Atherton Cove, do not have views of the project area for Alternatives 1 and 3 because waterway curvature and intervening land, vegetation, and development prevent views. From Atherton Cove, available views toward the project area vary. Homes along Atherton Cove are set back from the water's edge, and while some have direct views, the setback limits others' views, especially when vegetation and other structures intervene (Plate 3.10-3, Photo 5). However, there are views from many of the docks of homes along Atherton Cove, regardless of setbacks, for those not located around the bend and toward the end of the cove. Views of the project area from homes along Smith Canal are primarily limited to those on Atherton Island and the residence located directly east of the entrance to Atherton Island. Most other homes along Smith Canal do not have direct views of the project area because homes are set back from the water's edge and intervening land, vegetation, and development prevent views (Plate 3.10-3, Photo 6). There are views, however, from the docks of homes along Smith Canal. In addition, views from homes that are more inland are unavailable as they are obscured by development, fencing, and mature trees and shrubs.

Louis Park comprises a portion of the project area and the park, as a whole, is manicured and well-maintained. A large parking lot and a pathway near the water's edge provide easy access to the water, in addition to the boat ramp and floating docks. Available views of the project area from vantages within Louis Park are primarily limited to shoreline areas and the western edges of the park that are closest to the project area, including from Dad's Point, the parking area near the boat launch, and near Pixie Woods. These views are limited in areas due to shoreline vegetation and trees within the park. Only portions of the project area that are located just west of Pixie Woods, which is a historical resource (refer to Section 3.14, *Cultural Resources*) located along Smith Canal, are visible from the amusement park. Most views of the project area from Pixie Woods are not available because dense tree and shrub cover along the banks of Smith Canal and within the Pixie Woods complex prevent views beyond and toward Atherton Cove and Dad's Point and prevent views of the canal itself, even though the canal is in close proximity (Plate 3.10-3, Photo 7). Views of the project area are not available from the remaining portions of the park's interior because they are set back from the water and topography, trees in the park, and tree and shrub cover along the banks of Smith Canal prevent views, such as from the park's ball fields, tennis courts, the lagoon in Pixie Woods within Louis Park, and associated parking areas. Views of the project area from the All Star Sports training facility on Monte Diablo Boulevard between Pinetree Drive and Occidental Avenue and the Stockton Rod & Gun Club at the end of Shimizu Drive along Monte Diablo Boulevard are not available due to intervening vegetation.

The Stockton Golf and Country Club is an 18-hole golf course that has a large clubhouse and parking area along the San Joaquin River. The country club also has a pool and snack bar located near the clubhouse, further inland. The golf course contains manicured greens, trees lining the fairways, sand

traps, ponds, and golf cart pathways. Views of the project area from the country club are primarily available from the 8th and 9th greens, which border the San Joaquin River and Atherton Cove (Plate 3.10-3, Photo 8). However, mature trees and shrubs line the banks along the water's edge, and views are only available in a few locations where there are gaps in vegetation. Views from the clubhouse and other 16 greens are not available due to their location within the landscape and intervening trees and topography.

The primary sources of existing nighttime light in the study area are associated with interior and exterior residential and business lighting; pathway, street, and parking lot lighting in Louis Park; vehicle headlights; and security lighting at the Port. Existing sources of glare include water surfaces, light-colored buildings, paved areas, and building and vehicle windows. Trees in the study area help to filter and diffuse the amounts of visible light and glare.

Views in the study area are somewhat degraded by the presence of industrial operations and infrastructure associate with the Port. However, the juxtaposition of industrial land uses against water channels and vegetated water banks help to improve views in the study area. In addition, the well-maintained homes, the park, and the country club and their associated landscaping provide visual interest and cohesion to help offset the industrial presence of the Port to a degree. Therefore, the visual quality of the study area is moderate in vividness, intactness, and unity.

Viewer Groups

Residential Viewers

Residential viewers include those living in homes along Atherton Cove and Smith Canal, in the project area. Residents are familiar with the current, industrialized visual conditions and operations associated with the Port across the San Joaquin River; however, Atherton Cove and Smith Canal are lined with residential homes and docks, the park and golf course, and trees and other vegetation. Residential viewers have long, extended viewing times of the project area and are likely to have a high sense of ownership over adjacent waterways because they enjoy views of the water and use the waterways for recreation. Therefore, residents would have high visual sensitivity to changes in the project area.

Recreational Viewers

Recreational viewers include park users at Louis Park and Pixie Woods, golfers at the Stockton Golf and Country Club, and boaters (refer to Section 3.11, *Recreation*, for more information on use numbers and recreational resources). Park users have views of the project area from shoreline areas of the park that are closest to the project area, including Dad's Point. Park viewers include walkers, joggers, fishermen, and those taking in views from pathways near the water and from the channel banks. These viewers are likely to have the longest, direct views of the project area as they sit for extended times and fish or take in their surroundings.

Golfers at Stockton Golf and Country Club would have the shortest, least direct views of the project area because views from the course are present only where there are gaps in vegetation along the banks of the San Joaquin River and Atherton Cove. Golfers tend to be more focused on their game and may only take in the views on occasion as they pass by the few locations where views are available.

Boaters would have direct, longer views of the project area. Recreational boaters in the area include those using the Louis Park boat launch near Dad's Point; nearby residential recreationists using Atherton Cove and Smith Canal; and boaters from other areas that are accessing the San Joaquin River, Atherton Cove, and Smith Canal.

While recreational viewers are familiar with the current, industrialized visual conditions associated with the Port across the San Joaquin River, Atherton Cove, and Smith Canal are residential in nature and lined with residential docks and trees and other vegetation. Therefore, recreational viewers would all have moderate to moderately high visual sensitivity to changes in the project area because these viewers use the park, golf course, and waterways for recreational enjoyment, which includes taking in views of the surrounding area.

Industrial Viewers

Industrial viewers include workers along the very northern edge of the Port's Rough and Ready Island, directly adjacent to the San Joaquin River, and those on cargo or transport vessels. Warehouses limit views of the project site from interior vantages on the island. Workers at the port or on cargo vessels would all have low visual sensitivity to changes in the project area because these viewers are in the study area temporarily, while working, and are focused on the task at hand and very familiar with the current, industrialized visual conditions associated with the Port.

3.10.3 Environmental Impacts

This section describes the environmental impacts of the proposed project on visual resources. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, where appropriate.

3.10.3.1 Assessment Methods

Using the concepts and terminology described in Section 3.10.1 and professional standards and criteria for determining significance described in this section, analysis of the visual effects of the proposed project is based on the following methods.

- Direct field observation from vantage points, including neighboring buildings, property, and roadways (October 31, 2014).
- Photographic documentation of key views of and from the project site.
- Evaluation of regional visual context.
- Review of project construction drawings.
- Review of the project in regard to compliance with state and local ordinances and regulations and professional standards pertaining to visual quality.
- Review of photo simulations to assess visual impacts.

Professional Standards

Professional standards result from professional and direct expertise gained by staff working on visual analyses and consulting with other experienced staff, subconsultants, and clients on visual effects, including knowledge gained from public input on a broad range of projects. The

effects listed below represent collective knowledge that is professionally agreed upon and represents common, general public concerns. According to professional standards, a project may be considered to have significant impacts if it would substantially have any of the following consequences.

- Conflict with local guidelines or goals related to visual quality.
- Alter the existing natural viewsheds, including changes in terrain.
- Alter the existing visual quality of the region or eliminate visual resources.
- Increase light and glare in the study area.
- Result in backscatter light into the nighttime sky.
- Result in a reduction of sunlight or introduction of shadows in community areas.
- Obstruct or permanently reduce visually important features.
- Result in long-term (that is, persisting for 2 years or more) adverse visual changes or contrasts to the existing landscape as viewed from areas with high visual sensitivity.

Photo Simulations

Computer-generated visual simulations were produced using digitized photographs and computer modeling and rendering techniques to document and evaluate the visual changes that would result from implementation of the proposed project and its alternatives. The photo simulations are provided in Appendix H, *Visual Resources Technical Appendix.* Simulation vantage points were selected to provide representative public views from which specific project elements from each alternative would be most visible, and four KVs, mapped on Plate H-1, were selected for simulating project features. Simulations are shown in Plates H-2 through H-8. The before and after photo simulations provide clear images of the location, scale, and visual appearance of alternative features. The simulations were developed through an objective analytical and computer modeling process and are accurate within the constraints of the available site and alternative data (three-dimensional computer model was created and exported to Adobe Photoshop for production). Design data—preliminary engineering drawings, elevations and cross sections, site and topographical contour plans, concept diagrams, and reference pictures—were used as a platform from which digital models were created. For cases in which detailed design data were unavailable, more general descriptions about alternative facilities and their locations were used to prepare the digital models.

The simulations were prepared using available design data. Although the project elements will continue to undergo design refinement through final design stages, these refinements would not be expected to result in substantial differences in individual features that would affect the outcome of the visual effects analysis. The planning is far enough along and engineers have developed preliminary design of project facilities and related structures to meet the operational criteria for the proposed project and each alternative. Some of the factors incorporated into these considerations include appropriate wall and gate sizes, control building dimensions, extent of landform and landscape modification, the amount of electricity needed under the proposed project and each alternative and the associated structures and placement of transmission lines, placement of temporary and permanent access roads, and location of staging

areas. Finally, the analysis assumes that any shifts in specific feature configurations or new alternative components would be minor. Therefore, the simulations are considered appropriate and representative of the type and extent of possible visual changes to the study area.

The simulations also show the project with Mitigation Measure VIS-MM-2a, *Apply Aesthetic Surface Treatments to Project Features*, applied. This mitigation measure is simulated to show how it would lessen visual impacts associated with the proposed project and its alternatives.

3.10.3.2 Thresholds of Significance

The thresholds listed below are based on standard professional practice and on the criteria provided in State CEQA Guidelines Appendix G (14 California Code of Regulations 15000 et seq.). The project would be considered to have a significant impact on visual resources if it would result in any of the consequences listed below.

- Substantially degrade the existing visual character or quality of the site and its surroundings.
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway or within a scenic vista.
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

The project area is not located near a state scenic highway or other designated scenic corridor. In addition, there are no scenic vistas in the project area because existing development and vegetation prevents such views. Consequently, the proposed project would not substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway or adversely affect scenic vistas, and there would be no impact on such scenic resources for the proposed project or its alternatives. These impacts are not discussed further.

3.10.3.3 Impacts and Mitigation Measures

No Project Alternative

The No Project Alternative represents the continuation of existing deficiencies in the project area's flood control structures. No flood risk–reduction measures would be implemented, and no construction-related impacts on visual resources would occur. Under the No Project Alternative, visual resources are expected to remain similar to existing conditions. However, the visual character could change in the event of flooding that has the potential to destroy vegetation, infrastructure, and development. The impacts of such flooding could range from relatively minor to catastrophic, depending upon the severity and extent of the flood event. The consequences of levee failure and flooding are described under the No Project Alternative description in Chapter 2, *Proposed Project and Alternatives*, Section 2.4, including a summary of possible environmental effects.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact VIS-1: Temporary Visual Impacts Caused by Construction Activities (significant and unavoidable)

Construction Lighting

As described in Chapter 2, *Proposed Project and Alternatives*, construction would be short-term and temporary in nature, occurring over approximately 2 years. Construction would take place between 7:00 a.m. to 4:00 p.m., Monday through Friday, throughout the year for dry land work and between 7:00 a.m. to 7:00 p.m., up to 7 days a week, from mid-July to mid-October each year for in-water work. Because most of the construction would occur during daylight hours, high-intensity lighting would not be needed to illuminate construction activities. In the winter months, however, sunrise occurs after 7:00 a.m. and there would be impacts if high-intensity lighting was to be used prior to sunrise to light construction activities. Use of such lighting could result in nuisance light spill for residents and recreationists in the project area, resulting in significant impacts. Implementation of Mitigation Measure VIS-MM-1a would reduce impacts associated with construction lighting to a less-than-significant level.

Construction Traffic

Construction traffic in the project area would be via I-5, Country Club Boulevard, Monte Diablo Road, and boat or barges on the San Joaquin River. Construction traffic on I-5 would not be noticeable due to the amounts of similar traffic traveling on that route on a daily basis. Access via Country Club Boulevard would likely not be desirable because the boulevard serves as the entry for the Stockton Golf and Country Club, and such traffic could be disrupting and detract from views associated with the country club. Construction traffic along Monte Diablo Road would be visually disruptive as it passes through the residential portion of the street, but park users would be less sensitive to construction traffic on this roadway because they are accessing the park intermittently. Boats and barges would be in keeping with water vessels currently seen in the study area that are associated with the Port. However, it would bring views of such vessels in much closer proximity to sensitive residential and recreational viewers.

Construction Staging

Construction staging areas would be located west of I-5, in the open space area south of West Fremont Street and west of Ryde and Wilshire Avenues; at the Port of Stockton, across the river from the project area (though a specific location within the Port is not identified in this EIR); and in the parking area at Louis Park near the boat launch at Dad's Point. Residents, recreationists, and roadway travelers along West Fremont Street and west of Ryde and Wilshire Avenues would be screened from the staging area at this location by existing chain link fencing that has privacy slats that prevent views toward the interior of the lot. The Port is very industrial, and heavy equipment and materials storage is very common. Most Port workers would see this staging area at this location in passing. The staging area within Louis Park would only take up a portion of the parking lot and it is located far enough away and with enough intervening vegetation to ensure that residents near the project area would not be affected by staging at this location. Recreationists would still be able to park in the parking lot and launch their boats at this location during construction. Current fishing activity from the banks near the Louis Park shoreline near the boat ramp would not be interrupted during the majority of project construction, limited only during the construction of improvements to Dad's Point.

Viewer Access and Tree Removal

Recreational, and thus visual, access to the water and Dad's Point would also be affected during construction. Water-based visual access would be limited by the presence of construction activities, but an opening would be maintained from July 2017 through May 2018 to allow for boat passage between Atherton Cove and Smith Canal to the river until the gate is operational and open for boat passage. Construction of the culverts under Moreing Road take 2 months to install cofferdams, install the culvert, and then to remove cofferdams. Installation of the culvert, once the cofferdams are in place, would be visually disruptive to residents living on Atherton Island because they may be subject to waits of up to 15 minutes while trying to access or leave their community. While such waits would occur only over a short-term span of the two weeks while culvert installation takes place, this duration could be perceived negatively if residents are affected on a daily basis for those 2 weeks during regular commute hours. This would result in a negative viewer response and heightened viewer sensitivity, which would compound the effects of the perceived visual disruption, if these extended wait times occur when residents are commuting to and from work in the mornings and evenings. Implementation of Mitigation Measure VIS-MM-1b would slightly extend the construction schedule but would help to reduce the potential negative viewer response.

Access to the tip of Dad's Point would be restricted while the southern section of the fixed dual sheet pile wall is being built but the remainder of the point would be open to recreationists during this time. Dad's Point would be closed for a very short period of time, from September and October 2018, while enhancements are implemented. Dad's Point would require fill placement and grading to raise a low point by a minimum elevation of approximately 15 feet, and invasive plant species would be removed. Native landscaping, two ADA-accessible fishing platforms, bat boxes, if suitable, and an interpretive trail would be installed. In addition, of the Urban Levee Design Criteria (ULDC) requirements it is likely that some existing trees would be removed from Dad's Point (refer to Chapter 2, *Proposed Project and Alternatives*). The 400-square-foot control building would be built on Dad's Point and away from concentrated recreational viewers, with viewers at Pixie Woods, and with viewers on the Stockton Golf and Country Club's golf course. Therefore, recreational and visual access to the water and Dad's Point would not be significantly affected during construction. However, tree removal needed to accommodate construction activity to raise the grade of Dad's Point and ULDC requirements would likely be perceived as negative and result in a significant impact during construction.

Construction Timing

Construction of Alternative 1 would create changes in views of and from the project area over the course of 2 years and introduce considerable heavy equipment and associated vehicles, including barges, backhoes, compactors, tractors, and trucks into the viewshed of all viewer groups during this time. Viewers are accustomed to seeing heavy machinery associated with construction in the region and study area for roadway improvement and development projects; however, they would not be accustomed to seeing intense and isolated, on-land and in-water construction activities in the project area because construction operations are not common in this portion of the study area. In addition, while industrial operations take place at the Port, much of these operations are screened from view by warehouses along the San Joaquin River.

Impact to Private Properties

No residential properties would be directly affected by construction, and only a small portion of the Stockton Golf and Country Club shoreline would be affected.

Summary

Even though construction would be temporary and not last longer than 2 years under Alternative 1, the intensity of construction activities occurring within close proximity to sensitive residential and recreational viewers and alterations to the existing visual environment resulting from removal of mature trees at Dad's Point would result in direct impacts that would be significant and unavoidable even with mitigation. No indirect effects would result.

Mitigation Measure VIS-MM-1a: Limit Activities That Would Require High-Intensity Lighting to Be Used for Illumination to Daylight Hours

Construction activities scheduled to occur between 7 a.m. and 6 p.m. will not take place before or past daylight hours (which vary according to season). This will reduce the amount of construction experienced by viewer groups, because most construction activities would be occurring during business hours (when most viewer groups are likely at work) and eliminate the need to introduce high-wattage lighting sources to operate after dark near residences.

Mitigation Measure VIS-MM-1b: Limit Traffic Delays at Moreing Road to Off-Peak Commute Hours

Construction activities at Moreing Road that result in extended vehicle wait times would negatively affect residential viewers and create a heightened, negative viewer response. Construction activities at Moreing Road that would result in extended vehicle wait times will not take place during regular commute hours and will be timed to occur during business hours, such as between 9 a.m. and 3 p.m. While this may slightly lengthen the construction timeline, it will reduce delays experienced by residents in the mornings and evenings when they are commuting to and from work.

Impact VIS-2: Substantial Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings (significant and unavoidable)

Alternative 1 would result in changes to Dad's Point that are likely to be perceived as beneficial, to some degree, because they would provide additional recreational and visual access, increase visual diversity through the installation of native plant species that would attract more wildlife, and replace aging and deteriorating site features. While raising the low point at Dad's Point would not greatly alter views associated with Dad's Point, visual changes resulting from removal of mature trees because of the need to raise the grade of Dad's Point and ULDC requirements would result in substantial visual changes associated with Dad's Point that are likely to be perceived as negative, even though shrubs and grasses would be replanted. In addition, the control building on Dad's Point could stand out and be visually intrusive if it is not designed in manner that helps it blend with the visual environment.

Alternative 1 would build a gated fixed wall structure that would rise approximately 8.5 feet to 12.5 feet above the water surface. This means that the wall would appear to be shorter, exposing less wall surface during high tide, or taller, exposing more wall surface during low tide. In addition, viewer location would affect the perceived height of the wall in a manner that the wall may appear shorter for land-based viewers or taller for water-based viewers. Regardless of the tides, the project would introduce large-scale industrial looking walls and gate structure that impound Atherton Cove and Smith Canal and close these areas off, physically and visually, from the San Joaquin River (Plate 2-2). The gate structure would have a 50-foot-wide opening with miter gates that would remain

open until a high-water event would require them to be closed. Marine-grade sheet piles would be required for the in-water application of the gated fixed wall structure. This type of sheet pile weathers and rusts naturally to create a corroded barrier that protects interior steel. Sheet pile thickness is a factor in wall design to account for this natural corrosion barrier. Sheet pile wall surfaces may be treated, such as with marine-grade paint, that provides corrosion protection and options for wall aesthetics. Painted surfaces can last for 10–20 years depending on the application type. (North American Steel Sheet Piling Association 2008:3–11).

As seen in Appendix Plate H-2, *Simulated View*, the gate structures would heighten the perceived arrival and departure experience for recreational boaters accessing local waterways compared to existing conditions. Introducing a large, industrial-looking wall and gate structure that visually impounds Atherton Cove and Smith Canal would alter the existing visual character and quality of views associated with the study area and would result in significant visual impacts that would negatively affect sensitive residential and recreational viewers. The natural rusted wall surface would help the wall to recede into view to a degree, reducing the apparent scale of the wall, and a natural rusted wall surface may be preferred by affected viewers. However, the visual preference may be to see mitigation applied and the wall treated with color, as reflected in Appendix Plates H-3a and H-3b, *Simulated Views*. Implementation of Mitigation Measures VIS-MM-2a and VIS-MM2b would ensure that wall surfaces are treated in a manner that reduces impacts for affected viewers in addition to reducing impacts associated with the control building and gate structure but not to a less-than-significant level. Therefore, direct impacts would be significant and unavoidable. No indirect effects would result.

Mitigation Measure VIS-MM-2a: Apply Aesthetic Surface Treatments to Ancillary Project Features

Ancillary project features such as the control building(s), safety guardrails, and land-based signage will be designed in a manner that allows these features to blend with the surrounding built and natural environments so that they complement the visual landscape.

Ancillary project features will be of a material or color that helps surfaces to blend better with the surroundings. The control building will be painted or sided using materials that are colored a dark brown or green so the building recedes into the landscape instead of being brightly colored, which would draw attention toward the structure. The control building will be constructed with low-sheen and non-reflective surface materials to reduce potential for glare, and the use of glossy paints or surfaces should be avoided. Any safety barriers used on the top of sheet pile walls will be see-through, and a solid barrier that would obscure and limit views will not be used. The safety barrier will be colored in a manner that complements the coloring of the wall surface, using darker colors such as brown or black. Appropriate paint type will be selected for ancillary project features to ensure long-term durability of the painted surfaces. SJAFCA, or the appropriate operating agency or organization, will maintain the paint color over time.

Aesthetic design treatments will also be implemented if exposed concrete associated with the control building structure will be visible to the public, such as forming the concrete in a manner that mimics natural material (e.g., wood or rock surfacing) and using integral color. This would aid in reducing structure visibility and enable it to better blend with the landscape. For example, if a dark green painted surface is chosen for the control building walls, then a light brown or dark tan colored concrete would complement the colored surface. At a minimum, concrete will

have a roughened wall surface to reduce the potential for glare, and smooth troweled surfaces will be avoided.

Mitigation Measure VIS-MM-2b: Work with Affected Stakeholders to Determine Appropriate Sheet Pile Wall Aesthetic Treatments

SJAFCA will conduct a focused outreach effort to identify the viewers most affected by the proposed sheet pile wall aesthetics and will conduct a public meeting or charrette session with directly affected residents and representatives of Louis Park and the Stockton Golf and Country Club (affected stakeholders) to develop an aesthetic design approach to aid in reducing the visual impact of the proposed sheet pile walls. This measure will allow concerned viewers to aid in creating a sheet pile wall that is visually appealing, while balancing the need for increased flood safety at this location.

Therefore, SJAFCA will coordinate with affected stakeholders to determine if the sheet pile wall surfaces will retain a natural, rusted surface condition or if they will be treated with color. Potential wall surfacing options will be presented at the public meeting where affected stakeholders can review and provide input on their preferred wall treatment. If the majority of affected stakeholders determine a natural, rusted wall surface is desirable, then the wall will not be treated with color and it will be left to weather naturally. If the majority of affected stakeholders determine a colored wall surface is desirable, then the contractor will treat the wall surface with color suited for durability and safe use in marine environments. It is expected that there will be differing opinions on the preferred wall treatment. However, all affected stakeholders will be asked to select a preferred paint color even if individual stakeholders are in favor of a natural, rusted wall surface. This will be done in the event that the majority of affected stakeholders determine a colored wall surface is desirable to ensure that the opinions of all affected stakeholders are considered in the color selection process.

If a colored wall surface is desired, at a minimum, sheet pile walls will be painted in a shade that is visually cohesive with the general surrounding area using a darker shade that will allow the surface to recede and blend within the visual landscape. A darker paint shade will be used because a lighter color advances or is more apparent within the visual landscape. If the affected stakeholder color selection process results in needing to choose between two or three colors, then one of the darker shades will be selected. A paint manufacturer's color chart will be supplied during the public meeting to aid in color selection. In the event that another paint manufacturer is used, a color that is closest to the preferred paint color chosen at the public meeting will be applied. Highly glossy paints will be avoided.

Portions of the gate structure that have exposed concrete visible to the public will also implement aesthetic design features, such as forming the concrete in a manner that mimics natural material and using integral color. This will reduce the visibility of exposed concrete and enable it to better blend with selected wall treatment. For example, if a dark green painted surface is chosen, then a light brown or dark tan colored concrete would complement the colored surface. At a minimum, concrete exposed above the water surface will have a roughened wall surface to reduce the potential for glare, and smooth troweled surfaces will be avoided.

Aesthetic treatments for exposed sheet pile and exposed concrete wall surfaces will be implemented if feasible for site-specific constraints. SJAFCA will be responsible for implementing and maintaining the modifications agreed upon. Regardless of the surface treatment applied, SJAFCA or its contractor will perform graffiti abatement as described in

Section 2.3.1.3, *Operations and Maintenance*. The findings of this public outreach will be summarized and factored into the Final EIR analysis.

Impact VIS-3: Creation of a New Source of Substantial Light or Glare That Would Adversely Affect Daytime or Nighttime Views in the Area (significant and unavoidable)

Project features would result in new sources of glare by introducing light-colored surfaces with large surface areas that would reflect light off of those surfaces and increase glare, especially when combined with the removal of vegetation that absorbs light, provides shade, and screens glare. However, a naturally rusted sheet pile wall surface would help reduce the effects of glare. The amount of glare associated with surfaces would be increased if highly glossy paints or surface treatments are used, compared to satin or flat paints or surface treatments or materials that are less reflective. Because there are highly sensitive viewers in and around the waterways and control buildings, impacts associated with glare are considered significant. Implementation of Mitigation Measures VIS-MM-2a and VIS-MM2b would ensure that light-colored and highly glossy surfaces are avoided and would reduce impacts associated with glare from structure to a less-than-significant level.

If deemed necessary to aid navigation, U.S. Coast Guard-approved lighting may be installed along the fixed wall structure and at the gate opening and low-level security lighting may be installed on the control building to facilitate nighttime emergency access. This lighting is likely to be low-level and would not substantially increase nighttime lighting or result in nuisance lighting that would affect sensitive residential viewers. Because all proposed lighting would be low-level and utilize light and glare reduction measures, it would introduce only a minimal amount of nighttime lighting that would not result in nuisance light spill or ambient light glow.

Removal of mature trees from Dad's Point would remove sources of shade, which would increase the amount of sunlight and result in a substantial increase in direct sunlight and brightness and, as a result, glare that would be experienced at Dad's Point. Currently, benches and picnic tables on Dad's Point are shaded by trees during various times during of the day. Removal of mature trees would eliminate shaded seating areas that provide physical and visual respite from the sun's heat and light and glare. This would be compounded by removing shade from water's surface along the shoreline, which would increase glare coming from the water, and result in visual discomfort. Shrub and grass plantings would mature in several years but would not be a replacement for the shade that trees are able to provide. However, because Dad's Point would function as a levee, no structures can be installed to replace the shade that is provided by mature trees. Therefore, impacts would be significant and unavoidable. No indirect effects would result.

Mitigation Measure VIS-MM-2a: Apply Aesthetic Surface Treatments to Ancillary Project Features

Please refer to the discussion of Mitigation Measure VIS-MM-2a under Alternative 1, Impact VIS-2.

Mitigation Measure VIS-MM-2b: Work with Affected Stakeholders to Determine Appropriate Sheet Pile Wall Aesthetic Treatments

Please refer to the discussion of Mitigation Measure VIS-MM-2b under Alternative 1, Impact VIS-2.

Alternative 2: Atherton Cove Floodwall with Smith Canal Gate

Impact VIS-1: Temporary Visual Impacts Caused by Construction Activities (significant and unavoidable)

Construction Lighting, Traffic, and Staging and Impacts on Dad's Point

The hours of construction for Alternative 2 would be the same as described for Alternative 1. However, construction of the floodwall under Alternative 2 would take close to a year longer to construct. Using high-intensity lighting could result in nuisance light spill for residents and recreationists in the project area if it were to be used prior to sunrise to light construction activities, resulting in significant impacts. Implementation of Mitigation Measure VIS-MM-1a would ensure that impacts associated with construction lighting are reduced to a less-than-significant level. Construction traffic, staging, and the culverts under Moreing Road would occur along the same routes and in the same locations as described for Alternative 1, thus construction visual impacts associated with these features under Alternative 2 would be the same as described for Alternative 1. Mitigation Measure VIS-MM-1b would ensure that impacts associated with constructing culverts at Moreing Road are less than significant. Under Alternative 2, Dad's Point would not be raised, but invasive plant species would be removed and native landscaping, two ADA-accessible fishing platforms, bat boxes, if suitable, and an interpretive trail would be installed as with Alternative 1. Therefore, construction activities would be similar yet slightly less intense at Dad's Point under Alternative 2 compared to Alternative 1, and recreational and visual access to Dad's Point would not be significantly affected during construction. However, nonnative tree removal would likely be perceived as negative and result in a significant impact during construction.

Viewer Access

The 400 square-foot control building would be built west of Pixie Woods near Smith Canal, closer to larger groups of concentrated recreational viewers. In addition, there would be a concentration of recreational viewers present on the Stockton Golf and Country Club's golf course, near where the wall would terminate. Therefore, recreational viewers would see temporary construction activities taking place when they are in Louis Park and accessing and within Pixie Woods and are on the golf course. Water-based visual access would be limited by the presence of construction activities. Boat traffic would not be allowed between Smith Canal to Atherton Cove and the San Joaquin River during construction, from July 2017 through April 2018.

Construction Timing

Similar to Alternative 1, construction of Alternative 2 would introduce considerable heavy equipment and associated vehicles, including barges, backhoes, compactors, tractors, and trucks into the viewshed of all viewer groups during this time. While industrial operations take place at the Port, much of these operations are screened from view by warehouses along the river. Viewers are accustomed to seeing heavy machinery associated with construction in the region and study area for roadway improvement and development projects; however, they would not be accustomed to seeing intense and isolated, on-land and in-water construction activities in the project area because construction operations are not common in this portion of the study area. In addition, Alternative 2 would create changes in views of and from the project site over the course of 3 years, approximately 1 year longer than Alternatives 1.

Impact to Private Properties

Project features associated with Alternative 2 would have the largest area of impact, are located closest to sensitive viewers, and would result in the greatest amount of impact on private properties and Louis Park, compared to Alternatives 1. This alternative would also result in the greatest amount of permanent vegetation removal. While only a small portion of the country club shoreline would be affected by Alternative 2, 13 residential properties would be directly affected by construction. Construction would occur along the northern bank of Atherton Cove and across Smith Canal, and the floodwall would be constructed in two phases: (1) west of the approximate wall midpoint at station 10+50 (refer to Figure 1-7 in Appendix B) and (2) east of the approximate wall midpoint at station 10+50. Private piers would not be available for 1 year during each phase. Impacts on private properties would be the same during both phases and include the removal of existing piers, removal of all existing vegetation and revetments along the shoreline, installation of the double sheet pile wall system (refer to Plate 2-5), placement and compaction of soil backfill, installation of the turf-block access road, and reinstallation of piers with sufficient CVFPB and State Lands Commission permits. This would constitute a major construction project occurring within 10 feet of houses that would likely result in an invaded sense of privacy and noise and vibrations that could result in daily distractions that draw viewers' attentions towards construction activities. Implementation of Mitigation Measure VIS-MM-1c would lessen visual impacts on residents if residents opt to install visual screening that could reduce some of the effects associated with visible construction activities. Construction activities would also be directly visible to residents on Atherton Island facing the northern shoreline, which would be visually disruptive.

Summary

Even though construction would be temporary, it would last longer than 2 years under Alternative 2. Because of the intensity and duration of construction activities occurring within close proximity to sensitive residential and recreational viewers and the alterations to the existing visual environment, construction activities would result in direct impacts that would be significant and unavoidable even with mitigation. No indirect effects would result.

Mitigation Measure VIS-MM-1a: Limit Activities That Would Require High-Intensity Lighting to Be Used for Illumination to Daylight Hours

Please refer to the discussion of Mitigation Measure VIS-MM-1a under Alternative 1, Impact VIS-1.

Mitigation Measure VIS-MM-1b: Limit Traffic Delays at Moreing Road to Off-Peak Commute Hours

Please refer to the discussion of Mitigation Measure VIS-MM-1b under Alternative 1, Impact VIS-1.

Mitigation Measure VIS-MM-1c: Install Visual Barriers between Construction Work Areas and Residences

SJAFCA or its contractor will coordinate with affected residents to determine if they prefer that construction activities be screened from view. If the majority of residents determine such screening is desirable, then the contractor will install visual barriers to obstruct views of construction activities from residences. The visual barrier may be chain link fencing with

privacy slats, fencing with windscreen material, or other similar barrier. The visual barrier will be a minimum of 6 feet high to help to maintain the privacy of residents and block ground-level views toward construction activities. While this visual barrier would introduce a visual intrusion, it would greatly reduce the visual effects associated with visible construction activities and protect privacy.

Impact VIS-2: Substantial Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings (significant and unavoidable)

Like Alternative 1, Alternative 2 would result in changes to Dad's Point that are likely to be perceived as beneficial because they would provide additional recreational and visual access, increase visual diversity through the installation of native plant species that would attract more wildlife, and replace aging and deteriorating site features. Even with these improvements, visual changes resulting from removal of mature, nonnative trees would result in substantial visual changes associated with Dad's Point that are likely to be perceived as negative, even though trees, shrubs, and grasses would be replanted. This is because it would take more than 2 years for newly planted trees to mature and improve the value of visual conditions postproject, thus resulting in long-term visual changes. In addition, the control building at Louis Park could stand out, negatively affecting views from the Louis Park and Pixie Woods, a historical resource, and be visually intrusive if it is not designed in manner that helps it blend with the visual environment. Similar to Alternative 1, Alternative 2 would also build a fixed dual sheet pile walls and gates that would rise approximately 8.5 feet to 12.5 feet above the water surface. This means that the wall would appear to be shorter, exposing less wall surface during high tide, or taller, exposing more wall surface during low tide. However, under Alternative 2, the walls would be built along the northern bank of Atherton Cove and across Smith Canal. As with Alternative 1, marine-grade sheet piles would be required for the in-water application of the floodwall and gated fixed wall structure, which would weather and rust naturally, or the sheet pile wall surfaces could be treated with marine-grade paint to provide visual mitigation and additional corrosion protection.

As shown in Appendix Plate H-4, *Simulated View*, Alternative 2 would introduce a large-scale industrial looking wall along the northern bank of Atherton Cove that would greatly alter the existing visual environment that consists of a sloping, vegetated bank (refer to Appendix Plate H-4, *Existing View*). The walls would appear to be even larger because there would be no shoreline vegetation that would help to reduce the apparent scale of the structure. In addition, viewer location would affect the perceived height of the wall in a manner that the wall may appear shorter for land-based viewers or taller for water-based viewers and viewers using boat docks. While the area behind the floodwall may be able to accommodate planter beds, ULDC Section 7.16.3, Newly Constructed Levees, requires that new levees be designed, constructed, and maintained according to ETL 110-2-571, which limits vegetation to native grasses on levee crowns, slopes, and within 15 feet of the levee toe. The ULDC would therefore not allow for new plantings of woody vegetation behind the wall, preventing mitigation that could be set forth to reduce visual impacts through landscaping. Therefore, as shown in the simulation, there would be a stark contrast between the existing softened, vegetated shoreline and the proposed hardened, industrial fixed dual sheet pile floodwall. If a solid safety barrier is placed on top of the floodwall, it would act to obscure and limit views and to further increase the perceived height of the wall. In addition, residents would have a visual drop from the edge of their properties to the water's surface, instead of gradually sloping decline; and added ramping would be needed for pier gangways that would act to further increase infrastructure in the project area. The natural rusted wall surface would help the wall to recede into view to a

degree, reducing the apparent scale of the wall, and a natural rusted wall surface may be preferred by affected viewers. However, viewers may prefer to see visual mitigation applied and the wall treated with color, as reflected in Appendix Plate H-5, *Simulated View*.

The gated fixed wall structure would have a similar effect on Smith Canal and would also act to visually confine Smith Canal, as shown in Appendix Plate H-6, *Simulated View*. The gated fixed wall structure would create a sense of enclosure while on the canal and would also visually isolate the canal from Atherton Cove and the San Joaquin River (Plate 2-3). The gate structure would have a 50-foot-wide opening with miter gates that would remain open until a high-water event would require them to be closed. The gate structure would heighten the perceived arrival and departure experience for recreational boaters accessing local waterways compared to existing conditions. Alternative 2 places the gate structure and wall further down Smith Canal and more out of view to park users, boaters, and residents on Atherton Island. In addition, the surrounding vegetation along the canal banks acts to reduce the apparent scale of the wall at this location. As described above in Section 3.10.2, *Existing Conditions*, most homes along Smith Canal do not have direct views of the project area because homes are set back from the water's edge and intervening land, vegetation, and development prevent views. However, the gate structure and wall would be closer to the resident near the gate of Moreing Road and increase the visual intrusion of the project upon this property. The natural rusted wall surface would help the wall to recede into view to a degree, reducing the apparent scale of the structure, and a natural rusted wall surface may be preferred by affected viewers. However, viewers may prefer to see visual mitigation applied and the wall treated with color.

Overall, Alternative 2 would affect more private properties and to a much higher degree than Alternative 1. Introducing a large, industrial-looking wall and gate structure that visually alters the existing character of the northern bank of Atherton Cove and isolates Smith Canal would alter the existing visual character and quality of views associated with the project area, directly affects residential properties, and would result in significant visual impacts that would negatively affect sensitive residential and recreational viewers. Implementation of Mitigation Measures VIS-MM-2a and VIS-MM-2b would ensure that the wall surface is treated in a manner that reduces impacts for affected viewers in addition to reducing impacts associated with the control building and gate structure but not to a less-than-significant level. Implementation of Mitigation Measures VIS-MM-2c and VIS-MM-2d would help to further reduce impacts associated with the control building, floodwall, fixed dual sheet pile walls, and gate structures but also not to a less-than-significant level. Therefore, direct impacts would be significant and unavoidable. No indirect effects would result.

Mitigation Measure VIS-MM-2a: Apply Aesthetic Surface Treatments to Ancillary Project Features

Please refer to the discussion of Mitigation Measure VIS-MM-2a under Alternative 1, Impact VIS-2.

Mitigation Measure VIS-MM-2b: Work with Affected Stakeholders to Determine Appropriate Sheet Pile Wall Aesthetic Treatments

Please refer to the discussion of Mitigation Measure VIS-MM-2b under Alternative 1, Impact VIS-2.

Mitigation Measure VIS-MM-2c: Replace or Relocate Site Features and Landscaping Affected by Project

Where appropriate and to the degree possible, landscaping and related appurtenances, fencing, privacy walls, boat docks, and other similar features removed from private properties as a result of construction will be replaced or restored in place and in kind to mitigate for visual impacts resulting from the loss of such features. If the site cannot accommodate this, then SJAFCA will compensate parcel owners for features that would be removed or damaged as a result of the project. Replacement would be of value at least equal to that of existing features. To determine compensation for trees, an arborist certified in appraising a tree for the value it adds to that property will be used to determine monetary compensation for removal of that tree at such locations. Similarly, a person(s) qualified in evaluating landscape features other than trees, such as fencing, privacy walls, or other similar features, will be used to determine compensation values for the loss of those features at such locations. SJAFCA or its contractor will coordinate such appraisals. In the event that a resident deems the appraised value unfair, the resident may hire an independent appraisal at their own expense. Negotiations to settle upon a fair appraisal value can take place between SJAFCA or its contractor and the resident in question. If a fair appraisal value cannot be agreed upon, then an independent mediator will be used to resolve negotiations in a manner that is fair to all parties involved. The results of the assessment of private-property tree and landscape features will be used to determine the budget needed to implement this mitigation measure and will be included in the costs to construct it as part of the project. Applicable features requiring compliance with CVFPB and State Lands Commission permits will only be replaced or compensated for if the applicable feature is permitted. Features will not be replaced or compensated for if they are unpermitted. Before final project acceptance (i.e., prior to final acceptance of design plans and specifications that will be released for construction contract advertisement and award), funding source(s) for replacement of these features will be in place.

Mitigation Measure VIS-MM-2d: Implement Project Landscaping around Control Building(s)

Trees and shrubs will be installed to help screen views of the control building for Alternative 2. This will beautify views of the control building and provide additional screening for the building to help it to visually recede in areas with concentrated numbers of recreational viewers. This would improve views seen by recreational viewers entering and existing Pixie Woods, a historical resource. Locations of the plantings will vary by the selected alternative. Landscaping would be installed around the building. In addition, landscaping for Alternative 2 would be planted along the Pixie Woods fence line to screen views of the control building from the amusement park. The project landscape architect or landscape contractor and the construction contractor will adhere to the following practices in implementing the project landscaping plan.

- One hundred percent of the species composition of open space areas will reflect species that are native and indigenous to the project region. Evergreen and deciduous types may be used. Plant variety will increase the effectiveness of landscaping by providing multiple layers, seasonality, diverse habitat, and reduced susceptibility to disease.
- No invasive plant species will be used at any location for any purpose. Invasive plants will be determined by referencing the California Invasive Plant Council's invasive plant inventory list available on their website at: http://www.cal-ipc.org/paf/.

- Vegetation will be planted prior to project completion.
- Landscaping will minimize the use of water or eliminate the need for an irrigation system by using truck watering during the plant establishment period.
- If an irrigation system is required, an irrigation and maintenance program will be implemented during the plant establishment period and carried on, as needed, to ensure plant survival. All irrigated area will use a smart watering system that evaluates the existing site conditions and plant material against weather conditions to avoid overwatering of such areas. To avoid undue water flows, the irrigation system will be managed in such a manner that any broken spray heads, pipes, or other components are fixed within 1 to 2 days, or the zone or system will be shut down until it can be repaired.

Impact VIS-3: Creation of a New Source of Substantial Light or Glare That Would Adversely Affect Daytime or Nighttime Views in the Area (significant and unavoidable)

Like Alternative 1, low-level safety lighting could be installed on the fixed dual sheet pile walls, gate structure, and control building and would result in the same level of impact. Project features and changes at Dad's Point would also result in new sources of glare, as described under Alternative 1. A naturally rusted sheet pile wall surface would help reduce the effects of glare. Implementation of Mitigation Measures VIS-MM-2a and VIS-MM-2b would ensure that, if painted, light-colored and highly glossy surfaces are avoided and would reduce glare impacts associated with structures. However, Alternative 2 would have a greater impact because it would have the greatest amount of vegetation removal and would introduce the largest surface area into the landscape compared to Alternative 1 because of vegetation removal along the northern shoreline of Atherton Cove. Vegetation removal along the northern shoreline of Atherton Cove would act to greatly increase the amount of sunlight reaching private properties along this shoreline because all sources of shade would be removed. This is likely to result in a substantial increase in natural light and glare that could create visual discomfort on bright days, compounding the changes in light and glare in the study area when factored with the increases at Dad's Point.

Removal of mature trees from Dad's Point would remove sources of shade, which would increase the amount of sunlight and result in a substantial increase in direct sunlight and brightness and, as a result, glare that would be experienced at Dad's Point. Currently, benches and picnic tables on Dad's Point are shaded by trees during various times during of the day. Removal of mature trees would eliminate shaded seating areas that provide physical and visual respite from the sun's heat and light and glare. This would be compounded by removing shade from water's surface along the shoreline, which would increase glare coming from the water, and result in visual discomfort. However, because Dad's Point would not be subject to ULDC requirements under Alternative 2, less vegetation removal would be required. Furthermore, in addition to shrub and grass plantings, mature trees would be replanted that would mature in several years to replace the shade that was lost on Dad's Point. While this is beneficial, it would take more than 2 year for trees to mature and restore lost shade. Therefore, this is considered a long-term impact. Also, trees could not be replanted along the northern shoreline of Atherton Cove to aid in reducing impacts at that location, as described under Impact VIS-2. Therefore, impacts associated with an increase of light and glare under Alternative 2 are significant and unavoidable.

Mitigation Measure VIS-MM-2a: Apply Aesthetic Surface Treatments to Ancillary Project Features

Please refer to the discussion of Mitigation Measure VIS-MM-2a under Alternative 1, Impact VIS-2.

Mitigation Measure VIS-MM-2b: Work with Affected Stakeholders to Determine Appropriate Sheet Pile Wall Aesthetic Treatments

Please refer to the discussion of Mitigation Measure VIS-MM-2b under Alternative 1, Impact VIS-2.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact VIS-1: Temporary Visual Impacts Caused by Construction Activities (significant and unavoidable)

Construction Lighting

The hours of construction for Alternative 3 are the same as described for Alternative 1. Using high-intensity lighting could result in nuisance light spill for residents and recreationists in the project area if it were to be used prior to sunrise to light construction activities, resulting in significant impacts, and Mitigation Measure VIS-1a would ensure that impacts associated with construction lighting are less than significant.

Construction Traffic and Staging and Impacts on Dad's Point

Construction traffic, staging, and the culverts under Moreing Road would occur along the same routes and in the same locations as described for Alternative 1, thus construction-related visual impacts associated with these features under Alternative 3 would be the same as described for Alternative 1. Mitigation Measure VIS-MM-1b would ensure that impacts associated with constructing culverts at Moreing Road are less than significant. Under Alternative 3, Dad's Point would not be raised, but invasive plant species would be removed and native landscaping, two ADA-accessible fishing platforms, bat boxes, if suitable, and an interpretive trail would be installed as with Alternatives 1 and 2. Therefore, construction activities would be similar yet slightly less intense at Dad's Point under Alternative 3 compared to Alternative 1, and recreational and visual access to Dad's Point would not be significantly affected during construction. However, tree removal because of ULDC requirements would likely be perceived as negative and result in a significant impact during construction.

Viewer Access

A 400 square-foot control building would be built northwest of the Louis Park parking lot staging area near Smith Canal and another 400 square-foot control building would be built in the southeast corner of the Stockton Golf and Country Club golf course, both closer to larger groups of concentrated recreational viewers than Alternative 1, similar to Alternative 2. Therefore, recreational viewers would see temporary construction activities taking place when they are in Louis Park near the shoreline or are playing golf at the country club. Water-based visual access would be limited by the presence of construction activities, but an opening would be maintained at Atherton Cove from July 2017 through May 2018 to allow for boat passage between Atherton Cove

and the San Joaquin River; no boat passage would be allowed at Smith Canal from August 2017 through June 2018.

Construction Timing

Similar to Alternative 1, construction of Alternative 3 would introduce considerable heavy equipment and associated vehicles, including barges, backhoes, compactors, tractors, and trucks into the viewshed of all viewer groups during this time. While industrial operations take place at the Port, much of these operations are screened from view by warehouses along the San Joaquin River. Viewers are accustomed to seeing heavy machinery associated with construction in the region and study area for roadway improvement and development projects; however, they would not be accustomed to seeing intense and isolated, on-land and in-water construction activities in the project area because construction operations are not common in this portion of the study area.

Impact to Private Properties

Project features associated with Alternative 3 would have a larger area of impact than Alternative 1 but it would be less than Alternative 2. While only a small portion of the Stockton Golf and Country Club and Louis Park shorelines would be affected by Alternative 3, three residential properties would be directly affected by construction. Construction would occur along the southwestern and southeastern banks of Atherton Island, but private piers would still be available during construction. Impacts on private properties include the removal of all existing vegetation and revetments along affected shoreline, installation of the double sheet pile wall system (refer to Plate 2-5), placement and compaction of soil backfill, installation of the turf-block access road, and reinstallation of piers. This would constitute a major construction project occurring within 10 feet of houses that would likely result in an invaded sense of privacy and noise and vibrations that could result in daily distractions that draw viewers' attentions towards construction activities. This alternative would result in less permanent vegetation removal than Alternative 2 but more vegetation removal than Alternative 1.

Summary

Even though construction would be temporary and not last longer than 2 years under Alternative 3, the intensity of construction activities occurring within close proximity to sensitive residential and recreational viewers and alterations to the existing visual environment from vegetation removal and construction of project features would result in significant and unavoidable direct impacts, even with implementation of Mitigation Measures VIS-MM-1a, VIS-MM1b, and VIS-MM-1c. No indirect effects would result.

Mitigation Measure VIS-MM-1a: Limit Activities That Would Require High-Intensity Lighting to Be Used for Illumination to Daylight Hours

Please refer to the discussion of Mitigation Measure VIS-MM-1a under Alternative 1, Impact VIS-1.

Mitigation Measure VIS-MM-1b: Limit Traffic Delays at Moreing Road to Off-Peak Commute Hours

Please refer to the discussion of Mitigation Measure VIS-MM-1b under Alternative 1, Impact VIS-1.

Mitigation Measure VIS-MM-1c: Install Visual Barriers between Construction Work Areas and Residences

Please refer to the discussion of Mitigation Measure VIS-MM-1c under Alternative 2, Impact VIS-1.

Impact VIS-2: Substantial Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings (significant and unavoidable)

Like Alternatives 1 and 2, Alternative 3 would result in changes to Dad's Point that are likely to be perceived as beneficial because they would provide additional recreational and visual access, increase visual diversity through the installation of native plant species that would attract more wildlife, and replace aging and deteriorating site features. However, visual changes resulting from removal of mature trees because of invasive tree removal would result in substantial visual changes associated with Dad's Point that are likely to be perceived as negative, even though trees, shrubs, and grasses would be replanted. This is because it would take more than 2 years for newly planted trees to mature and improve the value of visual conditions post-project, thus resulting in long-term visual changes. In addition, the control buildings at the Stockton Golf and Country Club and Louis Park could stand out and be visually intrusive if they are not designed in manner that helps them blend with the visual environment. Like Alternative 1 and similar to Alternative 2, Alternative 3 would also build a fixed dual sheet pile wall and gate structure that would rise approximately 8.5 feet to 12.5 feet above the water surface. This means that the wall would appear to be shorter, exposing less wall surface during high tide, or taller, exposing more wall surface during low tide. In addition, viewer location would affect the perceived height of the wall in a manner that the wall may appear shorter for land-based viewers or taller for water-based viewers.

Like Alternative 1 and as seen in Appendix Plate H-7, *Simulated View,* , this would introduce large-scale industrial looking wall and a large gate structure that isolate Atherton Cove and Smith Canal and close off these areas, physically and visually, from the San Joaquin River (Plate 2-6). The gate structure would have a 50-foot-wide opening with miter gates that would remain open until a high-water event would require them to be closed. The gate structure would heighten the perceived arrival and departure experience for recreational boaters accessing local waterways compared to existing conditions. While similar to Alternative 1, Alternative 3 would place the wall and gates and associated access road closer to residents and increase their visual intrusion upon private properties and heightening the sense of enclosure to sensitive residential viewers along Atherton Cove. This would be less desirable than Alternative 1, which locates the wall and associated access road further away from residential properties. The area between the access road and the residence on the southwestern corner of Atherton Island may be able to accommodate planter beds, but the backfill material would likely not be suitable to support tree growth.

Appendix Plate H-8, *Simulated View*, shows the proposed location of the structure across Smith Canal under Alternative 3. Compared to Alternative 2, the wall is located in an area where there are more direct viewers and where there is less vegetation to reduce the apparent size of the structure. Therefore, the gate structure appears to be more prominent under Alternative 3 compared to Alternative 2. Introducing a large, industrial-looking wall and gate structure that visually confines Atherton Cove and Smith Canal would alter the existing visual character and quality of views associated with the study area, directly affects residential properties, and would result in significant visual impacts that would negatively affect sensitive residential and recreational viewers.

The natural rusted sheet pile wall surfaces would help the structures to recede into view to a degree, reducing the apparent scale of the structures, and a natural rusted wall surface may be preferred by affected viewers. However, viewers may prefer to see visual mitigation applied and the wall treated with color. Implementation of Mitigation Measures VIS-MM-2a and VIS-MM-2b would ensure that the wall surface is treated in a manner that reduces impacts for affected viewers in addition to reducing impacts associated with the control building and gate structure but not to a less-than-significant level. Implementation of Mitigation Measures VIS-MM-2c and VIS-MM-2d would further aid in reducing impacts associated with the control buildings, walls, access road, and gate structure but also not to a less-than-significant level. Therefore, direct impacts would be significant and unavoidable. No indirect effects would result.

Mitigation Measure VIS-MM-2a: Apply Aesthetic Surface Treatments to Ancillary Project Features

Please refer to the discussion of Mitigation Measure VIS-MM-2a under Alternative 1, Impact VIS-2.

Mitigation Measure VIS-MM-2b: Work with Affected Stakeholders to Determine Appropriate Sheet Pile Wall Aesthetic Treatments

Please refer to the discussion of Mitigation Measure VIS-MM-2b under Alternative 1, Impact VIS-2.

Mitigation Measure VIS-MM-2c: Replace or Relocate Site Features and Landscaping Affected by Project

Please refer to the discussion of Mitigation Measure VIS-MM-2c under Alternative 1, Impact VIS-2.

Mitigation Measure VIS-MM-2d: Implement Project Landscaping around Control Buildings

Please refer to the discussion of Mitigation Measure VIS-MM-2d under Alternative 2, Impact VIS-2. Trees and shrubs will be installed to help screen views of the control buildings for Alternative 3. This will beautify views of the control buildings and provide additional screening for the buildings to help them to visually recede in areas with concentrated numbers of recreational viewers. This would improve views seen by golfers at Stockton Golf Course and Country Club and recreationists using the Louis Park parking lot near the boat launch.

Impact VIS-3: Creation of a New Source of Substantial Light or Glare That Would Adversely Affect Daytime or Nighttime Views in the Area (significant and unavoidable)

Like Alternative 1, low-level safety lighting could be installed on the fixed dual sheet pile wall, gate structure, and control building and result in the same level of impact. Project features and changes at Dad's Point would also result in new sources of glare, as described under Alternative 2. A naturally rusted sheet pile wall surface would help reduce the effects of glare. Implementation of Mitigation Measures VIS-MM2a and VIS-MM2b would ensure that light-colored and highly glossy surfaces are avoided and would reduce glare impacts associated with structures to a less-than-significant level.

However, vegetation removal near the residence on the southwestern corner of Atherton Island would act to increase the amount of sunlight reaching private properties along this shoreline because large areas of shade would be removed. This is likely to result in a substantial increase in natural light and glare that could create visual discomfort on bright days, compounding the changes in light and glare in the study area when factored with the increases at Dad's Point from invasive tree removal. Removal of mature trees from Dad's Point would remove sources of shade, which would increase the amount of sunlight and result in a substantial increase in direct sunlight and brightness and, as a result, glare that would be experienced at Dad's Point. Currently, benches and picnic tables on Dad's Point are shaded by trees during various times during of the day. Removal of mature trees would eliminate shaded seating areas that provide physical and visual respite from the sun's heat and light and glare. This would be compounded by removing shade from water's surface along the shoreline, which would increase glare coming from the water, and result in visual discomfort. However, because Dad's Point would not be subject to ULDC requirements under Alternative 3, less vegetation removal would be required. Furthermore, in addition to shrub and grass plantings, mature trees would be replanted that would mature in several years to replace the shade that was lost on Dad's Point. While this is beneficial, it would take more than 2 year for trees to mature and restore lost shade. Therefore, this is considered a long-term impact. In addition, Mitigation Measures VIS-MM-2a and VIS-MM-2b would not aid in reducing impacts on the residence on the southwestern corner of Atherton Island. As described under Impact VIS-2, the backfill material in the area between the access road and the residence on the southwestern corner of Atherton Island would likely not be suitable to support tree growth. Therefore, impacts associated with an increase of light and glare under Alternative 3 are significant and unavoidable.

Mitigation Measure VIS-MM-2a: Apply Aesthetic Surface Treatments to Ancillary Project Features

Please refer to the discussion of Mitigation Measure VIS-MM-2a under Alternative 1, Impact VIS-1.

Mitigation Measure VIS-MM-2b: Work with Affected Stakeholders to Determine Appropriate Sheet Pile Wall Aesthetic Treatments

Please refer to the discussion of Mitigation Measure VIS-MM-2b under Alternative 1, Impact VIS-2.

3.11 Recreation

This section describes the regulatory and environmental setting for recreation resources in the study area. It also analyzes environmental impacts on recreation that could result from implementing the proposed project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.11.1 Existing Conditions

3.11.1.1 Regulatory Setting

The following Federal, state, and regional and local regulations related to recreation may apply to implementation of the proposed project. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

River and Harbors Appropriation Act of 1899

A description of the Rivers and Harbors Appropriation Act of 1899 is provided in Section 3.3, *Transportation and Navigation*.

State

California Division of Boating and Waterways Programs

One of the primary missions of the California Division of Boating and Waterways (DBW) is to promote a safer and more enjoyable boating environment by (1) providing for adequate boating law enforcement through local agencies, and (2) ensuring uniform enforcement of California boating laws throughout the state (California Division of Boating and Waterways 2014a, 2014b). DBW conducts a variety of programs to fulfill its mission.

In 1982, the California legislature designated DBW as the lead agency to cooperate with other state, local, and Federal agencies to control water hyacinth (*Eichhornia crassipes*) in the Delta through the Aquatic Weed Control Program. Treatment against this highly invasive species began in 2001. Water hyacinth has a substantial impact on ecology and recreation in the Delta as it displaces native plants, blocks light needed for photosynthesis, reduces the amount of dissolved oxygen in the water, and deposits silt and organic matter at an accelerated rate (California Division of Boating and Waterways 2014c).

Delta Plan

Required by the 2009 Sacramento–San Joaquin Delta Reform Act, the Delta Stewardship Council's Delta Plan is a comprehensive, long-term management plan for the Delta that creates new rules and recommendations to help improve statewide water supply reliability and protect and restore a vibrant and healthy Delta ecosystem. The Delta Plan aims to achieve these goals in a manner that

preserves, protects, and enhances the unique agricultural, cultural, and recreational characteristics of the Delta (Delta Stewardship Council 2010).

The Delta Reform Act states (Water Code Section 85022[d]) that one of the fundamental goals for managing land use in the Delta is to "Maximize public access to Delta resources and maximize public recreational opportunities in the Delta consistent with sound resources conservation principles and constitutionally protected rights of private property owners" (Delta Stewardship Council 2013).

California Boating Law

California boating laws and regulations concerning recreational boating, including public access, safety and education, law enforcement, and consumer and environmental protection are comprised of element of several codes, including: Harbors and Navigation, Business and Professions, Corporations, Education, Fish and Game, Government, Health and Safety, Penal, Public Resources, Vehicle, and Water Codes. The California Code of Regulations and the Federal Inland Navigation Rules are also included in this grouping of laws. These state laws and regulations apply uniformly on all waters of the state. California boating law does not replace the U.S. Coast Guard and other Federal regulations in force on Federally navigable waters and is in general conformity with such regulations (California Division of Boating and Waterways 2012).

Regional and Local

City of Stockton General Plan

The *2035 Stockton General Plan* (2007a) Recreation and Waterways element includes goals and policies related to recreation that may apply to the proposed project. The plan supports providing a wide variety of regional, community, neighborhood, and private open spaces and recreational facilities and services that meet the diverse needs of Stockton residents and visitors, including various age groups and income levels. The City of Stockton (City) is committed to ensuring these recreation opportunities are accessible to the public and are compatible with the areas in which they are located.

The plan also aims to preserve and enhance waterways for recreation and open space, including designing waterway and trail corridors "to meet the recreational needs of the community while maximizing public safety and access concerns."

The City aims to ensure that park and recreation facilities be provided at a level that meets the standards for net acres per 1,000 residents standards, minimum net acres per park, and service radius standards for neighborhood parks, community parks, and regional parks (see Table 3.11-1 of this Draft EIR).

Recreation facilities are to be developed in compliance with all applicable regulations designed to address public safety and environmental impacts that may result through the construction, operation, and maintenance of these facilities.

San Joaquin County General Plan

The *San Joaquin 2010 County Wide General Plan* (1992) contains objective and policies that may be relevant to the proposed project. The plan aims to "protect the diverse resources upon which recreation is based, such as waterways, marsh lands, wildlife habitats, unique land and scenic features, and historical and cultural sites." It also calls for providing recreational opportunities along

the County's waterways, such as bank fishing, boating, water skiing, and picnicking. The plan contains policies ensuring adequate public access to waterways and protection to water-related resources for their recreational importance.

Among its strategies to implement the general plan objectives and policies, the County plans to take the following actions. The County will request that USACE or other appropriate agencies maintain navigability of the County's waterways; it will develop standards for projects on and adjacent to waterways; and it will coordinate with city, state, and Federal agencies to implement policies to protect and enhance waterways.

3.11.1.2 Environmental Setting

The study area for recreation is the same as the project area described in Chapter 1, *Introduction*, and shown in Plate 1-2.

Recreation Resources and Facilities

In the study area, the Delta waterways and public and private park land and recreation facilities provide popular venues for both formal and informal recreation opportunities, including boating, fishing, and day use activities.

Delta Waterways

The Delta region provides more than 500 miles of navigable waterways, equaling more than 57,000 navigable surface acres (California Division of Boating and Waterways 2003). Off of the San Joaquin River in the project area are the two adjacent inlets of Atherton Cove and Smith Canal. These waterways provide residents living along the two sloughs, and those living on Atherton Island, boating and personal watercraft access from their private piers to the San Joaquin River as a corridor to the rest of the Delta region. These two sloughs, which are lined with mature native riparian and ornamental vegetation, also offer informal fishing opportunities by way of personal boat and along some public onshore areas.

Smith Canal and Atherton Cove are currently experiencing a water hyacinth bloom that is covering substantial expanses of the water, hindering recreation in the area (Plate 3.10-2, Photo 1). The invasive plant is engulfing the Louis Park boat launch at the base of Dad's Point and the nearby pier, as well as several piers owned by private residents along both sloughs. In addition to having a negative effect on the Delta's ecosystem, water hyacinth forms dense mats of vegetation that obstruct navigation channels, marinas, and irrigation systems. DBW's Aquatic Weed Control Program obtained permits from the National Oceanic and Atmospheric Administration Fisheries (NOAA), the U.S. Fish and Wildlife Service (FWS), and the Regional Water Quality Control Board (Regional Water Board) to operate a weed abatement program that began in April, 2014 and will continue through October, 2015, to control the plant in the Delta, including in the project area (California Division of Boating and Waterways 2014c).

Louis Park

Louis Park is a 60-acre public community park owned and operated by the City and is located at the confluence of the San Joaquin River and Smith Canal. Louis Park offers a variety of formal day use amenities, including a boat launch that is protected from the San Joaquin River by a peninsula of the park called Dad's Point (Plate 1-2), as well as picnic grounds and organized sports facilities.

Louis Park's western half is comprised of lawn and mature trees and is popular for picnicking, walking dogs, and other casual activities. The eastern half of the park is devoted to organized sports facilities. Amenities in the park include 40 picnic tables; 2 group picnic areas; 20 barbeques; 1 tot lot/children's play area; 4 tennis court; a 4-field, lighted softball complex with separate parking, seating, and restrooms; 1 baseball diamond; 2 basketball courts; 4 handball courts; 19 horseshoe pits; 1 boat launch; 1 fire pit; 3 restrooms; and 6 parking lots. No official bike routes or walking/running paths are located within or connect to Louis Park or the larger project area, but a future Class I bike path and Class III bike route are planned to link Louis Park with the existing bikeway network (City of Stockton 2007b).

Louis Park Boat Launch

The Stockton Community Services Department operates and maintains the Louis Park boat launch, located in the inlet of water between Louis Park and the base of Dad's Point. Boaters access it through the parking lot at the west end of Monte Diablo Avenue in Louis Park. This is one of two public boat launch areas operated by the City of Stockton. Use fees for a vehicle with a boat trailer are $12.25 on weekdays, $14.25 on weekends. Annual use passes are also available. The boat launch is available for public use when the park is open, beginning one hour prior to sunrise and ending one hour following sunset (City of Stockton 2011).

Dad's Point

Dad's Point is a narrow land bar comprised of approximately 3.5 acres that provides formal park features as well as serves as an informal fishing venue. The area is lighted has a paved pathway surrounded by grass and contains a drinking fountain, doggy bag station, and a fire pit at the end of the pathway. Both sides of Dad's Point are lined with mature trees and shrubs, with an occasional park bench on the south side facing the San Joaquin River, with a view to the industrial use areas on Rough and Ready Island across the river. The steep banks of the land bar are comprised of deteriorating erosion control made of rocks and concrete with makeshift paths to the water's edge. Bank fishing is common along Dad's Point.

Pixie Woods Amusement Park

Pixie Woods is a children's amusement park located in the northern portion of Louis Park. Pixie Woods, opened in 1954, has a carousel and children's theater; paddle-wheel boat rides in a human-made lagoon; and train rides, and also holds special events. The public can also schedule private events. The park is open May through late October, and hours of operation vary by season and day of the week (City of Stockton Community Services Department 2014).

Other City and County Public Parks

In addition to Louis Park, the City of Stockton Community Services Department maintains and operates 65 other community and neighborhood parks that range in size from 1 acre to 61 acres, with a total of 640 acres of developed parkland. Amenities include picnic areas and barbeque grills; play equipment and tot lots; baseball and softball diamonds; tennis, handball, horseshoe, and multi-use courts and soccer fields (City of Stockton Community Services Department 2014). Two other parks have boat launches: Buckley Cove (about 5 miles northeast of project site) and Morelli Park (about 4 miles southeast of the project site).

Stockton also contains two County-owned regional parks (Oak Grove Regional Park and the Regional Sports Complex) that serve the project area.

Table 3.11-1 shows the service ratios and other common standards for the City parks in the project vicinity.

Table 3.11-1. City of Stockton and San Joaquin County Park Standards

Type of Park	Net Acres/1,000 Residents	Minimum Net Acres/Park	Service Radius
Neighborhood	2	5	Up to 0.5 mile radius
Community	3	15	Up to 1 mile radius
Regional	3	30+	Region-wide

Sources: City of Stockton 2007a.

Stockton Golf and Country Club

The northwestern portion of the project area is largely comprised of the private Stockton Golf and Country Club, an approximately 130-acre private facility, and offers its members a variety of formal recreation activities and other amenities. It has a non-lighted 18-hole golf course that was rebuilt in the 1990s according to U.S. Golf Association specifications and in 1990 was designated to host one of the qualifying rounds for the U.S. Open. There is parking, a clubhouse, fitness center, pool, and restaurant. The club serves as a venue for events such as weddings, corporate events, and tournaments.

Recreation Activities

The Delta's unique scenic value, wide variety of wildlife, and cultural attractions make it an important resource for recreation endeavors for locals and tourists alike, including 500,000 boaters per year and a substantial number of anglers (Delta Stewardship Council 2010; Delta Protection Commission 2014). Boating and fishing (both by boat and from shore) are the two most popular recreation uses in the Delta (California Division of Boating and Waterways 2003), both of which are popular in the project area.

Boating

In 2002, DBW estimated there were approximately 2.13 million annual boat trips in the Delta (California Division of Boating and Waterways 2002). Boaters cruise, fish, water ski, and swim from their boats in the rivers throughout the year, especially April through October (Delta Waterways 2015). Operating personal watercraft (e.g., jet skis), wakeboarding and wind surfing are also popular. Non-motorized boat activities such as canoeing and kayaking are more common in the various sloughs throughout the region, and participation in these types of activities has been increasing (California State Parks 2011).

Popular boating destinations for recreationists in the Stockton area of the Delta are hotels and resorts on the river banks; the Stockton Arena; local events and festivals; the historic downtown waterfront with the Stockton Marina that includes a walking promenade with public art, waterfront dining, and entertainment venues. Other area marinas offer amenities such as boat launching, docking, berthing, electricity, restrooms, ice, fishing tackle, groceries and supplies, fuel, and pumpout stations.

For visitors, boating is a way to explore this unique area. Delta cruise charters depart from several Delta cities, including Stockton, as well as non-motorized boat tours. Power boat, houseboat, kayak, personal watercraft, paddle boat, and other rentals are also available in several locations.

For Delta residents, boating and waterfront living is a lifestyle. A majority of the single-family residences that line Atherton Cove and Smith Canal in the project area have private docks with their own power boats and personal watercraft that they recreate with in the main river channel, as well as non-motorized watercraft, such as kayaks.

Louis Park Boat Launch is the only public boat launching facility in the project area. However, in addition to the two other public City boat launching areas, Buckley Cove and Morelli Park, there are several marinas in Stockton that provide boat launching facilities for local residents and visitors alike. These include Ladds Marina, Herman and Helen's Marina, King Island Resort, Paradise Point Marina, RiverPoint Landing, Tiki Lagun Resort, Turner Cut Resort, and Windmill Cove.

In addition to the boating activities already described, formal boating, rowing, and sailing clubs exist in the Delta, including the Stockton Rowing Club and the Stockton Yacht Club, both located to the north and northwest of the project area.

Fishing

For Delta recreationists, fishing is second in popularity only to boating. Fishing by boat is most common, accounting for 11.8 million activity days, followed by fishing from shore, which accounts for 9.6 million activity days per day (California Division of Boating and Waterways 2003). Fishing in tournaments also occurs but is the least popular fishing activity of the three (Delta Protection Commission 1997). Several official fishing events take place in the project region, but none in the project area.

Major sport fish in the Delta region are: American shad; bass (striped, smallmouth, largemouth, spotted); black crappie; Chinook salmon; catfish (channel, blue, white, black bullhead, brown bullhead); starry flounder; steelhead; sunfish (bluegill, pumpkinseed, redear, green); tule perch; warmouth; white sturgeon (Delta Protection Commission 2007). Both trolling and bait fishing is common.

Many anglers prefer to fish from private boats because it provides greater privacy and more freedom than charter boats in selecting fishing spots. However, there are many charter boat operators and guides in the Delta that take anglers striped bass fishing for a fee (Department of Fish and Wildlife 2014).

Fishing from shore is generally less productive than boat fishing, but is practiced by many anglers (Department of Fish and Wildlife 2014). While bank fishing (fishing from shore or piers) is a popular Delta activity, it has few formal support facilities (Delta Protection Commission 2007). The California Department of Parks and Recreation recommends rehabilitating and expanding sites for angling on public and private lands (California State Parks 2011).

Several favored bank-fishing spots are scattered throughout the Delta that are popular during spring and fall (Department of Fish and Wildlife 2014). At least two word-of-mouth fishing holes exist on the San Joaquin River in the project vicinity, including one located near the Port of Stockton (California Delta Chambers and Visitor's Bureau 2014).

The California Delta Chamber of Commerce considers Dad's Point in Louis Park a pier fishing spot; however, there is no officially designated fishing area in this location. Locals have made make-shift

platforms and steep paths to the water using rip rap and also utilize the two boarding floats at the tip of Louis Park. The City has posted signs prohibiting fishing in this location.

3.11.2 Environmental Impacts

This section describes the environmental impacts of the proposed project on recreation resources. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, where appropriate.

3.11.2.1 Assessment Methods

This analysis of the proposed project's effects on recreation was based on standard professional practice and the information resources cited herein. In addition, direct field observations of the project area were made on October 22, 2014 to assess the nature of informal recreational uses in the project area and the extent of the water hyacinth bloom in the area. The key impacts were identified and evaluated based on the environmental characteristics of the project area and the magnitude and duration of activities related to the construction and operation of the proposed project.

3.11.2.2 Thresholds of Significance

The thresholds listed below are based on standard professional practice and on the criteria provided in State CEQA Guidelines Appendix G (14 California Code of Regulations 15000 et seq.). The proposed project would be considered to have a significant impact on recreation if it would result in any of the following consequences.

- Increase the use of existing neighborhood and regional parks or other recreation facilities such that substantial physical deterioration of the facility would occur or be accelerated or such that service ratios or other performance objectives would not be maintained.
- Substantially limit or disrupt the availability or quality of existing recreation facilities or recreation opportunities in the project vicinity or region.
- Substantially impair safe access to existing recreation facilities or recreation opportunities.
- Conflict with any applicable recreation planning or policy documents.

The proposed project would not conflict with any applicable recreation planning or policy documents, and this impact is not discussed further.

3.11.2.3 Impacts and Mitigation Measures

No Project Alternative

The No Project Alternative represents the continuation of existing deficiencies in the project area's flood control structures. No flood risk–reduction measures would be implemented, and no construction-related effects would occur. Under the No Project Alternative, recreation in the project area is anticipated to remain similar to existing conditions. The gated sheet pile wall would not be constructed and the improvements planned for Dad's Point would not be implemented. Access to public recreation facilities and the quality of recreational boating activities would remain unchanged. Project area residents would have the same access to their private watercraft as under

current conditions, with some areas occasionally inaccessible for boating because of water hyacinth infestation (3.11.1.2, *Environmental Setting*) and those in Atherton Cove having difficulty boating at low tide due to low water levels in the cove, as reported by Atherton Cove homeowners (Appendix B). Conditions for water hyacinth growth would also be the same, with high likelihood of water hyacinth presence near Smith Canal and Atherton Cove, but little presence near the San Joaquin River.

However, in the case of a high-water event, potential levee failure in the project area could impede access to recreation facilities. Dad's Point's facilities could be affected under the No Project Alternative as its grade would not be raised as it would be under Alternative 1. The Louis Park boat launch, public piers, and private residential docks could suffer possible damage, as well. The Louis Park mainland, however, would generally experience minimal inundation because of its relatively high elevation (see Section 3.1, *Flood Risk Management and Geomorphic Conditions*). The consequences of levee failure and flooding are described under the No Project Alternative description in Chapter 2, *Proposed Project and Alternatives*, Section 2.4, including a summary of possible environmental effects.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact REC-1: Interference with Access to Public Recreation Facilities as a Result of Project Construction (less than significant with mitigation)

Under Alternative 1, staging areas to house construction equipment and mobilize construction activities for the project could include the Louis Park parking area near the boat launch at the base of Dad's Point. Similarly, Monte Diablo Avenue, which terminates in the Louis Park boat launch parking lot, would be a haul route for materials needed for construction and would include the use of a paved path in Louis Park. These staging areas and haul routes could temporarily and intermittently limit access to portions of the Louis Park boat launch parking lot, the boat launch and associated floating docks off of the Louis Park shoreline, Dad's Point, and the paved path in Louis Park. However, it is anticipated that recreationists would still be able to park in the parking lot and launch their boats at this location during construction. In addition, there are other parking lots available in Louis Park for those taking part in non-boating activities at the park such as seasonal, intermittent softball tournaments at the softball complex; such games would typically be held at night or on weekends and not typically during construction work hours. Use of the paved path in Louis Park would also be temporary and would not prohibit access through the park.

While increased use of other City and County parks and public boat launches in the project vicinity may result from more limited access to the Louis Park boat launch, this change in use patterns would be minimal and temporary and would not cause physical deterioration or lead to exceeding the City park service ratios and performance objectives discussed in Section 3.11.1.2, *Environmental Setting*.

In addition, under Alternative 1, raising the grade of Dad's Point for flood risk–reduction purposes would involve constructing a concrete retaining wall from Dad's Point to the Louis Park boat launch area and would temporarily constrict use of the boat launch (April to June). The grade raise and implementation of other Dad's Point improvements (see Chapter 2, *Proposed Project and Alternatives*) could also interfere with access to bank fishing locations along the Louis Park shoreline and Dad's Point. However, these areas would remain accessible during the majority of project construction.

Access to the tip of Dad's Point would be restricted while southern section of the fixed dual sheet pile wall is being built and the 400-square-foot gate structure control building, but the remainder of the point would remain open to recreationists during this time except for during the grade raise and for another short time frame of September through October in Year 2, while improvements are implemented.

While construction would interfere with access to Dad's Point, the closure would be temporary. In addition, the project's improvements to Dad's Point under Alternative 1 would ultimately provide beneficial new recreational opportunities, including ADA-compliant fishing and wildlife viewing platforms, a multi-use interpretive trail with kiosks and benches, bat boxes, if suitable, and invasive species removal and planting of native landscaping.

Construction under Alternative 1 would interfere with access to public recreation facilities, including the boat launch, the boat launch parking lot, and Dad's Point. However, this effect would not substantially limit or disrupt the availability of existing recreational facilities or opportunities in the project area or cause substantial or permanent increased use of other recreation facilities. Project construction under Alternative 1 would not affect access to other public recreation facilities in the project area. Implementation of Mitigation Measure REC-MM-1 would further ensure that this direct impact would be less than significant, and no indirect effects would result.

Mitigation Measure REC-MM-1: Direct Displaced Recreationists to Under-Utilized Recreation Facilities

SJAFCA or its contractor will coordinate with affected public and private recreation providers to direct displaced users of recreational facilities in the project area to under-utilized recreational facilities in the project vicinity.

Impact REC-2: Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Construction (less than significant with mitigation)

During construction of Alternative 1, the width of the channel opening from the project area to the San Joaquin River would be limited. While there would be an accessible boat passageway, construction would limit access for boat traffic from both Smith Canal and Atherton Cove to this narrowed opening until the gate structure would be operational, estimated to be 11 months after construction of the cofferdam (July through May), at which point boating traffic would be limited to access through the 50-foot gate, as discussed in Impact REC-3, *Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Operation and Maintenance*. Additionally, the narrowed channel during construction would decrease visibility, compared to existing conditions, for boaters entering and exiting the project area. The worsened visibility would require more careful navigating around other boaters or hidden debris.

As discussed in Section 3.3, *Transportation and Navigation*, equipment on barges would be operating in the project area during construction, temporarily decreasing the available space for recreational watercraft. Watercraft would still be able to pass along the section of the San Joaquin River adjacent to the project area. However, this additional boat traffic and work activity during construction could cause congestion in the other project area waterways.

Construction of Alternative 1 would last approximately 2 years, with the majority of the work taking place during months typically associated with recreational boating use in the project vicinity (April

through October) (Delta Boating 2015). This period is one of increased boating traffic in the Delta waterways and boaters are expecting a quality experience enjoying water-based recreation activity.

This impact on the quality or ease of the boating experience would be significant. However, implementation of Mitigation Measure REC-MM-2 would reduce this direct impact to a less-than-significant level. No indirect effects would result.

Mitigation Measure REC-MM-2: Implement Measures to Aid Navigation

SJAFCA or its contractor will implement temporary measures during construction and permanent measures during operation and maintenance to improve the ease of navigation for boaters in the project area. Measures will meet U.S. Coast Guard and DBW requirements, and may include ones such as those listed below.

- Post signage describing boating conditions and right-of-way restrictions.
- Post a boating speed limit.
- Install strategically placed and appropriately colored buoys for boat traffic management.
- Install strategically placed and appropriately colored lighting for visibility if required by USCG or DBW standards.
- Implement other measures in accordance with the DBW California Waterway Marker System.
- Maintain an educational website and conduct other public outreach such as flyers, posters, and postcards specifically for boaters to alert them of relevant construction and maintenance schedules, alternate routes, and other navigation-related information.

Impact REC-3: Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Operation and Maintenance (less than significant with mitigation)

Under Alternative 1, the operation and maintenance of the gated fixed wall structure would minimally affect the quality and ease of the recreational boating experience in the project area.

During operation and maintenance for Alternative 1, the gate would remain open a majority of the time to allow for recreation, navigation, and tidal movement, except as needed for flood control purposes, testing, inspection, and maintenance. Operation and maintenance activities under Alternative 1 would include periodic testing of the gate structure and culvert slide gates. Gate closures for high water events and operations and maintenance checks would be infrequent and, thus, would not significantly disrupt or impair the quality of recreational boating activities. As discussed in Section 3.1, *Flood Risk, Hydrology, and Geomorphology* and as reflected in the hydrodynamic model results (Appendix B), under Alternative 1, obstruction of channel flow from the presence of the gated fixed sheet pile wall structure has the potential to reduce velocity and cause sedimentation in the vicinity of the floodwall, while on the flood tide creating localized eddies near the entrance to Atherton Cove and Smith Canal. The eddy in Smith Canal could result in some shoaling (deposition of sediments) near the entrance of the canal.

As discussed in Section 3.3, *Transportation and Navigation*, equipment on barges would be operating in the project area during construction, temporarily decreasing the available space for recreational

watercraft. However, navigation in the San Joaquin River would return to normal conditions following project construction, and there would be no permanent effects.

Insufficient water depths and unknown currents can lead to challenging conditions for boaters. However, because water velocities would only be reduced in limited areas, increases in sedimentation and shoaling would not impair the ease of boating in the project area, and the impact would be less than significant.

In addition, while the gate would remain open a majority of the time, there would still be visibility issues and other factors that could impair the ease of boating as a result of the narrowed channel opening from the 50-foot-wide gate, similar to those discussed under Impact REC-2.

These factors could disrupt the ease and quality of the boating experience. Implementation of Mitigation Measure REC-MM-2 would reduce this direct impact to a less-than-significant level. No indirect effects would result.

Mitigation Measure REC-MM-2: Implement Measures to Aid Navigation

Please refer to the discussion of Mitigation Measure REC-MM-2 under Alternative 1, Impact REC-2.

Impact REC-4: Disruption of Access for Project-Area Residents to Their Private Watercraft during Construction (less than significant)

Under Alternative 1, the gated fixed wall structure would be built to span from the tip of Dad's Point to the right bank of the San Joaquin River at the Stockton Golf and Country Club. Therefore, because the wall would not be directly adjacent to any residences, there would be minimal effects on the private resident docks and piers in the project area. This direct impact is less than significant. No indirect effects would result. No mitigation is necessary.

Impact REC-5: Interference with Recreational Boating as a Result of Increased Water Hyacinth Infestation (no impact)

Extensive floating mats of water hyacinth currently accumulate at the end of Atherton Cove and at the Louis Park boat launch, making the boat launch unusable and surrounding the boat piers of many residents, substantially impeding with recreational boating access. During times of infestation, many residents and nonresidents cannot launch their boats from the project area and may opt to utilize other public boat launches or private marinas in the vicinity. Hyacinth can also entangle boat rudders, interfering with the ease of the boating experience.

Hyacinth would continue to accumulate in these areas after project construction. However, under Alternative 1, the width of the opening from which water hyacinth floats from the calm waters of Atherton Cove and Smith Canal, suitable water hyacinth habitat, out to the San Joaquin River and downstream would be reduced to the 50-foot-wide gate opening in the dual sheet pile wall structure. Project-related increases in water velocities near the gate could help reduce water hyacinth cover in the center of the channel. However, as a result of the gated wall structure preventing the hyacinth from drifting into the river, there could be significant accumulation of hyacinth east of the wall without regular removal of the water hyacinth mats. However, under Alternative 1, construction and operation of the fixed dual sheet pile wall would not result in an increase in water hyacinth in the Atherton Cove and Smith Canal due to water hyacinth removal

maintenance activities described in Section 2.3.1.3, *Operations and Maintenance*. Implementation of Alternative 1 would have no impact on recreational boating as a result of water hyacinth growth.

Alternative 2: Atherton Cove Floodwall with Smith Canal Gate

Impact REC-1: Interference with Access to Public Recreation Facilities as a Result of Project Construction (less than significant)

Effects on access to public recreation facilities under Alternative 2 would be similar to the effects of Alternative 1 but of a lesser degree.

Staging and haul routes would be the same as under Alternative 1 and would include Monte Diablo Avenue and the south parking lot at the Louis Park boat launch, but use of these areas would not prohibit recreationist uses. The gated fixed wall structure would span Smith Canal instead of going from Dad's Point to the Stockton Golf and Country Club, but the construction process would be similar.

Unlike Alternative 1, the grade at Dad's Point would not be raised, so the concrete retaining wall near the Louis Park boat launch is not needed and would not temporarily constrict use of that facility or access to bank fishing along the Louis Park shoreline and Dad's Point. Also unlike Alternative 1, the 400-square-foot gate structure control building would be located at the left bank of Smith Canal, in Louis Park. However, the presence of this building would not prevent access to the park and its facilities.

Project construction under Alternative 2 would have fewer impacts on Dad's Point and the Louis Park boat launch area than Alternative 1 and would not affect access to other public recreation facilities in the project area. This direct impact would be less than significant. No mitigation is necessary, and no indirect effects would result.

Impact REC-2: Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Construction (significant and unavoidable)

Effects on the quality and ease of recreational boating activities under Alternative 2 would be more substantial than the effects under Alternative 1.

As opposed to Alternative 1, under Alternative 2, the gate structure would be built across Smith Canal versus spanning Dad's Point to the Stockton Golf and Country Club. While there would be an accessible boat passageway from Atherton Cove to the San Joaquin River under Alternative 2, construction of the gate structure across Smith Canal would not allow for boat traffic from Smith Canal. Boat access would not be available until the gate structure would be operational, estimated to be 13 months after construction (compared to 11 months for Alternative 1), at which point boating traffic would be limited to access through the 50-foot gate, as discussed in Impact REC-3.

Unlike Alternative 1, the installation of the floodwall along Atherton Cove would involve additional in-water work and require the removal of existing boat docks and piers along the cove. The existing docks and piers would be removed in stages by barge-mounted cranes, which would add further traffic congestion in the waterways of the project area. (For the effect of dock and pier removal for resident boat owners along Atherton Cove under Alternative 2, see Impact REC-4.)

Construction of Alternative 2 would last approximately 3 years—1 more year than Alternative 1—with the majority of the work taking place during months typically associated with recreational boating use in the project vicinity.

This direct impact on the quality or ease of the boating experience would be significant. No mitigation is available to reduce this impact, and impact would be significant and unavoidable. No indirect effects would result.

Impact REC-3: Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Operation and Maintenance (less than significant with mitigation)

The effect on quality and ease of boating activities under Alternative 2 is similar to under Alternative 1.

During operation and maintenance for Alternative 2, the gate would remain open a majority of the time to allow for recreation, navigation, and tidal movement, except as needed for flood control purposes, testing, inspection, and maintenance. Gate closures for high water events and operations and maintenance checks would be infrequent and, thus, would not significantly disrupt or impair the quality of recreational boating activities.

Unlike Alternative 1 conditions, the presence of the gate structure under Alternative 2 is not expected to create localized eddies at the entrances to Atherton Cove and Smith Canal and, like under Alternative 1, sedimentation from reduced water velocities would be limited.

In addition, while the gate would remain open a majority of the time, there would still be changes to visibility for boaters as they enter and exit the project area through the narrowed channel opening (i.e., the 50-foot-wide gate), similar to those discussed under Impact REC-2.

These factors could disrupt the quality or ease of the boating experience. Implementation of Mitigation Measure REC-MM-2 would reduce this direct impact to a less-than-significant level. No indirect effects would result.

Mitigation Measure REC-MM-2: Implement Measures to Aid Navigation

Please refer to the discussion of Mitigation Measure REC-MM-2 under Alternative 1, Impact REC-2.

Impact REC-4: Disruption of Access for Project-Area Residents to Their Private Watercraft during Construction (significant and unavoidable)

As mentioned under Impact REC-2, unlike Alternative 1, the installation of the floodwall along Atherton Cove under Alternative 2 would involve additional in-water work and require the removal of existing boat docks and piers along the cove. Approximately 10 boat docks and piers would be removed and/or temporarily relocated. Removal of the boat docks and piers would be staged to maintain access until the portion of the floodwall construction requires removal. The boat piers and docks would not be removed in Year 1 of construction, but would be out of service for up to 2 years, during Years 2 and 3. Upon completion of construction of sections of the floodwall, boat docks and piers that had been relocated would be reinstalled, while those that had been completely removed would be replaced. Only those docks and piers that currently have Central Valley Flood Protection Board and State Lands Commission permits would be reinstalled or replaced,

In addition, unlike Alternative 1, boat traffic along Smith Canal under Alternative 2 would not be allowed during construction.

The removal of private docks and piers along Atherton Cove and having Smith Canal inaccessible for boat traffic would significantly affect access to recreational boating for residents as they would not be able to access Delta waterways directly from their homes as they are currently accustomed. Though these effects would be temporary, lasting approximately 2 years, they would constitute a direct significant impact for affected residents. Implementation of Mitigation Measure VIS-MM-2b and Mitigation Measure REC-MM-4 would reduce this impact, but not to a less-than-significant level. This impact would be significant and unavoidable. No indirect effects would result.

Mitigation Measure VIS-MM-2c: Replace or Relocate Site Features and Landscaping Affected by Project

Please refer to the discussion of Mitigation Measure VIS-MM-2b under Alternative 2, Impact VIS-2, in Section 3.10, *Visual Resources*.

Mitigation Measure REC-MM-4: Compensate Residents for the Cost of Alternative Docking Facilities

A SJAFCA representative will assist residents in locating suitable alternative docking facilities for their vessels during construction. Further, SJAFCA will compensate affected residents for the cost of alternative docking facilities for project area residents' private watercrafts during construction if access to Atherton Cove and the San Joaquin River is significantly impaired.

Impact REC-5: Interference with Recreational Boating as a Result of Increased Water Hyacinth Infestation (no impact)

Under Alternative 2, impacts on recreational boating related to water hyacinth in the project area would be less than under Alternative 1.

The potential for water hyacinth to accumulate along the gated fixed wall structure associated with Alternative 2 would be less than the potential under Alternative 1. As described in Section 3.2, *Water Quality and Groundwater Resources*, less hyacinth would be expected to accumulate adjacent to the Alternative 2 structure because the gate opening (50 feet) would represent a greater fraction of the total length of the wall (approximately 225 feet) compared to Alternative 1 (50 feet out of a total of approximately 800 feet).

However, hyacinth would likely continue to accumulate in these areas after project construction. Without maintenance, the wall could enhance water hyacinth presence by creating areas of still water adjacent to the wall and by preventing the hyacinth from drifting downstream into the San Joaquin River. However, under Alternative 2, construction and operation of the gate structure would not result in an increase in water hyacinth in Smith Canal due to water hyacinth removal maintenance activities described in Section 2.3.2.3*, Operations and Maintenance.* By conducting regular water hyacinth removal activities, implementation of Alternative 2 would have no impact on recreational boating as a result of water hyacinth growth.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact REC-1: Interference with Access to Public Recreation Facilities as a Result of Project Construction (less than significant)

Effects on access to public recreation facilities under Alternative 3 would be similar to the effects of Alternative 1 but of a lesser degree.

Staging and haul routes would be the same as under Alternative 1

Like Alternative 2, the grade at Dad's Point would not be raised, so the concrete retaining wall near the Louis Park boat launch would not be constructed.

Unlike Alternatives 1 and 2, there would be two fixed walls with single gates. One would span across Smith Canal from Louis Park to Atherton Island, and the other across Atherton Cove from Atherton Island to the Stockton Golf and Country Club. Neither would connect to Dad's Point.

Because of the two gates, there would be two 400-square-foot gate structure control buildings, one of which would be located at the left bank of Smith Canal in Louis Park (like Alternative 2), with the other being located adjacent to the Stockton Golf and Country Club. However, the presence of these building would not prevent access to the public park and its facilities.

Project construction under Alternative 3 would have fewer impacts on Dad's Point and the Louis Park boat launch area than Alternative 1 and would not affect access to other public recreation facilities in the project area. This direct impact would be less than significant. No mitigation is necessary, and no indirect effects would result.

Impact REC-2: Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Construction (less than significant with mitigation)

While there would be two gated fixed wall structures under Alternative 3 instead of one as under Alternatives 1 and 2, effects on the quality of boating as a result of project construction under Alternative 3 would be similar to those of Alternatives 1 and 2.

Under Alternative 3, two separate fixed sheet pile walls would be built, each with its own gate.

While there would be an accessible boat passageway, construction would limit access for boat traffic from Atherton Cove to a narrowed opening and would be blocked from Smith Canal until the gate structure would be operational, estimated to be 11 months after construction of the cofferdam, at which point boating traffic would be widened to 50 feet. However, 50 feet is narrower than baseline conditions (see Impact REC-3).

Like Alternative 1, construction of Alternative 3 would last approximately 2 years, though like both Alternatives 1 and 2, the majority of the work would take place during months typically associated with recreational boating use in the project vicinity.

This direct impact on the quality or ease of the boating experience would be significant. Implementation of Mitigation Measure REC-MM-2 would reduce this impact to a less-than-significant level.

Mitigation Measure REC-MM-2: Implement Measures to Aid Navigation

Please refer to the discussion of Mitigation Measure REC-MM-2 under Alternative 1, Impact REC-2.

Impact REC-3: Disruption or Impairment of the Quality or Ease of Recreational Boating Activities as a Result of Project Operation and Maintenance (less than significant with mitigation)

The effect on quality or ease of boating activities under Alternative 3 is similar to under Alternative 1.

During operation and maintenance for Alternative 3, the gate would remain open a majority of the time to allow for recreation, navigation, and tidal movement, except as needed for flood control purposes, testing, inspection, and maintenance. Gate closures for high water events and operations and maintenance checks would be infrequent and, thus, would not significantly disrupt or impair the quality of recreational boating activities.

Like under Alternative 1, sedimentation from reduced water velocities would be limited under Alternative 3. Shoaling may occur in the entrance of Smith Canal (see Section 3.1 and Appendix B); however, increases in sedimentation would not be significant. In addition, while the gate would remain open a majority of the time, there would still be changes to visibility for boaters as they enter and exit the project area through the narrowed channel opening (i.e., the 50-foot-wide gate), similar to those discussed under Impact REC-2.

These factors could disrupt the quality or ease of the disrupting the quality and ease of boating experience. Implementation of Mitigation Measure REC-MM-2 would reduce this direct impact to a less-than-significant level.

No indirect effects would result.

Mitigation Measure REC-MM-2: Implement Measures to Aid Navigation

Please refer to the discussion of Mitigation Measure REC-MM-2 under Alternative 1, Impact REC-2.

Impact REC-4: Disruption of Access for Project-Area Residents to Their Private Watercraft during Construction (significant and unavoidable)

This impact would be similar under Alternative 3 as under Alternative 1. The gated fixed wall structure, however, would consist of two fixed walls with two single gates instead of a single gated fixed wall structure as under Alternatives 1 and 2. The Smith Canal wall would span from Louis Park to Atherton Island, and the Atherton Cove wall would span from Atherton Island to the Stockton Golf and Country Club. Unlike Alternative 2, no floodwall along Atherton Cove would be constructed. The gated fixed wall would be directly adjacent to only a few, if any, residences with private docks or piers. Therefore, there would be minimal effects on the private resident docks and piers in the project area as a result of this Alternative 3. However, like under Alternative 2, boat traffic along Smith Canal under Alternative 3 would not be allowed during construction. This would significantly affect access to recreational boating for residents of Smith Canal as they would not be able to access Delta waterways directly from their homes as they are currently accustomed. Though these effects would be temporary, lasting approximately 21 months, they would constitute a direct significant

impact for affected residents. This direct impact is significant. Implementation of Mitigation Measure REC-MM-4 would reduce this impact, but not to a less-than-significant level. No indirect impacts would result.

Mitigation Measure REC-MM-4: Compensate Residents for the Cost of Alternative Docking Facilities

Please refer to the discussion of Mitigation Measure REC-MM-4 under Alternative 2, Impact REC-4.

Impact REC-5: Interference with Recreational Boating as a Result of Increased Water Hyacinth Infestation (no impact)

Under Alternative 3, impacts on recreational boating related to water hyacinth in the project area would be similar to the impacts under Alternative 1.

As a result of the gated wall structures preventing the hyacinth from drifting into the river and creating areas of still water for hyacinth to gather, there could be significant accumulation of hyacinth behind the walls in areas that currently tend to be open water if regular removal of the hyacinth is not performed. However, water hyacinth mats could accumulate adjacent to the gated fixed wall structures in the areas where there will be relatively little surface velocity. Under Alternative 3, construction and operation of the gate structure would not result in an increase in water hyacinth in Smith Canal or Atherton Cove due to water hyacinth removal maintenance activities described in Section 2.3.3.3, *Operations and Maintenance*. By conducting regular water hyacinth removal activities, implementation of Alternative 3 would have no impact on recreational boating as a result of water hyacinth growth.

3.12 Utilities and Public Services

This section describes the regulatory and environmental setting for utilities and public services in the study area. It also analyzes environmental impacts on utilities and public services that could result from implementing the proposed project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.12.1 Existing Conditions

3.12.1.1 Regulatory Setting

The following Federal, state, and regional and local regulations related to utilities and public services may apply to implementation of the proposed project. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

There are no Federal regulations related to utilities and public services that apply to the proposed project.

State

California Public Utilities Commission Regulations

The California Public Utilities Commission regulates privately owned telecommunication, electric, natural gas, water, railroad, rail transit, and passenger transportation companies in the state.

California Integrated Waste Management Act (AB 939)

To minimize the amount of solid waste that must be disposed of by transformation and land disposal, the State legislature passed Assembly Bill (AB) 939, the California Integrated Waste Management Act of 1989 (AB 939), effective January 1990. According to AB 939, all cities and counties in California were required to divert 25% of all solid waste to recycling facilities from landfill or transformation facilities by January 1, 1995, and 50% by January 1, 2000. The California Integrated Waste Management Board's Department of Resources Recycling and Recovery (now CalRecycle) is the state department designated to oversee, manage, and track California's 92 million tons of waste generated each year.

Regional and Local

San Joaquin County General Plan

The *San Joaquin 2010 County Wide General Plan* (1992) Community Development and Public Health and Safety chapters outline specific goals, policies, and implementation measures that provide guidance and regulation for the provision of utilities and public services in the county that could be applicable to the proposed project.

The plan establishes water policies intended to maintain a safe and adequate public water supply, to maintain safe and adequate facilities for collection and treatment of wastewater, and to promote stormwater collection and disposal that enhances the environment and complies with the requirements of the Clean Water Act.

As described in the County general plan, solid waste management and disposal is governed by the San Joaquin County Waste Management Plan. This plan defines programs for recycling, resource recovery, and disposal. All development in the county must be consistent with the County's Waste Management Plan. The County promotes solid waste source reduction, composting, and recycling.

Law enforcement and fire protection and emergency response policies in the general plan are intended to ensure that protection services and facilities are provided for the public's safety and that that law enforcement and fire hazards are prevented through physical planning. The general plan adopts a standard for law enforcement of 1.5 line officers assigned to patrol duty per 1,000 residents in urban communities. Law enforcement and fire hazards are due to be determined during project review and prevented or mitigated to acceptable levels of risk.

City of Stockton General Plan

The *2035 City of Stockton General Plan* (2007) Public Facilities and Services chapter outlines specific goals and policies that provide guidance and regulation for city utilities and public services that could be applicable to the proposed project.

The general plan sets forth policies associated with water conservation, water resource planning, and collaboration with other water purveyors in the region to ensure water demands are met. The plan also requires all new development to be served by an adequate collection system, meet all water quality standards, and comply with Federal standards for surface water protection and installation of adequate infrastructure that meets ultimate capacity needs.

The general plan's stormwater policies require detention storage with measured release to ensure that the capacity of downstream creeks is not exceeded, public facilities and infrastructure are designed to meet ultimate capacity needs, and that low impact development techniques are used for stormwater quality control.

The general plan sets forth solid waste policies that promote solid waste reduction and require recycling of construction debris.

The general plan sets forth law enforcement and fire protection policies as well. Law enforcement policies promote maintaining an average response time of 5 minutes or less for priority calls and a minimum ratio of 1.5 sworn officers per 1,000 residents. The plan also promotes safety programs and planning for newly developed areas of the city. Fire protection policies promote maintaining fire response times, encourage cooperation with adjacent fire districts, establish a weed abatement program that reduces fire hazards, require adequate emergency access and routes for emergency vehicles, and establish evacuation routes.

3.12.1.2 Environmental Setting

The study area for utilities and public services is comprised of the project area, described in Chapter 1, *Introduction*, and shown in Plate 1-2.

Wastewater

The City of Stockton's Regional Wastewater Control Facility is operated by the Stockton Municipal Utilities Department. The wastewater treatment services area in the city and some outlying County areas (City of Stockton 2012). The sanitary sewer collection system is divided into 10 designated subareas or subsystems. The project area is within subarea 3 (City of Stockton 2010). There are over 116,000 sewer connections and over 900 miles of sanitary sewer lines that connect to the facility (City of Stockton 2012). Treated water is discharged into the Delta at a rate averaging 23 million gallons per day (mgd) (Carollo Engineers 2011). The facility's average daily flows are approximately 33 mgd out of a total permitted average flow capacity of 55 mgd (City of Stockton 2013a). The *Regional Wastewater Control Facility Capital Improvement and Energy Management Plan*, adopted in 2011, projects that annual and monthly flows will increase to about 55 mgd by 2035 (Carollo Engineers 2011). The plan also identifies future capital projects to increase capacity by 2035 (Carollo Engineers 2011).

Stormwater

Reclamation Districts 1614 and 828 are within the boundaries of the City of Stockton and a portion of Reclamation District 1614 is within San Joaquin County.. The City of Stockton Stormwater Utility Division operates and maintains 620 miles of pipe, 72 pump stations, and over 100 discharge outfall pipes that collect and route runoff and discharge it to local rivers, creeks, and sloughs (City of Stockton 2014a). Those rivers, creeks, and sloughs collect and convey storm runoff to the San Joaquin River and Delta. Smith Canal serves this function for the project area, draining runoff and discharge into the San Joaquin River. In addition to operating and maintaining stormwater infrastructure in Stockton, the City manages the National Pollutant Discharge Elimination Permit System (NPDES) and the required monitoring, testing, education, and other programs required under the permit (City of Stockton 2014a).

Water

California Water Services (CalWater), a private company, provides water for most of central Stockton, including the project area, which is within the Stockton District (CalWater 2011). CalWater's water supplies originate from a combination of local groundwater and water purchased from the Stockton East Water District (SEWD). Groundwater currently provides approximately 35% of the water supply. There are 23 active wells and 7 on standby status, 17 booster pumps, 12 storage tanks, and one imported water connection (CalWater 2015). The purchased water from SEWD is either from New Hogan Reservoir on the Calaveras River or New Melones Reservoir on the Stanislaus River (CalWater 2011). CalWater's *Urban Water Management Plan* indicates that water supplies will be reliable through the planning horizon of 2040 and that no supply deficiencies are expected (CalWater 2011).

Solid Waste

The City of Stockton uses the privately-owned Forward Landfill and the County-owned Foothill Sanitary Landfill and the North County Recycling Center and Sanitary Landfill (City of Stockton 2007). City waste is transported to private or public facilities, such as the County-owned Lovelace Material Recovery Facility or the East Stockton Transfer Station facility, prior to delivery at a landfill. The project proposes to use the Lovelace Material Recovery Facility or North County Recycling Center and Sanitary Landfill.

The Lovelace Material Recovery Facility is located at 2323 E. Lovelace Road, Manteca, approximately 12.5 miles from the project area. The Lovelace Material Recovery Facility encompasses 15 acres and received an average of 346 tons of waste daily in 2012 (CalRecycle 2014b). Solid waste is then transported to the Foothill Sanitary Landfill by truck (CalRecycle 2014c). The Foothill Sanitary Landfill has a maximum capacity of 138,000,000 cubic yards; as of 2010, the landfill had 125,000,000 cubic yards (or 34%) of capacity remaining (CalRecycle2014c). The anticipated closure date of the facility is 2082 (CalRecycle 2014c).

The North County Recycling Center and Sanitary Landfill is located at 17720 E. Harney Laney, Lodi, CA, approximately 22 miles from the project area. The facility encompasses 320 acres. The maximum permitted throughput is 3,055 cubic yards, and the maximum permitted capacity is 41,200,000 cubic yards. In 2009, the remaining capacity was 35,400,000 cubic yards. The facility accepts construction and demolition waste and commercial waste, among other materials. The anticipated closure date of the facility is 2046 (CalRecycle 2015).

Police

The Stockton Police Department services all areas within the city limits, which is approximately 65 square miles (City of Stockton 2013b). The emergency response time is between 3 and 5 minutes and depends on the time of day, location, and number of requests. The police department is comprised of over 331 sworn officers and over 150 civilian personnel (City of Stockton 2014b). There are 41 police telecommunicators and 127 volunteers serving a population of over 290,000 people (City of Stockton 2013b).

Fire Protection and Emergency Response

The Stockton Fire Department (SFD) maintains 14 fire stations locations dispersed throughout the area with a total population served of over 336,000 and a total area served of 91.9 square miles (City of Stockton 2013c, 2014c). The fire station no. 6 is closest to the project area, located approximately 2 miles away at 1501 Picardy Drive, Stockton. The ratio of firefighters to population served is 0.91 firefighters per 1,000 residents (City of Stockton 2007). There are currently 181 sworn personnel supported by 24 civilian employees (City of Stockton 2014c). The average response time is 3 to 5 minutes (Johnson pers. comm.).

Parks

Refer to Section 3.11, *Recreation*, for impacts on parks and recreational opportunities.

3.12.2 Environmental Impacts

This section describes the environmental impacts of the project relating to utilities and public services for the proposed project. It describes the methods used to evaluate the impacts and the thresholds used to determine whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, where appropriate.

3.12.2.1 Assessment Methods

This evaluation of utilities and public services is based on professional standards and information cited throughout the section. Sources of information include relevant documents and maps to identify and determine locations of existing utilities and public services in the project area. The key impacts were identified and evaluated based on the environmental characteristics of the project area and the magnitude and duration of activities related to the construction and operation of the proposed project.

3.12.2.2 Thresholds of Significance

The thresholds listed below are based on standard professional practice and on the criteria provided in State CEQA Guidelines Appendix G (14 California Code of Regulations 15000 et seq.) The project would be considered to have a significant impact on utilities and public services if it would result in any of the following consequences.

- Have sufficient water supplies available to serve the project during construction from existing entitlements and resources.
- Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.
- Significantly affect public utility and communication facilities that are located underground or aboveground.
- Require an increased fire protection, police protection, or ambulance services or significantly affect existing emergency response times or facilities.

There would be sufficient water supplies available to serve the project. During construction, local water sources would be used for dust control. It is estimated that Alternatives 1 and 3 would require 1.32 million gallons of water for 240 watering days. Alternative 2 would require 2.42 million gallons of water for 440 watering days. Water demand per day would be 5,500 gallons. Water for dust control would be extracted from a local hydrant within the CalWater service area. Project operation would not have demands on water supplies. Water for dust control is a one-time use over a 1- to 3-year period and, as discussed under *Existing Conditions*, CalWater indicates that water supplies will be reliable through the planning horizon 2040 (approximately 22 years after project completion); therefore, potential impacts on water supply availability are not analyzed further in this Draft EIR.

Refer to Section 3.1, *Flood Risk Management and Geomorphic Conditions,* for a discussion of impacts on the stormwater system in the project area.

3.12.2.3 Impacts and Mitigation Measures

No Project Alternative

Under the No Project Alternative, the Federal Emergency Management Agency (FEMA) accreditation would not be secured. The project area would continue to be in the FEMA-designated Special Flood Hazard Area. Under the No Project Alternative, approximately 8,000 properties and 24,000 residents would continue to be under increased risk from flooding during a high flow or high tide event. All residents in the project area would continue to obtain mandatory flood insurance and adhere to building restrictions. In addition, as stated in Chapter 1, *Introduction*, the project area

would be in noncompliance with Senate Bill 5, which requires 200-year flood protection by 2025 for urbanized areas with building limitations after July 2016, if adequate progress is not met.

Implementation of the No Project Alternative would not result in construction-related effects on utility lines from temporary disruption or damage and increase in solid waste. However, because no flood risk–reduction measures would be constructed, the No Project Alternative would increase the demand of emergency response and times due to an increase in demand for emergency service providers during a high flow or high tide event. In addition, during such an event, this alternative would interfere with utilities by overflowing stormwater drains and interrupting power and communications services.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact UTL-1: Damage of Public Utility and Communication Infrastructure and Disruption of Service as a Result of Project Construction (less than significant with mitigation)

Construction of Alternative 1 could necessitate the relocation of utility infrastructure, which could result in temporary loss of service. As described in Section 3.12.1.2, *Environmental Setting*, underground and overhead utilities in the project area include communication, water, sanitary sewer, gas, electricity, and other utility lines. Utilities present in the project area would be located with specificity prior to construction.

During construction, the installation of the three culverts could disrupt or damage utilities present in or under Moreing Road. Damage of public utility or disruption of service would result in a significant direct impact. Implementation of Mitigation Measure UTL-1 would reduce this impact to a less-than-significant level. No indirect effects would result.

Mitigation Measure UTL-MM-1: Coordinate with Utility Providers, Prepare a Response Plan, and Conduct Worker Training

SJAFCA or its contractor will ensure the following measures are implemented to avoid and minimize potential damage to utilities and service disruptions during construction. Implementing these measures will help ensure existing utilities are not damaged and that service interruptions are minimized.

- Obtain utility excavation or encroachment permits as necessary before initiating any work with the potential to affect utility lines, and include all necessary permit terms in construction contract specifications.
- Before starting construction, coordinate with the Stockton Municipal Utilities Department and other utility providers in the area to locate existing lines and to implement orderly relocation of utilities that need to be removed or relocated. Avoid relocating utilities when possible. Provide notification of potential interruptions in services to the appropriate agencies.
- Before starting construction, verify utility locations through field surveys and the use of the Underground Service Alert services. Clearly mark any buried utility lines in the area of construction before any earthmoving activity.
- Before starting construction, prepare a response plan to address potential accidental damage to a utility line. The plan will identify chain-of-command rules for notifying

authorities and appropriate actions and responsibilities to ensure the safety of the public and the workers. Contractors will conduct worker training to respond to these situations.

- Stage utility relocations to minimize service interruptions.

Impact UTL-2: Increase in Solid Waste Generation Due to Project Construction and Maintenance (less than significant)

Implementation of Alternative 1 would generate 4,978 cubic yards of solid waste for disposal over two months of the construction period. As discussed in Chapter 2, *Proposed Project and Alternatives,* construction debris from clearing and grubbing between the connection of the gate closure structure and the shoreline would be hauled to one of two permitted disposal sites: the Lovelace Materials Recovery Facility in Manteca or the North County Recycling Center and Sanitary Landfill in Lodi. Upon project approval, SJAFCA or its contractor would decide on which solid waste facility to use.

The Lovelace Materials Recovery Facility receives an average of 346 tons of waste daily that is then transported to the Foothill Sanitary Landfill. As discussed under *Existing Conditions*, the Foothill Sanitary Landfill has 125,000,000 cubic yards of remaining capacity. The solid waste generated during the construction phase would not exceed the remaining capacity of the facility. Alternative 1 would temporarily increase solid waste generation during construction.

As stated under *Existing Conditions*, the remaining capacity of the North County Recycling Center and Sanitary Landfill is 35,400,000 cubic yards and the anticipated closing date is 2046. Generation of the 4,978 cubic yards of solid waste during construction would not result in adverse effects on the remaining capacity of the landfill. Construction of Alternative 1 would temporarily increase solid waste disposal at the North County Recycling Center and Sanitary Landfill.

As discussed in Chapter 2, *Proposed Project and Alternatives*, routine maintenance activities would involve removal of debris and vegetation accumulated behind the gated fixed wall by SJAFCA. This debris would not be generated by the project but originate from non-point sources upstream (e.g., littering, vegetation debris); such material currently flows down Smith Canal and into the San Joaquin River. The average amount of debris that currently flows into San Joaquin River is not known with specificity, but is expected to be negligible.

Implementation of Alternative 1 would increase solid waste from construction and maintenance activities, but would not have a substantial effect on the remaining capacity of the facilities. Therefore, implementation of Alternative 1 would result in a less-than-significant indirect impact. No direct effect would result.

Impact UTL-3: Increase in Emergency Response Times during Project Construction (less than significant with mitigation)

Implementation of Alternative 1 would involve installing three culverts on Moreing Road and hauling materials to the project site. As discussed in Chapter 2, *Proposed Project and Alternatives*, single-lane traffic would be maintained during the installation of the three culverts on Moreing Road, which is the only access road to Atherton Island. During the 2-month installation period of the three culverts, access to Atherton Island would be delayed by up to 15 minutes. This delay would increase emergency response times during the construction phase.

As discussed in Section 3.3, *Transportation and Navigation*, construction traffic would disrupt local roadways, create conflicts with local traffic, pedestrians, bicyclists, and bus services; and result in temporary road closures that would affect the existing surrounding community. Local disruption to traffic during construction would increase emergency response times to the project area.

The increase in response times during the construction phase would result in a direct significant impact. Implementation of Mitigation Measures UTL-MM-3 and TRA-MM-3 would reduce the delay during the event of an emergency and would reduce this impact to a less-than-significant level. No indirect effects would result.

Mitigation Measure UTL-MM-3: Coordinate with Public Service Providers

Prior to construction, SJAFCA will be responsible for ensuring that its contractor coordinates with public service providers to develop a plan to coordinate traffic and allow access along Moreing Road during the installation of the three culverts to reduce delay to Atherton Island.

Mitigation Measure TRA-MM-3: Implement a Construction Traffic Management Plan

Please refer to the discussion of Mitigation Measure TRA-MM-3 under Alternative 1, Impact TRA-3 in Section 3.3, *Transportation and Navigation*.

Operation of Alternative 1 would generate minimal trips from operation of the gate structure and testing, inspection, and maintenance activities. These activities would not increase the emergency response times to the project area.

Alternative 2: Atherton Cove Flood Wall with Smith Canal Gate

Impact UTL-1: Damage of Public Utility and Communication Infrastructure and Disruption of Service as a Result of Project Construction (less than significant with mitigation)

Similar to Alternative 1, construction of Alternative 2 could necessitate the relocation of utility infrastructure, which could result in temporary loss of service.

Similar to Alternative 1, the installation of the three culverts could disrupt or damage present in or under Moreing Road. In addition, construction of the floodwall along Atherton Cove and gate structure control building could also encounter an unknown utility line. Damage of public utility or disruption of service would result in a significant direct impact. Implementation of Mitigation Measure UTL-1 would reduce this impact to a less-than-significant level. No indirect effects would result.

Mitigation Measure UTL-MM-1: Coordinate with Utility Providers, Prepare a Response Plan, and Conduct Worker Training

Please refer to the discussion of Mitigation Measure UTL-MM-1 under Alternative 1, Impact UTL-1.

Impact UTL-2: Increase in Solid Waste Generation Due to Project Construction and Maintenance (less than significant)

During construction, implementation of Alternative 2 would generate 9,470 cubic yards of solid waste. Solid waste would be generated from construction debris, including from clearing and

grubbing between the connection of the gated fixed wall and the shoreline and from clearing the area for construction of the floodwall. Similar to Alternative 1, the solid waste would be hauled to one of the two permitted disposal facilities, Lovelace Materials Recovery Facility or North County Recycling Center and Sanitary Landfill.

Construction activities would increase solid waste generation; however, disposal of solid waste at the Lovelace Materials Recovery Facility would not affect the remaining capacity of the facility. Disposal of solid waste at the North County Recycling Center and Sanitary Landfill would not affect the remaining capacity of the facility.

Similar to Alternative 1, routine maintenance activities would involve removal of debris accumulated behind the gated fixed wall by SJAFCA. This debris would not be generated by the project but originate from non-point sources upstream (e.g., littering, vegetation debris); such material currently flows down Smith Canal and into the San Joaquin River. The average amount of debris that currently flows into San Joaquin River is not known with specificity, but is expected to be negligible.

Implementation of Alternative 2 would increase solid waste from construction and maintenance activities, but would not have a substantial effect on the remaining capacity of the facilities. Therefore, implementation of Alternative 2 would result in a less-than-significant indirect impact. No direct effect would result.

Impact UTL-3: Increase in Emergency Response Times during Project Construction (less than significant with mitigation)

Similar to Alternative 1, Alternative 2 would involve installing three culverts on Moreing Road and hauling and importing construction materials. During installation of the culverts, access to Atherton Island would be delayed by up to 15 minutes.. This delay would increase the emergency response times to Atherton Island.

As discussed in Section 3.3, *Transportation and Navigation*, construction traffic would disrupt local roadways, create conflicts with local traffic, pedestrians, bicyclists, and bus services; and result in temporary road closures that would affect the existing surrounding community. Local disruption to traffic during construction would increase emergency response times to the project area.

The increase in response times during the construction phase would result in a direct significant impact. Implementation of Mitigation Measures UTL-MM-3 and TRA-MM-3 would reduce the delay during the event of an emergency and would reduce this impact to a less-than-significant level. No indirect effects would result.

Mitigation Measure UTL-MM-3: Coordinate with Public Service Providers

Please refer to the discussion of Mitigation Measure UTL-MM-3 under Alternative 1, Impact UTL-3.

Mitigation Measure TRA-MM-3: Implement a Construction Traffic Management Plan

Please refer to the discussion of Mitigation Measure TRA-MM-3 under Alternative 1, Impact TRA-3 in Section 3.3, *Transportation and Navigation*.

Operation of Alternative 2 would generate minimal trips related to gate operation and testing, inspection, and maintenance activities. These activities would not increase the emergency response times to the project area.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact UTL-1: Damage of Public Utility and Communication Infrastructure and Disruption of Service as a Result of Project Construction (less than significant with mitigation)

Similar to Alternatives 1 and 2, construction of Alternative 3 could necessitate the relocation of utility infrastructure, which could result in temporary loss of service. During construction, the installation of the three culverts could disrupt or damage utilities present in or under Moreing Road. Damage of public utility or disruption of service would result in a significant direct impact. Implementation of Mitigation Measure UTL-1 would reduce this impact to a less-than-significant level. No indirect effects would result

Mitigation Measure UTL-MM-1: Coordinate with Utility Providers, Prepare a Response Plan, and Conduct Worker Training

Please refer to the discussion of Mitigation Measure UTL-MM-1 under Alternative 1, Impact UTL-1.

Impact UTL-2: Increase in Solid Waste Generation Due to Project Construction and Maintenance (less than significant)

During construction, implementation of Alternative 3 would generate 5,290 cubic yards of solid waste. Solid waste would be generated from construction debris and clearing and grubbing from the between the connection of the gated fixed wall structures and the shorelines. Similar to Alternatives 1 and 2, the solid waste would be hauled to one of the two permitted disposal facilities, Lovelace Materials Recovery Facility or North County Recycling Center and Sanitary Landfill.

Construction activities would increase solid waste generation. Disposal of all construction generated solid waste at the Lovelace Materials Recovery Facility would not affect the remaining capacity of the facility. Disposal of all construction generated solid waste at the North County Recycling Center and Sanitary Landfill would not affect the remaining capacity of this facility.

As discussed in Chapter 2, *Proposed Project and Alternatives*, routine maintenance activities would involve removal of debris accumulated behind the gated fixed wall by SJAFCA. This debris would not be generated by the project but originate from non-point sources upstream (e.g., littering, vegetation debris); such material currently flows down Smith Canal and into the San Joaquin River. The average amount of debris that currently flows into San Joaquin River is not known with specificity, but is expected to be negligible.

Implementation of Alternative 3 would increase solid waste from construction and maintenance activities, but would not have a substantial effect on the remaining capacity of the facilities. Therefore, implementation of Alternative 3 would result in a less-than-significant indirect impact. No direct effect would result.

Impact UTL-3: Increase in Emergency Response Times during Project Construction (less than significant with mitigation)

Similar to Alternatives 1 and 2, during the installation of the three culverts at Moreing Road access to Atherton Island would be delayed by up to 15 minutes. This delay would increase the emergency response times during the construction.

As discussed in Section 3.3, *Transportation and Navigation*, construction traffic would disrupt local roadways, create conflicts with local traffic, pedestrians, bicyclists, and bus services; and result in temporary road closures that would affect the existing surrounding community. Local disruption to traffic during construction would increase emergency response times to the project area.

The increase in response times during the construction phase would result in a direct significant impact. Implementation of Mitigation Measures UTL-MM-3 and TRA-MM-3 would reduce the delay during the event of an emergency and would reduce this impact to a less-than-significant level. No indirect effects would result.

Mitigation Measure UTL-MM-3: Coordinate with Public Service Providers

Please refer to the discussion of Mitigation Measure UTL-MM-3 under Alternative 1, Impact UTL-3.

Mitigation Measure TRA-MM-3: Implement a Construction Traffic Management Plan

Please refer to the discussion of Mitigation Measure TRA-MM-3 under Alternative 1, Impact TRA-3 in Section 3.3, *Transportation and Navigation*.

Operation of Alternative 3 would not generate substantial trips related to gate operation and testing, inspection, and maintenance activities. These activities would not increase the emergency response times to the project area.

3.13 Public Health and Environmental Hazards

This section describes the regulatory and environmental setting for public health and environmental hazards in the study area. It also analyzes hazardous substance-related risks to the public and the environment that could result from implementing the proposed project or its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

3.13.1 Existing Conditions

3.13.1.1 Regulatory Setting

The following Federal, state, and regional and local regulations related to public health and environmental hazards may apply to implementation of the proposed project. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

The U.S. Environmental Protection Agency (EPA) is the lead Federal agency responsible for the enforcement of Federal regulations associated with hazardous materials. Other applicable Federal regulations are contained primarily in the Code of Federal Regulations (CFR) Titles 29, 40, and 49.

Resource Conservation and Recovery Act

The Federal Resource Conservation and Recovery Act (RCRA) (42 United States Code (USC) Section 6901 et seq. 1976) provides EPA with the authority to control hazardous waste from cradle to-grave. This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. The 1984 Federal Hazardous and Solid Waste Amendments to RCRA focus on waste minimization and phasing out land disposal of hazardous waste, as well as corrective actions for releases. Other mandates of this law include increased enforcement authority for EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program. The 1986 RCRA amendments enabled EPA to address environmental problems from underground tanks storing petroleum and other hazardous substances. RCRA also set forth a framework for the management of non-hazardous solid wastes. RCRA Section 3006 allows EPA to authorize state hazardous waste programs. Once authorized, the state program operates in lieu of the Federal program, although EPA retains enforcement authority even after a state program has been authorized.

Hazardous Materials Transportation Act

The primary objective of the Hazardous Materials Transportation Act of 1975 (HMTA) (49 USC 5101-5127) is to provide adequate protection against risks to life and property inherent in commercial transportation of hazardous materials by improving the regulatory and enforcement authority of the Secretary of the Department of Transportation (DOT). Hazardous materials, as defined by the Secretary of the DOT, are any "particular quantity or form" of a materials that "may pose an unreasonable risk to health and safety or property." Among the material designated as hazardous are explosives; radioactive materials; infectious substances; flammable or combustible

liquids, solids, or gases; toxic, oxidizing, or corrosive materials; and compressed gases in specific forms and quantities. The regulations cited in the HMTA apply, but are not limited to, a person who transports hazardous materials, designs containers for, or prepares or accepts hazardous materials for transportation. HMTA governs safety aspects, including security, of the transportation of hazardous materials that the Secretary of the DOT considers appropriate.

Enforcement of the HMTA is shared by each of the following administrations under delegations from the Secretary of the DOT.

- Research and Special Programs Administration is responsible for container manufacturers, reconditioners, and retesters and shares authority over shippers of hazardous materials.
- Federal Highway Administration enforces all regulations pertaining to motor carriers.
- Federal Railroad Administration enforces all regulations pertaining to rail carriers.
- Federal Aviation Administration enforces all regulations pertaining to air carriers.
- U.S. Coast Guard enforces all regulations pertaining to shipments by water.

Occupations Safety and Health Act

The Occupational Safety and Health Administration administers the Occupational Safety and Health Act, (29 USC 15) which requires special training of handlers of hazardous materials, notification to employees who work in the vicinity of hazardous materials, and acquisition from the manufacturer of material safety data sheets. A material safety data sheet describes the proper use of hazardous materials and is intended to provide workers and emergency personnel with procedures for handling or working with that material. The Act also requires the training of employees to remediate any hazardous materials accidental releases.

State

California regulations related to public health and environmental hazards are equal to or more stringent than Federal regulations. EPA has granted the California Department of Toxic Substances Control (DTSC) and the State Water Resources Control Board (State Water Board) primary oversight responsibility to administer and enforce hazardous waste management programs, including the remediation of sites contaminated by hazardous substances.

Hazardous Waste Control Act

The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to but more stringent than the Federal Resource Conservation and Recovery Act program. The act is implemented by regulations contained in Title 26 of the California Code of Regulations (CCR). In California, DTSC administers the Federal RCRA program. The HWCA regulates the transportation and disposal of hazardous wastes and establishes standards for hazardous waste facilities.

California Department of Transportation

The California Department of Transportation regulates the transportation of hazardous materials, including contaminated soil. The California Highway Patrol and the California Department of Transportation are the state agencies with primary responsibility for enforcing Federal and state regulations related to transportation within California. These agencies respond to transportation

emergencies related to hazardous materials (including contaminated soil). Together, these agencies determine the container types to be used and grant licenses to hazardous waste haulers for hazardous waste transportation on public roads.

Regional and Local

San Joaquin County General Plan

The Public Health and Safety element of the *San Joaquin 2010 County Wide General Plan* (1992) contains policies that intend to protect the environment and the public health and safety from past, present, and future exposure of hazardous materials and hazardous waste and promote efforts to reduce hazardous wastes (San Joaquin County 1992). Policies related to public health and environmental hazards that could apply to the proposed project focus on avoiding the contamination of air and water resources or soils and prevention of harm to individuals. The general plan also calls for land uses and structures containing unsafe materials or wastes to be located away from populated areas and encourages minimizing the general use and creation of hazardous materials and wastes.

City of Stockton General Plan

The *2035 Stockton General Plan* (2007) includes policies associated with public health and environmental hazards that could apply to the proposed project. The Public Facilities and Services chapter sets forth policies associated with hazardous materials storage, transportation, disposal, recycling, and management to minimize risk to city residents and property. The City's goals and policies include requiring proper storage and disposal of hazardous materials to prevent leakage, potential explosions, fires or the escape of harmful. Policies also require fire codes to be kept up to date and promote fire safety awareness to protect the community from injury and damage resulting from natural catastrophes such as fires. The Health and Safety element sets forth goals and policies to provide the maintenance and enhancement of emergency operations planning in the city. Policies include coordinated emergency response with local, state, and Federal agencies and update of the Emergency Operations Plan to meet current local, state, and Federal emergency requirements.

3.13.1.2 Environmental Setting

The study area for public health and environmental hazards is comprised of the project area, described in Chapter 1, *Introduction*, and shown in Plate 1-2, and the area within a 0.25 mile radius of the project area.

Hazardous Materials

Hazardous materials are chemicals and other substances defined as hazardous by Federal and state laws and regulations; they also include waste chemicals and spilled materials and can occur in common contexts. In general, these materials may have harmful effects on public health or the environment during their use or when released into the environment because of their quantity, concentration, or physical, chemical, or infectious characteristics. Hazardous materials can include the following items.

- Pesticides, herbicides, and fertilizers.
- Petroleum hydrocarbons.

- Underground storage tanks.
- Contaminated debris.
- Lead.
- Wastewater.
- Pits or ponds.
- Stormwater runoff structures.
- Transformers that may contain polychlorinated biphenyls (PCBs).

Seven hazardous sites have been identified in the study area (Table 3.13-1). Only two of these sites are in the project area, one located on Dad's Point (T10000004301) and the other at the Stockton Golf and Country Club (80000657, the former Naval Communications Station [NCS] Rough and Ready Island). Dad's Point, also known by the Department of the Army as Louis Park Spit, was owned by the Department of Defense from sometime after 1948 to sometime before or during 1965 and was used by the U.S. Navy (U.S. Department of the Army 2011). The Department of the Army submitted a No DoD Action Indicated (NDAI) report to DTSC on February 8, 2011, which concluded that no further action was required at the site (State Water Resources Control Board 2015). DTSC and the State Water Board concurred with the findings of the NDAI on March 12, 2013 (California Department of Toxic Substances Control 2013). The former NCS Rough and Ready Island (80000657) site at the current Stockton Golf and Country Club was a cleanup site for lead overseen by DTSC until April 28, 2014, when it was determined that no further action was needed (California Department of Toxic Substances and Control 2013).

There are no active hazardous materials sites located within the project area.

Table 3.13-1. Hazardous Sites in the Study Area

Project Name	Status	Project Type	Location
Port of Stockton Rough and ready Island, Louis Park Spit (T10000004301)	No Further Action	Military Privatized Site	1 Monte Diablo Ave, Stockton
NSC Rough and Ready Island (80000657)	No Further Action	Military Action	North Pershing Ave, Stockton
Stockton Golf and Country Club (T0607700427)	Completed—Case Closed	Leaking Underground Storage Tank Cleanup Site	3800 Country Club Blvd., Stockton
Port of Stockton Rough and Ready Island, - Naval Reserve Center (T0607700500)	Completed—Case Closed	Military Privatized Site	3100 Monte Diablo Ave, Stockton
Port of Stockton Rough and Ready Island – Building #210 (T0607700778)	Completed—Case Closed	Military Privatized Site	210 Rough and Ready Island, Stockton
Port of Stockton Rough and Ready Island – Building #508-1 OWS (T0607700139)	Open—Site Assessment as of 8/28/2008	Military Privatized Site	Embarcadero, Stockton

Project Name	Status	Project Type	Location
Port of Stockton Rough and Ready Island - Site 06 (DOD100398500)	Open—Site Assessment as of 5/13/2010	Military Privatized Site	Gilmore Avenue and Boone Drive, Stockton
Port of Stockton Rough and Ready Island – Building #312 (T0607700781)	Completed—Case Closed	Military Privatized Site	312 Rough and Ready Island, Stockton

Sources: State Water Resources Control Board 2014; California Department of Toxic Substances and Control 2014b.

Wildfire Hazards

The project area is not located in an area prone to wildland fires (California Department Forestry and Fire 2008).

Emergency Response and Evacuation

Emergency response and evacuation in the project area is provided by San Joaquin County (County) and City of Stockton (City). In 1993, the County Board of Supervisors established an agreement for participation between the County and the cities within the county to share resources and information during the event of a disaster. The County is responsible for preparing an *Emergency Operations Plan,* which addresses emergency planning, mitigation, response, and recovery activities (San Joaquin County 1992). The City's Office of Emergency Services manages emergency preparedness for Stockton and is responsible for disaster preparedness, the response of City departments, and disaster mitigation (City of Stockton 2014).

Schools

There are no schools within 0.25 mile of the project area. This is relevant because the State CEQA Guidelines advise that hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school could constitute a significant impact on public health.

3.13.2 Environmental Impacts

This section describes the environmental consequences relating to public health and environmental hazards for the proposed project. It describes the methods used to determine and evaluate the effects and lists the thresholds used to conclude whether an effect would have a significant impact. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, where appropriate.

3.13.2.1 Assessment Methods

This analysis of public health and environmental hazards is based on professional standards and the information cited throughout the section.

Project impacts on public health and environmental hazards were identified and evaluated based on the environmental characteristics of the project area and the magnitude, intensity, and duration of

activities related to the construction and operation of the project. The analysis includes evaluation of (1) the potential hazard-related effects on workers and the public that could result from construction activities associated with the project, and (2) the potential hazard-related effects on workers and the public that could result from operating the project.

3.13.2.2 Thresholds of Significance

The thresholds listed below are based on professional standards and the criteria provided in State CEQA Guidelines Appendix G (14 CCR, 15000 et seq.). The project would be considered to have a significant impact on public health and environmental hazards if it would result in any of the consequences listed below.

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials to the environment.
- Result in hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.
- Be located on a site that is on a list of hazardous materials sites compiled pursuant to California Government Code 65962.5 and, as a result, create a significant hazard to the public or the environment.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- 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.

As discussed in Section 3.13.1.2, *Environmental Setting*, there are no known hazardous materials sites in the project area that are on a list compiled pursuant to California Government Code 65962.5. The project would not result in hazardous emissions or involve handling hazardous or acutely hazardous materials within 0.25-mile of an existing or proposed school, and this impact is not discussed further. Impacts related to the placement of structures within the 100-year flood hazard area and the exposure of people or structures to flooding as a result of levee failure are discussed in Section 3.1, *Flood Risk Management and Geomorphic Conditions*. Project impacts on emergency response times are discussed in Section 3.12, *Utilities and Public Services*. The proposed project is not located in an area prone to wildland fires, so this impact is not discussed further.

3.13.2.3 Impacts and Mitigation Measures

No Project Alternative

The No Project Alternative represents the continuation of existing deficiencies in the project area's flood control structures. The consequences of levee failure and flooding are described under the No Project Alternative description in Chapter 2, Section 2.4, including a summary of possible environmental effects.

Under the No Project Alternative, no potential construction-related impacts would occur, such as accidental spills or inadvertent discovery of hazardous materials. However, the flood risks in the

area would not be reduced as levees in the project area would continue to have encroachments that inhibit maintenance and inspection activities. The inability to maintain and inspect the existing levees, particularly during a high-water event, would likely increase the risk of levee failure. A levee failure could result in flooding that could compromise sanitary sewer lines and could upset stored hazardous materials and spread agricultural pesticides, oil, gasoline, and other hazardous materials in flood waters, creating hazardous conditions for the public and the environment. Flood damage to homes and other structures can render them dangerous as a result of structural damage and contamination.

Effects on the water supply system could be particularly severe in the event of a levee failure, as a single break in a water delivery pipe or main could contaminate the city's water supply. All breaks and leaks would need to be repaired, and the pipes of every house would need to be flushed to remove contamination before residents and businesses could rely on safe water. Depending on the severity and location of the flooding and contamination, this effort could take a significant amount of time.

Varying levels of damage could be done to public service structures as well, causing delays in fire protection, police protection, or emergency medical assistance. A levee failure could also stress the region's emergency response and hospital services, as the likelihood of injury resulting from the high-water event is high, and evacuees may not have access to their regular medications.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact HAZ-1: Incidental Release of Hazardous Materials during Construction (less than significant with mitigation)

Implementation of Alternative 1 would require the use of hazardous materials, such as fuels and lubricants, to operate construction equipment and vehicles such as excavators, compactors, haul trucks, and loaders. Construction contractors would be required to use, store, and transport hazardous materials in compliance with applicable Federal, state, and local regulations during project construction. However, fuels and lubricants could be released accidentally into the environment at the construction site and along access routes, causing environmental or human exposure to these hazards, which would be a direct and significant impact. Implementation of Mitigation Measure HAZ-MM-1 would ensure that the risk of accidental spills and releases into the environment would be minimal and that the impact would be reduced to a less-than-significant level. Risks of water quality (surface and groundwater) contamination associated with incidental release of these materials are addressed in Section 3.2, *Water Quality and Groundwater Resources*.

Mitigation Measure HAZ-MM-1: Prepare and Implement a Spill Prevention, Control, and Countermeasure Plan

A spill prevention, control, and countermeasure plan (SPCCP) is intended to prevent any discharge of oil into navigable water or adjoining shorelines. The San Joaquin Area Flood Control Agency (SJAFCA) or its contractor will develop and implement an SPCCP to minimize the potential for and effects from spills of oil during construction and operation activities. The SPCCP will be completed before any construction activities begin. Implementation of this measure will comply with state and Federal water quality regulations. The SPCCP will describe spill sources and spill pathways in addition to the actions that will be taken in the event of a spill (e.g., an oil spill from engine refueling will be immediately cleaned up with oil absorbents). The

SPCCP will outline descriptions of containment facilities and practices such as double-walled tanks, containment berms, emergency shutoffs, drip pans, fueling procedures, and spill response kits. It will describe how and when employees are trained in proper handling procedure and spill prevention and response procedures.

SJAFCA will review and approve the SPCCP before onset of construction activities and routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained. SJAFCA will notify its contractors immediately if there is a noncompliance issue and will require compliance.

The Federal reportable spill quantity for petroleum products, as defined in 40 CFR 110, is any oil spill that has the following consequences.

- Violates applicable water quality standards.
- Causes a film or sheen on or discoloration of the water surface or adjoining shoreline.
- Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

If a spill is reportable, the contractor's superintendent will notify SJAFCA, and SJAFCA will take action to contact the appropriate safety and cleanup crews to ensure that the SPCCP is followed. A written description of reportable releases must be submitted to the Regional Water Board. This submittal must contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases will be documented on a spill report form.

If an appreciable spill occurs and results determine that project activities have adversely affected surface or groundwater quality, a detailed analysis will be performed by a registered environmental assessor or professional engineer to identify the likely cause of contamination. This analysis will conform to American Society for Testing and Materials (ASTM) standards and will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, SJAFCA and its contractors will select and implement measures to control contamination, with a performance standard that surface water quality and groundwater quality must be returned to baseline conditions.

Impact HAZ-2: Exposure of Hazardous Materials Encountered at Project Site (less than significant with mitigation)

There is potential that undocumented hazardous materials could be encountered at the project site. Excavation and construction activities at or near areas of currently unrecorded soil or groundwater contamination could result in the exposure of construction workers, the general public, and the environment to hazardous materials such as petroleum hydrocarbons, contaminated debris, or elevated levels of other chemicals that could be hazardous. At this time, there are no known occurrences of hazardous materials at the project area. However, construction activities could potentially take place in the vicinity of undocumented environmental concerns and could result in public health and environmental hazards. This would be a direct and significant impact. Implementation of Mitigation Measure HAZ-MM-2 would reduce the impact to a less-than–significant level.

Mitigation Measure HAZ-MM-2: Implement Measures to Maintain Soil and Groundwater Conditions

If excavation and construction activities expose previously unrecorded hazardous materials, a detailed analysis will be performed by a registered environmental assessor or professional engineer to identify the likely cause of contamination. This analysis will conform to American Society for Testing and Materials (ASTM) standards and will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, SJAFCA and its contractors will select and implement measures to control contamination, with a performance standard that soil and/or groundwater must be returned to baseline conditions.

Impact HAZ-3: Access to the Construction Site and Vehicles by the Public (less than significant with mitigation)

Under Alternative 1, construction workers would operate vehicles and other mechanical equipment. This could result in exposure of the public to heavy equipment at the construction site, particularly in areas where there is regular public access, such as Louis Park. In addition, people may walk, ride bicycles, or otherwise use the roadways adjacent to the project site during the construction period when heavy machinery and haul trucks would be accessing the site. Equipment in staging areas could be accessed by the public if the equipment is not properly secured. This would result in a direct and significant impact on public health. However, SJAFCA or its contractor would ensure that all workers are properly trained to operate equipment, and safety precautions would be followed at all times during construction to avoid accidents. Implementation of Mitigation Measure HAZ-MM-3 would reduce this impact to a less-than-significant level.

Mitigation Measure HAZ-MM-3: Notify the Public of Construction Area Closure and Secure Staging Areas

SJAFCA will ensure that the contractor posts notice of construction activities and intended days of construction area closure at least 30 days in advance of closures in and near formal recreation facilities. The contractor will post notice of construction activities and closures at least 10 days in advance in all other areas. Notice will be posted adjacent to access roads, and signs will be at least 3 square feet in size and provide a contact for questions regarding project construction. SJAFCA also will ensure that the construction area is securely fenced off to keep the public from being exposed to construction site equipment.

Alternative 2: Atherton Cove Floodwall with Smith Canal Gate

Impact HAZ-1: Incidental Release of Hazardous Materials during Construction (less than significant with mitigation)

Direct impacts associated with Impact HAZ-1 under Alternative 2 are the same as those described above for Impact HAZ-1 under Alternative 1. However, construction of Alternative 2 would take an extra year to complete compared to Alternative 1 and, therefore, Alternative 2 would have a prolonged risk of hazardous material spill or exposure. Regardless, implementation of Mitigation Measure HAZ-MM-1 would still reduce the impact to a less-than-significant level.

Mitigation Measure HAZ-MM-1: Prepare and Implement a Spill Prevention, Control, and Countermeasure Plan

Please refer to the discussion of Mitigation Measure HAZ-MM-1 under Alternative 1, Impact HAZ-1.

Impact HAZ-2: Exposure of Hazardous Materials Encountered at Project Site (less than significant with mitigation)

Direct impacts associated with Impact HAZ-2 under Alternative 2 are identical to those described above for Impact HAZ-2 under Alternative 1. Construction activities could potentially take place in the vicinity of undocumented environmental concerns and could result in public health and environmental hazards. This would be a significant impact. Implementation of Mitigation Measures HAZ-MM-2 would reduce the impact to a less-than–significant level.

Mitigation Measure HAZ-MM-2: Implementation of Measures to Maintain Soil and Groundwater Conditions

Please refer to the discussion of Mitigation Measure HAZ-MM-2 under Alternative 1, Impact HAZ-2.

Impact HAZ-3: Access to the Construction Site and Vehicles by the Public (less than significant with mitigation)

Direct impacts associated with Impact HAZ-3 under Alternative 2 are the same as those described for Impact HAZ-3 under Alternative 1. However, construction of Alternative 2 would take an extra year to complete when compared to Alternative 1, and therefore Alternative 2 would result in a longer exposure of heavy equipment to the public. Regardless, implementation of Mitigation Measure HAZ-MM-3 would still reduce the direct significant impact to a less-than-significant level.

Mitigation Measure HAZ-MM-3: Notify the Public of Construction Area Closure and Secure Staging Areas

Please refer to the discussion of Mitigation Measure HAZ-MM-3 under Alternative 1, Impact HAZ-3.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact HAZ-1: Incidental Release of Hazardous Materials during Construction (less than significant with mitigation)

Direct impacts associated with Impact HAZ-1 under Alternative 3 are identical to those described above for Impact HAZ-1 under Alternative 1. The risk of humans or the environment being exposed to hazardous materials or spills as a result of the project would be significant. Implementation of Mitigation Measure HAZ-MM-1 would reduce the impact to a less-than-significant level.

Mitigation Measure HAZ-MM-1: Prepare and Implement a Spill Prevention, Control, and Countermeasure Plan

Please refer to the discussion of Mitigation Measure HAZ-MM-1 under Alternative 1, Impact HAZ-1.

Impact HAZ-2: Exposure of Hazardous Materials Encountered at Project Site (less than significant with mitigation)

Direct impacts associated with Impact HAZ-2 under Alternative 3 are identical to those described above for Impact HAZ-2 under Alternative 1. Construction activities could potentially take place in the vicinity of undocumented environmental concerns and could result in public health and environmental hazards. This would be a significant impact. Implementation of Mitigation Measure HAZ-MM-2 would reduce the impact to a less-than–significant level.

Mitigation Measure HAZ-MM-2: Implementation of Measures to Maintain Soil and Groundwater Conditions

Please refer to the discussion of Mitigation Measure HAZ-MM-2 under Alternative 1, Impact HAZ-2.

Impact HAZ-3: Access to the Construction Site and Vehicles by the Public (less than significant with mitigation)

Direct impacts associated with Impact HAZ-3 under Alternative 3 are identical to those described above for Impact HAZ-3 under Alternative 1. Implementation of Mitigation Measure HAZ-MM-3 would reduce this direct significant impact to public health to a less-than-significant level.

Mitigation Measure HAZ-MM-3: Notify the Public of Construction Area Closure and Secure Staging Areas

Please refer to the discussion of Mitigation Measure HAZ-MM-3 under Alternative 1, Impact HAZ-3.

3.14 Cultural Resources

This section describes the regulatory and environmental setting for cultural resources in the study area. It also analyzes environmental impacts on cultural resources that could result from implementing the project and its alternatives and provides mitigation measures for significant impacts, where appropriate. Growth-inducing and cumulative impacts are discussed in Chapter 4, *Growth-Inducing and Cumulative Impacts*.

For the purposes of this section, *cultural resources* consist of historic-period and prehistoric archaeological sites, traditional cultural properties, and built environment resources.

Archaeological resources consist of the physical remains of past human activity that have been preserved below or above ground but no longer take the form of a standing structure (e.g., a house or building). Archaeological remains may occur in the same place as standing structures but are considered a distinct element (or *component*) of the larger resource.

Traditional cultural properties consist of resources that are associated with the practices or beliefs of a living community and are (a) rooted in that community's history for at least 50 years, and (b) important in maintaining the continuing cultural identity of the community (Parker and King 1998:1).

Built environment resources consist of buildings, structures, objects, sites, or districts. Typically, built environment resources must be 50 years of age or older to qualify as cultural resources. Where these resources form a landscape unified by a coherent historical or design theme, they may qualify as a rural historic landscape.

3.14.1 Existing Conditions

3.14.1.1 Regulatory Setting

The following Federal, state, and regional and local regulations related to cultural resources may apply to implementation of the project. Additional relevant regulations are described in Chapter 5, *Regulatory Framework and Compliance*.

Federal

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966 (as amended) is Federal legislation intended to preserve historical and archaeological sites throughout the United States. The act established several institutions, including the Advisory Council on Historic Preservation, the Section 106 review process, the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices and Officers.

State

The State of California implements the NHPA through its statewide comprehensive cultural resource preservation programs. The California Office of Historic Preservation (OHP), an office of the

California Department of Parks and Recreation (DPR), implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historical Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the State's jurisdiction.

California Environmental Quality Act

California Environmental Quality Act (CEQA) as codified in California Public Resources Code (PRC) Sections 21000 et seq. and implemented via the State CEQA Guidelines (14 California Code of Regulations [CCR] Section 15000 et seq.) is the principal statute governing the environmental review of projects in the state. To be considered a historical resource, a resource must be at least 50 years of age. In addition, the State CEQA Guidelines define an *historical resource* as:

- a resource listed in the California Register of Historical Resources;
- a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in an historical resource survey meeting the requirements of PRC Section 5024.1(g); or
- any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record. The CRHR is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The CRHR criteria are based on [National Register of Historic Places (NRHP)] criteria (PRC Section 5024.1[b]). Certain resources are determined by CEQA to be automatically included in the CRHR, including California properties formally eligible for or listed in the NRHP. To be eligible for listing in the CRHR as a historical resource, a prehistoric or historic-period resource must be significant at the local, state, and/or Federal level under one or more of the following criteria.
    1) It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
    2) It is associated with the lives of persons important in our past;
    3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or,
    4) It has yielded, or may be likely to yield, information important in prehistory or history [14 CCR Section 4852(b)].

Resources considered eligible for listing in the California Register of Historic Resources (CRHR) must also retain sufficient integrity to convey their historical significance. The CRHR relies on the same seven aspects of integrity used in evaluating properties for NRHP listing. These aspects are as follows.

- *Location*—the place where the historic property was constructed or the place where the historic event took place.
- *Design*—the combination of elements that create the form, plan, space, structure, and style of a property.
- *Setting*—the physical environment of a historic property.

- *Materials*—the physical environments where combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.
- *Workmanship*—the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.
- *Feeling*—a property's expression of the aesthetic or historic sense of a particular period of time.
- *Association*—the direct link between an important historic event or person and a historic property. (NPS 2002)

A resource that has lost its historic character or appearance may still have sufficient integrity for the CRHR if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data.

CEQA requires lead agencies to determine if a proposed project would have a significant effect on important historical resources or unique archaeological resources. If a lead agency determines that an archaeological site is an historical resource, the provisions of PRC Section 21084.1 and state CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the state CEQA Guidelines criteria for an historical resource, then the site may meet the threshold of PRC Section 21083.2 regarding unique archaeological resources. A *unique archaeological resource* is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria.

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person [PRC Section 21083.2 (g)].
- The State CEQA Guidelines note that if a resource is neither a unique archaeological resource nor an historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (14 CCR Section 15064[c][4]).

Discovery of Human Remains

Section 7050.5 of the California Health and Safety Code (HSC) provides the following guidance regarding the discovery of human remains.

(a) Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the [PRC]. The provisions of this subdivision shall not apply to any person carrying out an agreement developed pursuant to subdivision (l) of Section 5097.94 of the [PRC] or to any person authorized to implement Section 5097.98 of the [PRC].

(b) In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the [California] Government Code [CGC], that the remains are not subject to the provisions of Section 27491 of the [CGC] or any other

related provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the [PRC]. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

(c) If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the [Native American Heritage Commission]. (HSC Section 7050.5).

Of particular note to cultural resources is subsection (c), requiring the coroner to contact the Native American Heritage Commission (NAHC) within 24 hours if discovered human remains are determined to be Native American in origin. After notification, the NAHC will follow the procedures outlined in PRC Section 5097.98, which include notification of most likely descendants (MLDs), if possible, and recommendations for treatment of the remains. The MLDs will have 24 hours after notification by the NAHC to make their recommendation (PRC Section 5097.98). In addition, knowing or willful possession of Native American human remains or artifacts taken from a grave or cairn is a felony under state law (PRC Section 5097.99).

Cultural Resources in State Waters

The title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged land of California is vested in the state and under the jurisdiction of the California State Lands Commission (CSLC) (PRC Section 6313[a]). Any such resources remaining in state waters for more than 50 years should be presumed NRHP- or CRHR-eligible until formally evaluated (PRC Section 6313[b]).

Regional and Local

San Joaquin County General Plan

The *San Joaquin 2010 County Wide General Plan* (1992) Open Space Plan contains provisions specific to the preservation of the county's important resources, including a commitment to preserving historical and cultural sites such as historic buildings, museum collections, historic places, and prehistoric sites. The County may require that archaeological and paleontological sites be left undeveloped as open space and areas containing historic resources be zoned for preservation purposes.

City of Stockton General Plan

The Natural and Cultural Resources element of the *2035 Stockton General Plan* (2007) contains a goal specific to cultural resources. Goal NCR-3 encourages the identification, protection, and enhancement of the city's archaeological, historical, cultural, and paleontological resources for their cultural values. To fulfill this goal, the City uses appropriate state and Federal standards in evaluating the significance of historic resources in the city. The City also supports public and private efforts to preserve, rehabilitate, and continue the use of historic structures, sites, and districts; maintains an inventory of historical and cultural resources; and implements the State Historic Building Code for historic properties.

Before beginning a project, the City requires project applicants to have a qualified archaeologist conduct a record search, conduct field surveys, and prepare technical reports, meeting California Office of Historic Preservation Standards. Consistent with Stockton Municipal Code Section 16-310.050-Cultural Resources, if archaeological/paleontological resources are discovered during site excavation, the City requires that grading and construction work on the project site cease until the significance of the features can be determined by a qualified archaeologist/paleontologist and recommendations are made for measures to protect the site or resources.

The City consults with Native American representatives regarding cultural resources to identify locations of importance to Native Americans. In addition, consistent with Stockton Municipal code Section 16-310.050-Cultural Resources and the State CEQA Guidelines (Section 15064.5), if human remains of Native American origin are discovered during project construction, the general plan requires compliance with state laws relating to the disposition of Native American burials, pursuant to the Native American Heritage Commission (PRC Section 5097).

3.14.1.2 Environmental Setting

The study area for cultural resources consists of the project area, described in Chapter 1, *Introduction*, and shown in Plate 1-2, in addition to adjacent cultural resources or parcels. The study area includes the entire parcel, and not just the area immediately adjacent to the project area.

Existing Cultural Resources

Efforts to locate existing cultural resources consisted of conducting records searches, consulting with the NAHC and Native American representatives, and conducting archaeological surveys and studies.

Records Search

On June 20, 2014, ICF International (ICF) archaeologist Erik Allen conducted a records search at the Central California Information Center (CCIC), at California State University, Stanislaus. The CCIC maintains the official records of the California Historical Resources Information System (CHRIS) of previous cultural resources studies and recorded cultural resources for San Joaquin County, among other counties. The records search consulted the CHRIS base maps of previously recorded cultural resources and previously conducted cultural resources studies for the project area and all areas within 0.5 mile of the project area. This material is provided in Appendix I. A total of 22 previous cultural resources studies have been conducted within 0.5 mile of the project area. Six of these studies covered parts of project area, albeit only approximately 5% of the eastern portions. The records search and literature review did not identify any previously recorded cultural resources within the project area and identified 24 previously recorded cultural resources within 0.5 mile of the project area. ICF also conducted a search of the California State Lands Commission Shipwreck Database to determine if any known shipwrecks are located in or in the vicinity of the project area. The database contains information on known or potential shipwrecks located on the state's tide and submerged lands. No record of any shipwrecks in or in the vicinity of the project area are present in the database (California State Lands Commission 2014).

In addition, ICF architectural historian Monte Kim conducted primary and secondary research at the University of the Pacific Library in Stockton on July 16, 2014, and an examination of all available historic maps of the project area at the California Room of the California State Library in Sacramento on September 9, 2014.

Native American Correspondence

ICF contacted the NAHC by email (with an attached request and project location map) on July 8, 2014 to identify any areas of concern within the project area that may be listed in the NAHC's Sacred Lands File (SLF), and to provide a list of Native American representatives who may have interest in the project. The NAHC replied by fax on July 18, 2014, indicating that the SLF has no record of cultural resources within the project area and providing a contact list of three potentially interested Native American representatives. On July 20, 2014, ICF sent letters via certified mail with information on the project, including the SLF search results, to those Native American contacts provided by the NAHC. To date, no written responses have been received from any of the Native American contacts. On October 13, 2014, ICF archaeologist Robin Hoffman made follow-up telephone calls to each of the three Native American contacts provided by the NAHC. Hoffman spoke with Katherine Erolinda Perez (Northern Valley Yokuts, Ohlone/Costanoan, Bay Miwok), providing details on the project, the results of the records search and field survey, and asking if Perez had any concerns about the project—Perez stated that she had no concerns regarding the project and did not know the project area or vicinity well. Hoffman also spoke with Les James (Southern Sierra Miwuk Nation) about the same issues as those discussed with Perez—James also stated that he had no concerns regarding the project and did not know the project area or vicinity well. Hoffman was unable to contact Lois Martin (Southern Sierra Miwuk Nation) but left her a voicemail that provided the same information as that discussed with Perez and James. To date, no other Native American correspondence has been sent or received by ICF. The Native American correspondence is provided in Appendix I.

Interested Parties Correspondence

On October 1, 2014, the following historical interest groups and historical archive repositories were sent letters and location maps regarding the Smith Canal project: San Joaquin County Historical Society, Cesar Chavez Central Library, Haggin Museum, Jedediah Smith Society, and the Stockton Corral of Westerners. The letter provided a project description and solicited comments, concerns, and questions with regards to the project, as well as requested information on historical resources in the study area that may not have been identified in the records search or during archival research. To date, no responses have been received. The interested parties correspondence is provided in Appendix I.

Fieldwork

On July 16, 2014, ICF archaeologist Erik Allen successfully conducted an intensive archaeological pedestrian survey of all accessible unpaved portions of the project area using parallel 5-meter transects. Private residences and the Stockton Golf and Country Club were not surveyed because access had not been granted. Visibility during the survey was variable, ranging from 0% in areas covered by thick grass to 100% in bare areas near the shoreline. Exposed subsurface soil was examined where visible.

Also on July 16, 2014, ICF architectural historian Monte Kim conducted an initial field survey of the project area. As part of the field process, buildings and structures 50 years of age or older were photographed and documented. Approximately 60% of the study area was accessible for survey. Due to access issues, several properties on Atherton Island were recorded from the Dad's Point isthmus at a distance of 400 feet or more. Dense vegetation in the form of trees and shrubs presented further challenges in recording these resources. The survey resulted in the identification of 24 built environment resources.

Findings

Archaeological Resources

No archaeological resources, prehistoric or historic-period, were identified during the survey.

Built Environment/Architectural Resources

There are 24 built environment/architectural resources in the study area that are at least 50 years of age. Overall, the survey population includes 18 residential properties, a private recreational club (Stockton Golf and Country Club), a public park (Louis Park), an amusement park (Pixie Woods), two waterways (Stockton Deep Water Ship Channel [DWSC] and Smith Canal), and the levee segments in the Atherton Cove area.

As a result of the survey and evaluation, three resources within the study area were found eligible for listing in the CRHR under Criterion 1: the DWSC, Smith Canal, and the Pixie Woods amusement park.

Prehistoric Background

The taxonomic framework of the northern San Joaquin Valley is described in the following sections in terms of archaeological patterns, following Fredrickson's (1973) system. A *pattern* is a general mode of life characterized archaeologically by technology, particular artifacts, economic systems, trade, burial practices, and other aspects of culture. Fredrickson's (1973) *periods* are also employed in the discussion below: Paleoindian (12000–8000 BP), Lower Archaic (8000–5000 BP), Middle Archaic (5000–2500 BP), Upper Archaic (2500–950 BP), Lower Emergent (950–450 BP), and Upper Emergent (450–150 BP) (White et al. 2002:Fig. 15). In Fredrickson's use, periods served as arbitrary intervals that could be used to compare patterns over space and time. Only with the clear identification of pervasive temporal patterns would periods acquire specific archaeological meaning.

Terminal Pleistocene and Early Holocene (13500–7000 BP)

At the end of the Pleistocene (roughly the beginning of the Paleoindian Period), circa 13500–10500 BP, parts of the Sierra Nevada adjacent to the Central Valley were covered with large glaciers (West et al. 2007), and the valley provided a major transportation route for animals and people. This transportation corridor, perhaps rivaled only by maritime coastal travel (Erlandson et al. 2007), was undoubtedly used heavily by early Californians. Evidence for human occupation during this period, however, is scarce, the hypothesized result of being buried by deep alluvial sediments that accumulated rapidly during the late Holocene (Westwood 2005).

Although rare, archaeological remains of this early period were reported in and around the Central Valley (Ann S. Peak & Associates 1981; Johnson 1967; Treganza and Heizer 1953). Johnson (1967:283–284) presents evidence for some use of the Mokelumne River area, under what is now Camanche Reservoir, during the late Pleistocene. Archaeologists working at Camanche Reservoir found a number of lithic cores and a flake that are associated with Pleistocene gravels. These archaeological remains were grouped into what is called the Farmington Complex, which is characterized by core tools and large, reworked percussion flakes (Treganza and Heizer 1953:28). Farther north, at Rancho Murrieta, lithic artifacts spanning the reduction sequence, as well as unworked raw material, were recovered from gravel deposits attributed to the late Pleistocene (Ann S. Peak & Associates 1981). Recent geoarchaeological investigations at CA-STA-69 (in the vicinity of Farmington Complex type site CA-STA-44), however, indicate that the Farmington Complex

assemblage at the site is contained completely within Holocene alluvial terrace deposits, not Pleistocene glacial outwash deposits. These findings raise the question of whether reinvestigation of other Farmington Complex assemblages will reveal a Holocene assemblage (Rosenthal and Meyer 2004:96; Rosenthal et al. 2007:151).

The economy of the Central Valley residents during the late Pleistocene is thought to have been based on the hunting of large Pleistocene mammals. Although no direct evidence of this exists in the Central Valley, the similarity of the artifact assemblages with those of other locations in western North America lends some support to the notion of a large-game economic focus. Much of the Pleistocene megafauna became extinct at the Pleistocene/Holocene transition. These extinctions were caused by warming temperatures, rising sea levels, and changing precipitation patterns. As the Central Valley gradually became both warmer and dryer, pine forests were replaced with vegetation similar to that found today. The rising sea level filled San Francisco Bay and created the San Francisco Bay Delta (Bay-Delta) marshes. To survive without large game, people had to change their food procurement strategies to make use of a more diverse range of smaller plants and animals.

Middle to Late Holocene (7000–1200 BP)

During the Lower Archaic Period, beginning approximately 6000 BP, a shift to a more specialized subsistence strategy began to take place. The more specialized strategy focused on ways of increasing the amount of food that could be produced from smaller portions of land. This change can be at least partially explained by the increasing numbers of people living in the Central Valley. An increased population is indicated by a much more abundant archaeological record and by dietary stress, as indicated by dental pathologies (Morrato 1984:203–204). As the population slowly increased, it became more difficult for people to obtain seasonally available resources across large areas of land. The beginnings of this intensification can be seen in the Middle-Archaic Windmiller Pattern (4500–2800 BP) and is based on the assemblage at the Windmiller site (CA-SAC-107). The Windmiller Pattern shows evidence of a mixed economy of game procurement and use of wild plant foods. Artifacts and faunal remains at Windmiller sites include seeds, a variety of small game, and fish. The archaeological record contains numerous projectile points and a wide range of faunal remains. Hunting was not limited to terrestrial animals, as evidenced by fishing hooks and spears that have been found in association with the remains of sturgeon (*Acipenser* sp.), salmon (*Oncorhynchus* sp.), and other fish. Plants also were used, as indicated by ground-stone artifacts and clay balls that were used for boiling acorn mush. The bone tool industry appears minimal but includes awls, needles, and flakers. Other characteristic artifacts include charmstones, quartz crystals, bone awls and needles, and abalone (*Haliotis* sp.) and olive snail (*Olivella* sp.) shell beads and ornaments. Trade is reflected in the material from which utilitarian, ornamental, and ceremonial objects were produced.

Windmiller Pattern origins are believed to be linked to the arrival of Utian peoples from outside California who were adapted to riverine and wetland environments (Moratto 1984). Windmiller sites are concentrated on low rises or knolls within the floodplains of major creeks or rivers. Such locations provided protection from seasonal flooding and proximity to riverine, marsh, and valley grassland biotic communities. People with a Windmiller adaptation buried their dead in formal cemeteries, suggesting a degree of sedentism, both within and separate from their villages, in a ritual context that included the use of red ochre, often rich grave offerings, and ventral extension with a predominantly western orientation (although other burial positions, such as dorsal extension and flexed, and cremations are also known) (Moratto 1984).

Settlement strategies during the Windmiller period reflect seasonal adaptations; habitation sites in the northern San Joaquin Valley were occupied during winter, but populations moved into the foothills during summer (Moratto 1984). The earliest evidence of widespread occupation of the lower Sacramento Valley/Sacramento–San Joaquin River Delta (Delta) region comes from several sites assigned to the Windmiller Pattern (previously, Early Horizon), dated ca. 4500–2800 BP (Ragir 1972). While the Windmiller Pattern is identified with the Delta, work at Camanche Reservoir has identified sites with Windmiller assemblages (Johnson 1967), indicating that other northern San Joaquin Valley settings were also used by people exhibiting these adaptations (Beardsley 1948; Gerow 1974; Heizer 1949; Heizer and Fenenga 1939; Lillard et al. 1939; Ragir 1972; Schulz 1970).

Central Valley inhabitants responded to the Middle Archaic population increase in two ways. First, they used the marshlands of the Delta, which were much more extensive and rich in food resources than they are today. Second, they increased the use of the acorn as a food source. The acorn had been used before this time, but it became a much more predominant resource with specialized procurement and processing technologies. People following these strategies were more sedentary than they had been in the past, and village sites are found throughout the valley along rivers and near other areas with permanent sources of water. An economic shift from a foraging to a collecting strategy probably occurred during the Middle Archaic.

The result of the settlement and subsistence reorientation described in the previous paragraph was a coeval, adaptive pattern with the Windmiller Pattern labeled the Berkeley Pattern (3500–2500 BP) (Fredrickson 1973). Windmiller Pattern sites seem to occur with more frequency in or near the Delta, while Berkeley Pattern sites tend to be more prevalent farther north. Berkeley Pattern sites are more numerous and more widely distributed than Windmiller sites and are characterized by deep midden deposits, suggesting intensified occupation and a broadened subsistence base. The Berkeley Pattern also has a greater emphasis on the exploitation of the acorn as a staple. A reduction in the number of handstones and millingstones and an increase in the number of mortars and pestles reflect this greater dependence on acorns. Although gathered resources gained importance during this period, the continued presence of projectile points and atlatls (spear-throwers) in the archaeological record indicates that hunting was still an important activity (Fredrickson 1973). Fishing technology improved and diversified, suggesting greater reliance on riverine estuarine resources. This pattern is also noted for its especially well-developed bone industry and such technological innovations as ribbon flaking of chipped stone artifacts.

Material culture similarities of the Berkeley and Windmiller Patterns include mortars and millingstones, quartz crystals, charmstones, projectile points, shell beads and ornaments, and bone tools. New elements appearing in the Berkeley Pattern include steatite beads, tubes and ear ornaments, slate pendants, and burial of the dead in flexed positions with variable orientation or cremations accompanied by fewer grave goods. During this period, flexed burials are found alongside extended burials at CA-COL-247, contrary to the pattern elsewhere in the Valley, which saw near exclusive use of flexed burials for interment of the deceased (Moratto 1984; Rosenthal et al. 2007:155; White 2003:175). The use of grave goods generally declined (Moratto 1984), and trade continued to be important (Beardsley 1948; Fredrickson 1973; Heizer and Fenenga 1939; Lillard et al. 1939; Moratto 1984).

A restricted land base, coupled with a more specialized resource base, meant that people had to develop economic relationships with other groups of people with different specialized resources living in other areas. Although resources and commodities were being exchanged throughout the region before this period, more extensive and more frequently used economic networks developed

during this time. Transported resources likely included foods (trans-Sierra acorn movement is known from later periods [d'Azevedo 1986]) and commodities more visible in the archaeological record, such as shell and lithic materials (Rosenthal et al. 2007:155).

Late Horizon (1200 BP – Historic Period)

The trends toward specialization, exchange, and spatial circumscription that characterized prior periods continued in the Late Horizon. Population continued to increase, and group territories continued to become smaller and more defined. The Delta region of the Central Valley reached population density figures higher than almost any other area of North America (Chartkoff and Chartkoff 1984). Patterns in the activities, social relationships, belief systems, and material culture continued to develop during this period and took forms similar to those described by the first Europeans that entered the area.

The predominant generalized subsistence pattern during this period is called the Augustine Pattern (1200 BP) that shows a high degree of technological specialization (Fredrickson 1973). Development of the Augustine Pattern was apparently stimulated by the southward expansion of Wintuan populations into the Valley (Moratto 1984). The Augustine Pattern reflects a change in subsistence and land use patterns to those of the ethnographically known people of the historic era. This pattern exhibits a great elaboration of ceremonial and social organization, including the development of social stratification. Exchange became well developed, and an even more intensive emphasis was placed on the use of the acorn, as evidenced by the presence of shaped mortars and pestles and numerous hopper mortars in the archaeological record.

Other notable elements of the artifact assemblage associated with the Augustine Pattern include flanged tubular smoking pipes, harpoons, clam shell disc beads, bone awls for basketry, bone whistles and stone pipes, and an especially elaborate baked clay industry, which includes figurines and pottery vessels (Cosumnes Brownware). The presence of small projectile point types, referred to as the Gunther Barbed series, suggests the use of bows and arrows. Other traits associated with the Augustine Pattern include the introduction of pre-interment burning of offerings in a grave pit during a mortuary ritual, increased village sedentism, maintenance of extensive exchange networks, population growth, and an incipient monetary economy in which beads were used as a standard of exchange (Moratto 1984). Burials were flexed with variable orientation and generally lacked grave goods (Beardsley 1948; Fredrickson 1973; Moratto 1984; Ragir 1972).

Ethnographic Background

The Stockton area was aboriginally inhabited by the Northern Valley Yokuts. Ethnographic work on this group is lacking due to their early decimation after Euro-American contact; as a result, most information regarding this group is gleaned from translated accounts of Spanish military men and missionaries. A summary of these sources has been compiled by W. J. Wallace (1978), whose work the following brief ethnographic setting is based.

Northern Valley Yokuts territory is defined roughly by the crest of the Diablo Range on the west and the foothills of the Sierra Nevada on the east. The southern boundary is approximately where the San Joaquin River bends northward, and the northern boundary is roughly halfway between the Calaveras and Mokelumne Rivers. The Yokuts may have been fairly recent arrivals in the Central Valley, perhaps being pushed out of the foothills about 500 years ago.

Population estimates for the Northern Valley Yokuts at the time of Euro-American contact vary from 11,000 to more than 31,000 individuals. Populations were concentrated along waterways and on the more hospitable east side of the San Joaquin River. Villages or clusters of villages made up miniature tribes (tribelets) led by headmen. The number of tribelets at Euro-American contact is estimated at 30 to 40. Members of each tribelet spoke their own dialect of the Yokuts language. Combined with the Southern Valley Yokuts and the Foothill Yokuts dialects, these tongues formed the Yokutsan linguistic family of the Penutian Stock (Shipley 1978).

Principal settlements were located on the tops of low mounds on or near the banks of the larger watercourses. Settlements were composed of single-family dwellings, sweathouses, and ceremonial assembly chambers. Dwellings were small and lightly constructed, semi-subterranean and oval. The public structures were large and earth covered. Sedentism was fostered by the abundance of riverine resources in the area.

Subsistence among the Northern Valley Yokuts revolved around the waterways and marshes of the lower San Joaquin Valley. Fishing with dragnets, harpoons, and hook and line, yielded salmon, white sturgeon, river perch, and other species of edible fish. Waterfowl and small game attracted to the water also provided a source of protein. The contribution of big game to the diet was probably minimal. Vegetal staples included acorns, tule roots, and seeds.

Goods not available locally were obtained through trade. Paiute and Shoshone groups on the eastern side of the Sierra were suppliers of obsidian. Shell beads and mussels were obtained from Salinan and Costanoan groups. Trading relations with Miwok groups yielded baskets and bows and arrows. Overland transport was facilitated by a network of trails, and tule rafts were used for water transport.

Most Northern Valley Yokuts groups had their first contact with Europeans in the early 1800s when the Spanish began exploring the Delta. The gradual erosion of Yokuts culture began during the mission period. Escaped neophytes brought foreign (European and Native American) habits and tastes, and Spanish expeditions to recover escapees. Epidemics of European diseases played a large role in the decimation of the native population. With the secularization of the mission and the release of neophytes, tribal and territorial adjustments were set in motion. People returned to other groups, and a number of polyglot tribes were formed. The final blow to the aboriginal population came with the Gold Rush and its aftermath. In the rush to the southern mines, native populations were pushed out of the way and out of their territories. Ex-miners settling in the fertile valley applied further pressure to the native groups and altered the landforms and waterways of the San Joaquin Valley. Many Yokuts resorted to wage labor on farms and ranches. Others were settled on land set aside for them on the Fresno and Tule River Reserves.

Historic Background

Early History and Settlement (1832–1869)

Euro-American occupation of the Stockton area began around 1832, when French Canadian fur hunters employed by the Hudson's Bay Company established a settlement called French Camp four miles south of present-day Stockton. In 1844, the Mexican Governor of California, Manuel Micheltorena, granted a 48,747-acre tract of land known as the *Rancho Campo de los Franceses*—which included French Camp and the future town site of Stockton—to Guillermo Gulnac (1801–1851), a naturalized Mexican citizen born in New York. In 1845, Gulnac sold the land to his former business partner Charles David Maria Weber (1814–1881), a German born immigrant who came to

California and eventually settled in the town of San Jose in 1842. The following year, Weber served in the Mexican-American War as a Captain in the United States Cavalry. In 1847, Captain Weber laid out the town of Tuleburg on the south side of a lagoon later known as the Stockton Channel. In the spring of 1849, Weber resurveyed the town and renamed it Stockton in honor of Commodore Robert F. Stockton, whose successful march on the Pueblo de Los Angeles during the Mexican-American War eventually resulted in control of California by the United States. The rectangular-shaped town site comprised an area of 4 square miles laid out in a gridiron pattern of blocks measuring 300 feet square. The town grew quickly as an inland shipping center during the California Gold Rush because of its location along the San Joaquin River. By the winter of 1849, the town had a population of about 1,000. In 1850, Stockton was incorporated and became the county seat of San Joaquin County (Hoover et al. 1966:368–369; Lewis Publishing Co. 1890:59).

During the early 1850s, Stockton served as a gateway for thousands of miners heading to the gold fields and mines in the southern Sierra Nevada. The town soon became a flourishing hub for trade and commerce centered primarily on staging and freighting activities, agriculture, and stock raising (Hoover et al. 1966:369–370).

Development at the Periphery (1869–1900)

In his work, the *History of San Joaquin County*, historian George H. Tinkham identified the beginning of the second stage of Stockton's development with the arrival of the Central Pacific Railroad in 1869. The railroad opened new markets, stimulated agricultural production, and hastened the subdivision of land (Tinkham 1923:317).

Agricultural Development

For most of the period between 1869 and 1900, agricultural production west of the city limits was controlled by a handful of landowners. The land adjoining the northwest corner of the city included two large agricultural tracts. One was owned by farmer James C. Smith (1821–1900) and the other by the founder of Stockton, Captain Charles M. Weber. A waterway known as Smith Canal served as a boundary between the two parcels.

Municipal Development and Smith Canal

By the early 1880s, the City of Stockton had constructed a drainage ditch along North Street to channel storm water and sewage from the city center to the periphery. The so-called North Street Canal originally ended at the city limits and did not have an outlet to the San Joaquin River. During the rainy season, drainage from the canal would flood the adjacent agricultural tract owned by J. C. Smith, destroying much of his crops. In December 1880, Smith sued the City of Stockton for $2,000 in damages and won a modest settlement for his agricultural losses (Wright Realtors 2014:5). Smith used the money to build a canal to channel the water off of his land and into the Delta sometime in 1881 or 1882 (Compton 1883). The 2-mile long canal extended from the Lower Sacramento Road (present-day North Pacific Avenue) westward to the San Joaquin River near Atherton Island. In 1887, the State of California appropriated $40,000 to the insane asylum for the construction and maintenance of levees along the North Street Canal. The City of Stockton later replaced the open canal with underground pipes and filled in the canal in 1915. Smith Canal, however, was left as an open water conveyance system (Wright Realtors 2014:5).

Residential Development and the Weber Tract

The tract of land directly south of Smith Canal was initially owned by Captain Charles M. Weber, the founder of Stockton. At the time of his death in 1881, Weber's landholdings in the Stockton area included nearly 50,000 acres. By 1883, Weber's heirs had begun to sell off portions of his estate, particularly the lots within the city or just outside the city limits (Compton 1883). The portion of the estate within the current project area was deeded to Captain Weber's wife, Helen Weber, and it remained intact until at least 1905.

A Quiet Interlude (1900–1945)

Residential Development and the Weber Tract

During the first half of the twentieth century, the Smith and Weber tracts remained semi-rural and sparsely developed, with only a handful of residential and farm buildings scattered throughout the area. By 1910, developers began to build homes on a small subdivision at the eastern edge of the Weber Tract (California Pictorial 1910). By 1912, plans to develop the remaining acreage within the Weber Tract were already in place (Quail 1912). Historic maps indicate that the Weber heirs sold the land to the Stockton Developing Company between 1905 and 1910. Although the tract was platted with over 100 rectangular shaped lots (known collectively as Stockton Acres), actual buildout of the plan occurred slowly during several phases. The first residences were constructed around 1916 and were scattered on lots throughout the area. During the 1920s, more sustained residential building occurred on blocks at the eastern half of the tract. In 1942, parcels located near the center of Stockton Acres between Kingsley and Banner Avenues were filled in with modest single-family, Minimal Traditional-style homes. Given their close proximity to the Naval Annex on Monte Diablo Avenue, these homes were likely occupied by workers employed at the facility during the war.

North of Smith Canal, residential development followed a much slower trajectory. After the passing of J. C. Smith in 1900, it appears that his heirs continued the family farming operation on the property for a short period of time. In 1905, the family formed the J. C. Smith Company and transferred the title of the property to the new company. By 1912, the Smith heirs sold the lower half of the family tract to William H. Hammond (Quail 1912). By 1917, the Hammond tract had been platted under the subdivision name of the Tuxedo Country Club (Budd & Widdows 1917). After World War I, the Smith heirs continued to sell off the remaining portions of their farm to developers. By 1926, most of this land was platted for residential development under the name of Pacific Gardens (Budd & Widdows 1926). During the 1920s and 1930s, only a few residences (including the two that are located in the current project area) were built in the Pacific Gardens Tract or the Tuxedo Country Club parcel. By 1940, the Tuxedo Country Club subdivision had become part of the Pacific Gardens tract (Metsker 1940). Only a handful of residences, however, were constructed on this land prior to the end of World War II.

Recreational Development and the Stockton Golf and Country Club

One of the oldest private recreational sites in the area is the Stockton Golf and Country Club. Established in 1914, the club is the thirteenth oldest country club in northern California. The club is located at the west end of the former Tuxedo Country Club tract on Browns Island. Initially, only a single dirt road leading out of the city center through the surrounding farmland provided access to the club. The country club originally featured a nine-hole golf course that sat among the tidal marshes. The original clubhouse was a three-story, wood-frame building asymmetrically fenestrated

with an abundance of windows on every level. At some point between 1914 and 1928, the U.S. War Department (a precursor to the Department of Defense) filled in the Calaveras River channel and drained the slough around Browns Island. During this period, the U.S. Army Corps of Engineers (USACE) built a levee along the southern edge of the country club property. A swimming pool was subsequently built into the levee, and in 1928 architect Sam Whiting expanded the golf course to 18 holes. Prior to redesigning the golf course at the Stockton Golf and Country Club, Whiting teamed with the prominent Scottish architect William Watson to build two of the three golf courses associated with the Olympic Club in San Francisco, the oldest athletic club in the United States. These two courses were the Lake and Ocean courses, which opened in 1924. Whiting also designed the course at the Sonoma golf club and teamed with Watson on the design of TPC Harding Park Golf Club in San Francisco (Hohlfeld 2014:1; Stewart 2014:1).

Infrastructural Development and the Stockton Deep Water Ship Channel

By the early 1870s, commercial and industrial interests in Stockton recognized the need for a deep water channel from the city to the Pacific Ocean. The 1870 San Joaquin County Map shows a proposed ship canal running parallel to the north side of the San Joaquin River. The proposed alignment was later abandoned in favor of a plan that called for the widening and deepening of the San Joaquin River. Lack of government funding, combined with the commencement of World War I, however, delayed the deep water channel project until 1930.

Prior to the completion of the DWSC, there were efforts to make the existing channel of the San Joaquin River more navigable for large ships. The original river channel was much shallower and featured bends that were sharper than its present course. A map from 1862 reveals that some of the current geographical features along the river did not exist at that time, including Browns Island, Atherton Island, and the narrow isthmus projecting into the channel from Louis Park (Dad's Point). The map also indicates that what is now Atherton Cove was actually a sharp bend in the original channel of the San Joaquin River, with the southeastern end of that curve terminating near the mouth of present-day Smith Canal. Additionally, the map shows that the Louis Park site and Dad's Point was part of Rough and Ready Island. By 1883, the county map reveals that the straightening of the San Joaquin River had already begun. Within the project area, cuts had been made into Rough and Ready Island to form a straighter and more navigable segment of the river. The new river alignment, combined with the original bends (which were retained as secondary channels), resulted in the formation of Browns Island and an island that later served as the site for Louis Park (Reid 1883). Over the course of the next 30 years, the only other change to the topography of the project area was the construction of a levee along Smith Canal and the east bank of the San Joaquin River between Smith Canal and the Calaveras River. A U.S. Geological Survey topographic map shows that this levee system had been constructed by 1913. The map also indicates that the Louis Park site was still a marshy, undeveloped island at the mouth of Smith Canal (U.S. Geological Survey 1913).

In May 1910, the U. S. Congress appropriated funds to conduct surveys for additional cutoffs in the San Joaquin River. This was the first move toward widening the San Joaquin River from Stockton to the Suisun Bay and increasing its depth to 15 feet (California Pictorial 1910).

At some point between 1917 and 1926, county maps indicate that the channel of the San Joaquin River had again been straightened within the current project area. The realigned channel created new geographic features that included Atherton Island and approximately 9 acres of marshland at the mouth of Smith Canal, which the City purchased in 1924 for the expansion of Louis Park.

Actual work on the so-called DWSC by USACE, however, did not begin until 1930, when the first dredging contracts were awarded. The DWSC dredging of the San Joaquin River was completed to a depth of 26 feet in 1933, the same year that the Port of Stockton officially opened as California's largest inland port (Port of Stockton; Architectural Resources Group 2000:9–10). The DWSC extended 11 miles from Disappointment Slough in the north to its terminus at the Port of Stockton in the south. The expanded DWSC and the city's Port facilities enabled large-scale international shipping access to Stockton. The construction of the DWSC and the new facilities at the Port of Stockton was an economic boom to the area, providing employment to hundreds of workers during the Great Depression.

During World War II, the straightened and deepened river channel facilitated the movement of large, military supply ships into and out of the Port of Stockton and the naval supply and communications depot on Rough and Ready Island. A naval annex facility was also established across the DWSC, just south of Louis Park. By the late 1960s, the facility was no longer needed by the U.S. Navy, and it was leased commercially. Both the annex facility and the facility on Rough and Ready Island were eventually decommissioned in 1995. The main naval facility on Rough and Ready Island was transferred to the Port of Stockton between 2000 and 2003. (Stockton Telephone Directory 1967:53).

Post World War II Development (1945–present)

Commercial and Infrastructural Development

By the early 1950s, the size of cargo ships had increased substantially and port officials began to seek congressional support to deepen the DWSC to 35 feet. Construction of the project finally began in the late 1960s but was halted due to environmental concerns. In 1980, the California Water Resources agency breathed new life into the channel deepening project by coordinating with USACE to resume dredging activities. The channel was dredged to a minimum depth of 37 feet at low tide and was completed in 1987. Today, as a result of the deepening of the channel, even the largest ocean-going vessels can reach the Port of Stockton. The DWSC has allowed the port to substantially expand and modernize its facilities. In July 2000, the port acquired the Rough and Ready Island Naval Base, and its terminals are currently home to many large companies, including California Portland Cement. Today, the Port of Stockton supports more than 4,500 jobs in the San Joaquin County area, generating about $180 million in annual salaries and benefits (Caltrans 2012:1).

Municipal and Recreational Development

After World War II, there was a rise in public expenditures for parks and municipal projects. At Louis Park, the city added new sanitary facilities, playground structures, a wading pool, and a large number of picnic tables and benches (Swenson 1950:22–23). In 1954, the city established the Pixie Woods children's park at the north end of Louis Park along Smith Canal. The amusement park featured attractions such as the Pixie Express Train, Frontier Town, the Pixie Queen paddle-wheel boat, and a vintage carousel (City of Stockton 2014).

Pixie Woods reflected a national trend among park officials to reconceptualize urban parks as recreational facilities rather than sites of social reform as previously envisioned by Progressives reformers during the first three decades of the twentieth century. Pixie Woods was among several municipally-owned amusement parks established during the 1950s. In California, similar amusement parks included Fairyland in Oakland (1950), Playland in Fresno (1955), and Fairytale

Town in Sacramento (1959). At Pixie Woods, many of the original 1950s attractions are still in use today.

For golfers, the Stockton Golf and Country Club has remained a popular course during the post-World War II era. In 1954, a new clubhouse replaced the original 1914 building. Further alterations to the facility occurred in the mid-1990s, when architect John Harbottle rebuilt all of the original 18 greens to United States Golf Association specifications and new irrigation and drainage systems were also installed. The most recent modification to the Stockton Golf and Country Club was in 2006, when the 1954 clubhouse was replaced with a new facility that included a state-of-the-art fitness center and a dining area overlooking the golf course and the San Joaquin River (Hohlfeld 2014:1; Stewart 2014:1).

Residential Development

Overall, the residential neighborhoods within the project area have been largely infilled with single-family homes, with very few vacant lots.

Most of the residences that presently define the neighborhoods within the project area were built during the post-World War II era of the 1950s and 1960s. On the relatively exclusive neighborhood of Atherton Island, 86% of the homes were built during these two decades. Architecturally, these modern waterfront residences display features that are characteristic of the Ranch, Contemporary, and Neoeclectic styles. These residences are also all large, ranging from 2,000 square feet to over 4,000 square feet, and feature private piers and boat docking structures.

North of Atherton Cove in the Country Club neighborhood, much of the residential construction along the waterfront dates to the 1980s or later. These modern homes are all single-family properties displaying a variety of Neoeclectic architectural styles.

South of Smith Canal in the Louis Park neighborhood, residential development consists of both condominiums and single-family homes constructed mostly in the 1970s and 1980s. These modern residential buildings were constructed north and west of the World War II–era housing adjacent to the Naval Annex.

3.14.2 Environmental Impacts

This section describes the environmental consequences relating to cultural resources for the project. It describes the methods used to determine and evaluate the effects of the project and lists the thresholds used to conclude whether an impact would have a significant impact. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided, where appropriate. Cultural resources evaluations in this Draft EIR have been completed consistent with judicial direction provided in *Madera Oversight Coalition, Inc.* v. *County of Madera* (2011), 199 Cal. App.4th 48.

3.14.2.1 Assessment Methods

This analysis of cultural resources is based on professional standards, the information cited throughout the section, and CEQA requirements.

Project impacts on cultural resources were identified and evaluated based on the environmental characteristics of the project area and the magnitude and duration of activities related to the construction and operation of the project.

CEQA requires an assessment of a project's potential impacts on significant historical resources (i.e., those that are listed or eligible for listing in the CRHR or in a local register or a survey that meets the requirements of Public Resources Code 5020.1[k] and 5024.1[g]). This assessment entails the following steps.

- Identify potential historical resources.
- Evaluate the significance of identified historical resources.
- Evaluate the anticipated effects of a project on all significant historical resources.

Under CEQA, only impacts on significant historical resources are considered potentially significant, thus only those impacts require detailed analysis in this EIR.

3.14.2.2 Thresholds of Significance

The thresholds listed below are based on the criteria provided in State CEQA Guidelines Appendix G (14 California Code of Regulations 15000 et seq.). The project would be considered to have a significant impact on cultural resources if it would result in any of the consequences listed below.

- Cause a substantial adverse change in the significance of a built environment resource or an archaeological resource that is a historical resource pursuant to State CEQA Guidelines Section 15064.5.
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to PRC Section 21083.2.
- Disturb any human remains, including those interred outside of formal cemeteries pursuant to California Health and Safety Code (CHSC) Section 7050.5.

The significance criteria for cultural resources are discussed under *California Environmental Quality Act* in Section 3.14.1.1 *Regulatory Setting*.

3.14.2.3 Impacts and Mitigation Measures

No Project Alternative

The No Project Alternative represents the continuation of existing deficiencies in the project area's flood control structures. The consequences of levee failure and flooding are described under the No Project Alternative description in Chapter 2, Section 2.4, including a summary of possible environmental effects. Under the No Project Alternative, Federal Emergency Management Agency (FEMA) accreditation would not be secured and the project area would continue to remain in the FEMA-designated Special Flood Hazard Area. The flood risks in the area would not be reduced, thereby continuing to expose approximately 8,000 properties and 24,000 residents to an increased risk of flooding. Failure to secure the accreditation from FEMA would require all residents to obtain mandatory flood insurance and adhere to building restrictions.

Under the No Project Alternative, impacts on known cultural resources would likely be greater than those from Alternatives 1, 2, and 3. Additionally, the increased risk of flooding under the No Project Alternative would increase the potential to affect currently unknown cultural resources within the project area due to erosion of archaeological sites along the shoreline.

Alternative 1: Single Gated Wall to Dad's Point (Proposed Project)

Impact CUL-1: Substantial Adverse Change in the Significance of a Built Environment Resource that is a Historical Resource Pursuant to State CEQA Guidelines Section 15064.5 (less than significant)

The only built resource within the project area that is considered to be a historical resource for the purposes of CEQA that has the potential to be affected by this alternative is the DWSC. This resource was recently evaluated in accordance with Section 15064.5(a)(2)(3) of the State CEQA Guidelines using the` criteria outlined in PRC Section 5024.1 and was recommended as eligible for listing in the CRHR under Criterion 1.

Alternative 1 would result in a direct impact on the DWSC because the gate structure and pile walls would be visible from the adjacent areas. However, use of the Monte Diablo Avenue staging area would not result in a temporary indirect visual impact on the DWSC, as the parcel is completely fenced and activities on the parcel would be obscured from view. The parcel proposed for staging has previously been used as a staging area for other projects, and there would be no ground disturbance on the property. Overall, only a very small portion of the 11-mile long DWSC would be affected under Alternative 1. Thus, implementation of Alternative 1 would result in a less-than-significant impact on the DWSC. No mitigation is necessary.

Impact CUL-2: Substantial Adverse Change in the Significance of an Archaeological Historical Resource Pursuant to State CEQA Guidelines Section 15064.5 or a Unique Archaeological Resource Pursuant to PRC Section 21083.2 (less than significant with mitigation)

No archaeological resources were identified as a result of this study, but it is still possible that significant buried archaeological materials are present on natural landforms in the project area. Disturbance or destruction of such as yet unidentified archaeological resources may result from ground-disturbing activities associated with Alternative 1 on natural landforms. Specifically, these include the area along the shoreline at the south end of the Stockton Golf and Country Club. Also, because the location of many shipwrecks is unknown, disturbance or destruction of as yet unidentified shipwrecks (archaeological resources) may result from ground-disturbing activities associated with Alternative 1 in currently submerged areas. This direct impact would be significant but reduced to a less-than-significant level with implementation of Mitigation Measure CUL-MM-2.

Mitigation Measure CUL-MM-2: Halt Work if Previously Unidentified Archaeological Resources are Encountered until a Qualified Archaeologist Assesses the Find and Native American Consultation has been Conducted

If previously unknown buried cultural resources, such as chipped or ground stone, historic debris, building foundations, shipwrecks, or human bone are inadvertently unearthed during ground-disturbing project activities, work will stop at the location of the find and all areas within 100 feet of the find until a qualified archaeologist can assess the significance of the find. If avoidance is not possible, an archaeologist meeting the Secretary of Interior's standards for archeology will develop an appropriate treatment plan that includes procedures such as recordation and excavation. If the find is Native American in origin, consultation with the NAHC and local Native American representatives will be initiated. If the find is located on state lands (e.g., submerged areas), the CSLC should be consulted to determine how to treat the find. The final disposition of archaeological resources recovered on state lands under the jurisdiction of the CSLC must be approved by the CSLC.

Impact CUL-3: Disturbance of any Human Remains, Including Those Interred Outside of Formal Cemeteries Pursuant to CHSC Section 7050.5 (less than significant with mitigation)

No known human remains are present within the project area. It is possible that buried human remains are present in the project area, but not identified during the archaeological survey due to their subsurface location. As such, there is still the potential that human remains would be encountered during project ground-disturbing activities associated with Alternative 1. This direct impact would be significant but reduced to a less-than-significant level with implementation of Mitigation Measure CUL-MM-3.

Mitigation Measure CUL-MM-3: Stop Work in Case of Accidental Discovery of Buried Human Remains until Procedures in PRC Section 5097 have been Completed

If human remains of Native American origin are discovered during project construction activities, it is necessary to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the NAHC (PRC Section 5097). If any human remains are discovered or recognized in any location other than a dedicated cemetery, there will be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the following steps have taken place.

- The San Joaquin County coroner has been informed and has determined that no investigation of the cause of death is required.
- If the remains are of Native American origin,
    - the descendants of the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98; or
    - the NAHC was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the NAHC.

Alternative 2: Atherton Cove Flood Wall with Smith Canal Gate

Impact CUL-1: Substantial Adverse Change in the Significance of a Built Environment Resource that is a Historical Resource Pursuant to State CEQA Guidelines Section 15064.5 (less than significant with mitigation)

There are two built resources within the project area that are considered to be historical resources for the purposes of CEQA that have the potential to be affected by Alternative 2: Smith Canal and the Pixie Woods amusement park in Louis Park. Both resources were recently evaluated in accordance with Section 15064.5(a)(2)(3) of the State CEQA Guidelines using the criteria outlined in PRC Section 5024.1, and they were recommended as eligible for listing in the CRHR under Criterion 1.

Implementation of Alternative 2 would result in a direct impact on Smith Canal because of the construction of a gated fixed wall structure projecting into the waterway from the canal's east and west banks. Additionally, there would be an indirect visual impact on Smith Canal, since a substantial portion of the gated fixed wall structure would be visible from the surrounding area. Overall, however, only a small portion of the 2-mile long canal would be directly or indirectly affected under Alternative 2 and, therefore, no mitigation is necessary.

Implementation of Alternative 2 would result in the construction of a 400 square foot gate control building in Louis Park approximately 35 feet south of the fence enclosing the amusement park. The impact on Pixie Woods would therefore be direct and visual. Implementation of Mitigation Measure VIS-MM-1 would reduce the direct impact on Pixie Woods to a less-than-significant level.

Mitigation Measure VIS-MM-2d: Implement Project Landscaping around Control Buildings

Please refer to the discussion of Mitigation Measure VIS-MM-2d in Section 3.10, *Visual Resources*, under Alternative 2, Impact VIS-2.

Impact CUL-2: Substantial Adverse Change in the Significance of an Archaeological Historical Resource Pursuant to State CEQA Guidelines Section 15064.5 or a Unique Archaeological Resource Pursuant to PRC Section 21083.2 (less than significant with mitigation)

No archaeological resources were identified as a result of this study, but it is still possible that significant buried archaeological materials are present on natural landforms in the project area. Disturbance or destruction of such as yet unidentified archaeological resources may result from ground-disturbing activities associated with Alternative 2 on natural landforms. Specifically, these include: the shoreline at the south end of the Stockton Golf and Country Club; the north bank of Atherton Cove; and the south bank of Smith Canal in Louis Park. Also, because the location of many shipwrecks is unknown, disturbance or destruction of as yet unidentified shipwrecks (archaeological resources) may result from ground-disturbing activities associated with Alternative 2 in currently submerged areas. This direct impact would be significant but reduced to a less-than-significant level with implementation of Mitigation Measure CUL-MM-2.

Mitigation Measure CUL-MM-2: Stop Work in Case of Accidental Discovery of Buried Archeological Resources

Please refer to the discussion of Mitigation Measure CUL-MM-2 under Alternative 1, Impact CUL-2.

Impact CUL-3: Disturbance of any Human Remains, Including Those Interred Outside of Formal Cemeteries Pursuant to CHSC Section 7050.5 (less than significant with mitigation)

No known human remains are present within the project area. It is possible that buried human remains are present in the project area but not identified during the archaeological survey due to their subsurface location. As such, there is still the potential that human remains would be encountered during project ground-disturbing activities associated with Alternative 2. This direct impact would be significant but reduced to a less-than-significant level with implementation of Mitigation Measure CUL-MM-3.

Mitigation Measure CUL-MM-3: Stop Work in Case of Accidental Discovery of Buried Human Remains

Please refer to the discussion of Mitigation Measure CUL-MM-3 under Alternative 1, Impact CUL-3.

Alternative 3: Dual Gated Walls to Atherton Cove and Smith Canal

Impact CUL-1: Substantial Adverse Change in the Significance of a Built Environment Resource that is a Historical Resource Pursuant to State CEQA Guidelines Section 15064.5 (less than significant)

The only built resource within the project area that is considered to be a historical resource for the purposes of CEQA that has the potential to be affected by Alternative 3 is Smith Canal. This resource was recently evaluated in accordance with Section 15064.5(a)(2)(3) of the State CEQA Guidelines using the criteria outlined in PRC Section 5024.1 and was recommended as eligible for listing in the CRHR under Criterion 1.

Alternative 3 would result in a direct impact on the mouth of Smith Canal because of the construction of a gated fixed wall structure projecting into the waterway from the canal's east and west banks. Additionally, there would be an indirect visual impact on Smith Canal, since a substantial portion of the gated fixed wall structure would be visible from the surrounding area. Overall, however, only a small portion of the 2-mile long canal would be directly or indirectly impacted under Alternative 3. Thus, implementation of Alternative 3 would result in a less-than-significant impact on Smith Canal. No mitigation is necessary.

Impact CUL-2: Substantial adverse change in the significance of an archaeological historical resource pursuant to Section 15064.5 or a unique archaeological resource pursuant to PRC Section 21083.2 (less than significant with mitigation)

No archaeological resources were identified as a result of this study, but it is still possible that significant buried archaeological materials are present on natural landforms in the project area. Disturbance or destruction of such as yet unidentified archaeological resources may result from ground-disturbing activities associated with Alternative 3 on natural landforms. Specifically, these include the shoreline at the south end of the Stockton Golf and Country Club and the south bank of Smith Canal in Louis Park. Also, because the location of many shipwrecks is unknown, disturbance or destruction of as yet unidentified shipwrecks (archaeological resources) may result from ground-disturbing activities associated with Alternative 3 in currently submerged areas. This direct impact would be significant but reduced to a less-than-significant level with implementation of Mitigation Measure CUL-MM-2.

Mitigation Measure CUL-MM-2: Stop Work in Case of Accidental Discovery of Buried Archeological Resources

Please refer to the discussion of Mitigation Measure CUL-MM-2 under Alternative 1, Impact CUL-2.

Impact CUL-3: Disturbance of any Human Remains, Including Those Interred Outside of Formal Cemeteries Pursuant to CHSC Section 7050.5 (less than significant with mitigation)

No known human remains are present within the project area. It is possible that buried human remains are present in the project area but not identified during the archaeological survey due to their subsurface location. As such, there is still the potential that human remains would be encountered during project ground-disturbing activities associated with Alternative 3. This direct impact would be significant but reduced to a less-than-significant level with implementation of Mitigation Measure CUL-MM-3.

Mitigation Measure CUL-MM-3: Stop Work in Case of Accidental Discovery of Buried Human Remains

Please refer to the discussion of Mitigation Measure CUL-MM-3 under Alternative 1, Impact CUL-3.

3.15 Minimally Impacted Resources

3.15.1 Introduction

This chapter describes environmental resources that were found to not have significant impacts and are therefore not discussed in detail, in accordance with State CEQA Guidelines Section 15128.

3.15.2 Geology and Soils

The project area is located in the northern portion of the San Joaquin Valley. The San Joaquin River is the main drainage of the San Joaquin Valley, collecting flows from tributaries in the south and flowing north to its discharge point in Suisun Bay in the San Francisco Bay Area. A majority of the Stockton area is underlain primarily by late-Pleistocene alluvium, and the Port of Stockton and the Stockton Deep Water Ship Channel are underlain by Dos Palos alluvium (City of Stockton 2007a: 11-37). The project area is located primarily in water, with soil map units in adjacent uplands identified as Scribner-Urban land complex, which typically consists of clay loam between 0 and 24 inches below ground surface, and stratified loam to silty clay loam between 24 and 60 inches below ground surface (U.S. Department of Agriculture Natural Resources Conservation Service 2009). Scribner-Urban land complex soils are poorly drained, with moderately slow water permeability and the hazard of erosion is slight (U.S. Department of Agriculture Soil Conservation Service 1992: 121). The subsurface soils in the channels consist primarily of shallow layers of silty or sandy clay and sandy silt, underlain with silty sand, sand, and sandy silt (Kleinfelder West, Inc. 2008:4). There are no known faults delineated within San Joaquin County on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist, which provides the public with known earthquake fault zones (California Department of Conservation 2010).

Construction and operation of the proposed Smith Canal project alternatives would not result in any impacts on geology and soils. Under all three alternatives, there would be no potential to expose people or structures to potential substantial adverse effects related to the rupture of a known earthquake fault as there are no known faults delineated within San Joaquin County. The proposed project alternatives would also not expose people or structures to potential adverse effects related to seismic ground shaking, seismic-related ground failure, or landslides.

None of the proposed alternatives is anticipated to cause substantial erosion, loss of topsoil, or loss of soil productivity. The sheet pile walls would be located in the water where the subsurface conditions consist primarily of shallow layers of silty or sandy clay and sandy silt, underlain with silty sand, sand, and sandy silt. Given the soil site conditions, conventional sheet piles would provide adequate stability for structural loading. While the project area has potential for expansive soils along the waterside embankments, sheet piles positioned near existing waterside embankments would have a minimum embedment of 15 feet below the dredge line, an additional sheet pile would be placed perpendicular to levee tie-ins, parallel to the existing bank, and existing soft soils would be replaced with soils that meet USACE requirements, thereby avoiding the potential to create substantial risks to life or property.

Septic tanks and alternative wastewater disposal systems are not proposed as part of any of the project alternatives. Implementation of any of the project alternatives would not 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, or of a locally important mineral resource recovery site. None of the project alternatives would directly or indirectly destroy a known unique paleontological resource or site, or unique geologic feature. The project alternatives would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project. As there would be no impacts related to geology, seismicity, soils, or mineral resources, these resources are not further analyzed in this document.

3.15.3 Agricultural Resources and Land Use

The existing land use designations in the project area are low density residential and parks/recreation (City of Stockton 2007). Louis Park and Dad's Point are park areas located on the south side of the project area, and residential areas and the Stockton Golf and Country Club are located on the northern side. The Farmland Mapping and Monitoring Map for San Joaquin County and the Land Cover map prepared by the Department of Forestry and Fire Protection show that the project site is within an urban and built-up area (California Department of Conservation 2012; California Department of Forestry and Fire Protection 2006). There are no Williamson Act lands in the project area, as all lands shown in the Farmland Mapping and Monitoring Map are classified as urban.

Construction and operation of the project site would not result in the conversion of agricultural lands delineated in a map pursuant to the Farmland Mapping and Monitoring Program or designated forestland by the Department of Forestry and Fire Protection.. Therefore, the project would not result in the conversion of designated prime farmland, farmland of statewide importance or unique farmland or conflict with existing zoning for agricultural use of a Williamson Act contract or conversion of forestland.

Although the project would require construction of one or two small control buildings near existing public and privately owned recreational land uses (Louis Park and the Stockton Golf and Country Club, respectively), placement of these buildings would not interfere with continued use of those facilities or require implementation of a zoning change to the affected parcels. Therefore, the project would not change the land use in the project area. Construction and operation of the proposed project would not divide an existing community. The gate structure would not prevent in-water access between Smith Canal and San Joaquin River or between the city and county. In addition, the proposed project and the alternatives would not conflict with an existing land use policy or program. The project would not convert open space land use to non-open space uses and, therefore, it would not be in conflict with the San Joaquin County Multi-Species Conservation Plan. There would be no impacts to land use. Therefore, potential impacts to land use are dismissed from further analysis.

3.15.4 Environmental Justice and Socioeconomics

The assessment of socioeconomic resources is guided primarily by Federal laws and policies, while state and local plans and policies, including local general plan housing elements, typically promote economic development and diversity, public health and safety, housing, and other concerns of the communities and residents within their jurisdictions. Environmental justice issues are mandated and regulated primarily at the Federal level. Federal Executive Order 12898, Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all Federal agencies to address potential impacts regarding environmental justice when considering actions. The order states that neither minority nor low-income populations may be subject to a

disproportionate level of adverse impacts as a result of a project. Although the proposed project is proposed by a local lead agency, environmental justice and socioeconomics are considered in this Draft EIR because future Federal approval will be required prior to project implementation.

The project area includes portions of census tracts 9 and 10 in San Joaquin County; however, the portion of the project area within census tract 9 contains no residences (U.S. Census Bureau 2011). In 2013, whites made up the largest population in census tract 10, and the median family income for census tract 10 was $53,799 per year (U.S. Census Bureau 2013a, 2013b). Census tract 10 contains both low-income and minority populations. The area surrounding the proposed project includes residential and open space uses, and there are few businesses in the immediate project vicinity.

While construction activity is expected to result in temporary noise, air quality, traffic, and recreation effects, among others, on those residing near the project area, these effects would be felt by all adjacent residents equally, and would not disproportionately affect any minority or low-income population. The most directly affected populations are those residing on Atherton Island, along Atherton Cove, and at the mouth of Smith Canal, which are located in census tract 10 (U.S. Census Bureau 2011). While the census tract contains low-income and minority populations, these populations would not be disproportionately affected by project construction and implementation. In addition, implementation of the proposed project would result in revisions to flood insurance maps, which would reduce flood insurance premiums. This would have a beneficial impact on low-income populations. There would be no potential effects on an environmental justice community.

Analysis of a project's socioeconomics impacts considers employment and resident and business displacement. Construction and operation of the proposed project and Alternatives 2 and 3 would not impact employment or businesses in the project area. The proposed project and Alternative 3 would not physically impact the properties of Atherton Cove residents. Alternative 2 would not encroach on existing properties' backyard along Atherton Cove, but would be adjacent to existing parcels. Encroachment during the construction of Alternative 2 would temporarily prevent use of part of residential properties, but it would not result in displacement of the residents. Therefore, potential socioeconomic impacts are dismissed from further analysis.

Chapter 4
Growth-Inducing and Cumulative Impacts

This chapter provides an analysis of both the growth-inducing and cumulative impacts that may result from the Smith Canal Gate project.

4.1 Growth-Inducing Impacts

4.1.1 Introduction

CEQA requires that an EIR discuss how a project's implementation could induce growth and analyze whether such growth would result in environmental impacts. This section presents an analysis of the Smith Canal project's potential for inducing growth and of any resulting environmental impacts. This section includes the following elements.

- Background information related to growth inducement.
- Methods used to analyze growth-related environmental impacts.
- Impact conclusions.

4.1.2 Existing Conditions

4.1.2.1 Regulatory Setting

CEQA Requirements

Section 21100(b)(5) of the State CEQA Guidelines requires an EIR discuss how a proposed project, if implemented, may induce growth and the effects of that induced growth (see also State CEQA Guidelines Section 15126). CEQA requires an EIR to discuss specifically "the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment" (State CEQA Guidelines Section 15126.2[d]). Only the elements of the Smith Canal Gate project that have the possibility to induce growth or remove obstacles to growth are assessed in this analysis; as flood risk reduction measures in general could support floodplain development, these measures are assessed, in aggregate, in this section. The Smith Canal Gate project's recreation enhancements and invasive plant species removal are not discussed in this section, as they would not induce growth or remove obstacles to growth.

Regulations Regarding Floodplain Development (Executive Order 11988)

Executive Order 11988 (May 24, 1977) requires a Federal agency, when taking an action, to avoid short- and long-term adverse effects associated with the occupancy and the modification of a floodplain. Federal actions must avoid direct and indirect support of floodplain development whenever there is a reasonable and feasible alternative. If the only reasonable and feasible alternative involves siting in a floodplain, the agency must minimize potential harm to or in the

floodplain and explain why the action is proposed in the floodplain. An analysis of compliance with Executive Order 11988 is included below as part of the effects discussion under Section 4.1.3.1.

Executive Order 13690 was issued on January 30, 2015, titled, *Establishing a Federal Flood Risk Standards and a Process for Further Soliciting and Considering Stakeholder Input*. Executive Order 13690 amends Executive Order 11988 by adopting a higher flood standard for future federal investments and other Federal actions that may affect floodplains. The subjects of federal investments and approvals will be required to meet the level of performance established through the Federal Flood Risk Management Standard, and includes projects that use federal funds for new structures. However, a national policy document titled, *Revised Guidelines for Implementing Executive Order 11988*, *Floodplain Management* (Guidelines), is under public review and is not currently available for use in this document. An analysis of compliance with Executive Order 13690 will be provided once the Guidelines are finalized.

4.1.2.2 Environmental Setting

The information in this section provides context for the analysis and explains the structure of the analysis. This background information includes the legal requirements for analyzing growth-inducing impacts in CEQA documents.

Growth Projections

In 2014, California's population was estimated to be 38 million people. By 2025, the state population is expected to rise to approximately 42 million (California Department of Finance 2014a, 2014b).

Locally, the population of Stockton has grown from 270,136 people in 2004 to an estimated 300,899 as of January 1, 2014 (California Department of Finance 2012, 2014). According to the San Joaquin Council of Government's (SJCOG's) population growth and distribution data, 430,393 people are projected to reside in the city of Stockton in 2035 (San Joaquin Council of Government 2009). Anticipated growth projections described in the General Plan Update are discussed below.

Current and Planned Stockton Development

Stockton has experienced extensive growth over the last decade and has been one of the fastest growing cities in California (City of Stockton 2010). This growth has been generally consistent with the *Stockton General Plan 2035*, but has slowed in the last few years. A SJCOG staff report on countywide population, household, and employment updates provided projections for growth in the county, as well as in the city of Stockton, from a base year of 2006 (San Joaquin Council of Government 2009). The staff report describes conditions present at the time of the staff report, and likely future developments to year 2035. The staff report estimates that by 2035, the city of Stockton will have 139,616 net new population, 45,757 net new dwelling units, and 48,346 net new employment.

To account for growth relative to flood risk management, the City has in place the following measures in the *Stockton General Plan Goals and Policies Report* (City of Stockton 2010):

- The City shall maintain and periodically update the Stormwater Master Plan, which defines drainage services areas, identifies flood prone areas, defines receiving water capacity constraints and conceptually defines regional facilities to serve future development. The plan shall be used as a guidance document for the preparation of detailed watershed drainage plans.

- They city shall formulate emergency management plans for the safe evacuation of people from areas subject to inundation from dam failure. Plans shall be reviewed and periodically updated.

4.1.3 Environmental Impacts

An action that removes an obstacle to growth is considered to be growth inducing. Thus, where flood risk may be seen as an obstacle to growth in an area, levee treatments that would reduce that risk may be considered to remove an obstacle to growth and thereby may be growth inducing.

Growth inducement can lead to environmental effects, such as increased demand for utilities and public services, increased traffic and noise, degradation of air or water quality, degradation or loss of plant or animal habitats, and conversion of agricultural and open space land to urban uses. Growth within a floodplain area increases the risk to people or property from flooding.

However, if the induced growth is consistent with or provided for by the adopted land use plans and growth management plans and policies for the area affected (e.g., city and county general plans, specific plans, transportation management plans), the secondary effects of such planned growth are identified and evaluated through a formal CEQA environmental review process and, as necessary, mitigation is adopted to address these effects. In some instances, significant and unavoidable effects would occur as a result of implementation of land use plans. All effects associated with this planned growth are the responsibility of the city or county in which the growth takes place, developers, or other entities proposing or approving the development. Local land use plans provide for land use development patterns and growth policies that encourage orderly urban development supported by adequate urban public services such as water supply, roadway infrastructure, sewer services, and solid waste services. This urban development may have environmental effects, as identified in CEQA documents prepared for adoption of local land use plans. If a project would have growth inducement potential that is not consistent with the land use plans and growth management plans and policies for the area affected (e.g., growth beyond that reflected in adopted plans and policies), then additional adverse secondary effects of growth beyond those previously evaluated could occur. Thus, it is important to assess the degree to which the growth associated with a project would or would not be consistent with regional and local planning.

4.1.3.1 Impacts and Mitigation Measures

No Project Alternative

Under the No Project Alternative, SJAFCA would not implement the proposed project. Routine operation and maintenance activities would continue where access is available, but most of the levees in the area would remain inaccessible for O&M purposes due to encroachments. In addition, the associated risk to human health and safety and property and the adverse economic effect that serious flooding could cause would continue. Further detail on the No Project Alternative is provided in Chapter 2, *Proposed Project and Alternatives, Section* 2.4, *No Project Alternative*.

As described in Chapter 2, for the purposes of evaluating impacts under the No Project Alternative, the EIR assumes that the flood risk reduction measures would not occur. This assumption provides the most conservative approach for disclosure and comparison of potential effects. Therefore, the No Project Alternative assumes no gated structure with sheet pile walls or floodwalls would be implemented, the purpose and objectives would not be met, and the current level of flood risk would continue.

Proposed Project

The Smith Canal Gate project would reacquire FEMA accreditation by implementing flood risk–reduction measures that would achieve a 100-year level of performance for 24,000 currently affected residents. The proposed project would also contribute to minimum 200-year level of performance for the surrounding urban area.

Based on these circumstances, the Smith Canal Gate project is not considered growth inducing and would not create the potential for additional development in the project area. The area that would have improved level of performance as a result of project implementation is completely built out and is not able to accommodate new development. Implementation of the Smith Canal Gate project would not open up new areas for development, as the project would be constructed along the edge of existing waterfront development. In addition, the Smith Canal Gate project would not change the current FEMA rating for the city as a whole or for other areas of the city that may be available for future development. The proposed project would not foster economic growth, population growth, the construction of additional housing, and there would be no expansion or increase in demand for such public services as schools, fire, police, sewer, solid waste disposal, and electrical and gas utilities.

Executive Order 11988 Analysis

As introduced in Section 4.1.2.1, *Regulatory Setting*, Executive Order 11988 addresses growth and development in floodplains as a primary issue. In February 1978, the Water Resources Council issued Floodplain Management Guidelines for Implementing Executive Order 11988. These guidelines provide analysis of the executive order, definitions of key terms, and an eight-step decision-making process for carrying out the executive order's directives. The process contained in the Water Resources Council guidelines incorporates the basic requirements of the executive order. Briefly, the eight-step process is outlined below, followed by discussion of the project's application of the process to demonstrate compliance.

- **Step 1: Determine whether a proposed project is in the base floodplain (100-year floodplain, or 1% chance flood, or 500-year floodplain, or 0.2% chance flood, if the action falls under the definition of critical, discussed separately below).** The Smith Canal Gate project includes the gate structures, sheet pile walls, floodwalls, and the area landward of the levees and structures for which risk of flooding would be reduced. The current FEMA 100-year floodplain includes areas landward of the existing levee and includes approximately 5,000 properties and approximately 15,000 residents. The primary purpose of the project is to reacquire FEMA accreditation that was revoked in 2008, as determined by SJAFCA. SJAFCA also has a goal consistent with state law to provide a minimum 200-year level of flood risk reduction performance by 2025. The proposed project is described in Chapter 2, which includes location, construction methods, and O&M activities.
- **Step 2: Provide public review.** The CEQA process provides for public disclosure; the EIR is one instrument for public review of the project. As discussed in Chapter 1, *Introduction*, SJAFCA will implement a public outreach program and facilitate public meetings to allow for public review of the project. Actions conducted as part of the outreach program are listed in Chapter 1, Section 1.6.1, *Community Outreach*.

  As the proposed flood risk reduction measures and EIR are further developed, the outreach program will continue in a broad sense through the methods listed above and will expand

through more targeted specific outreach to residents and businesses who might be more directly affected by construction or operation of the proposed flood risk reduction measures.

A more detailed accounting of the scoping process is provided in Appendix A.

- **Step 3: Identify and evaluate reasonable and feasible alternatives to locating in the base floodplain.** Prior to the loss of FEMA accreditation, the portions of the city of Stockton and unincorporated San Joaquin County that are protected by the levees in the project area had not been mapped in the base floodplain, and land use planning decisions had been based on studies demonstrating that existing levees provided an acceptable level of performance relative to the base flood. Evolving levee standards now necessitate flood risk reduction measures to continue to provide the mandated level of performance. The project is specifically targeted to provide such flood risk reduction measures and increase the level of performance beyond the base flood to that of the 0.5% chance (200-year) flood event, per goals set by the State of California. Due to the buildout on the landside of the levees, the only reasonable and feasible alternatives available require construction within the base floodplain. However, the alternatives analyzed in this document represent the least amount of construction within the floodplain while achieving the purpose and need of the project, and would not create the impetus or capability for growth in the surrounding area. Chapter 2 contains a description of alternatives that were considered but ultimately rejected for their inability to meet project purpose and need objectives, or their infeasibility.
- **Step 4: Identify the effects of the proposed action.** This analyzes the environmental impacts potentially resulting from the project per CEQA requirements. Review under ESA, CWA, CAA, and other Federal and state environmental regulations is also occurring in coordination with the EIR. Potential environmental impacts for the Smith Canal Gate project are described in Chapter 3, *Environmental Setting and Impacts*. In brief, the project may have temporary construction-related effects on roadway traffic and air quality from heavy equipment use, on residents due to noise generation, temporary and permanent effects on biological resources, changes in visual quality, permanent loss of property, and interruption in utility service and property access. The project's potential impact on flood risk is discussed in Section 3.1, *Flood Risk, Hydrology, and Geomorphology*.
- **Step 5: Minimize threats to life and property and to natural and beneficial floodplain values. Restore and preserve natural and beneficial floodplain values.** The project would restore FEMA accreditation and reduce flood risk to life and property within Stockton. The existing levee system was originally designed and constructed to provide a minimum level of performance relative to the base flood. SJAFCA's target for the Smith Canal Gate project is to reduce flood risk to contribute to minimum 200-year level of performance as mandated by SB 5. There would be no impact to beneficial floodplain values.
- **Step 6: Reevaluate alternatives.** This EIR is part of a step-wise evaluation process to refine the alternatives through public review as well as through resource and regulatory agency input in consultation for compliance with CWA, ESA, and other project authorizations. The alternatives have been evaluated at the planning level for initial screening (Chapter 2) and for re-evaluation through project-level analysis (Chapter 3). The alternatives are also continuously evaluated on a technical basis through independent review of the design documents (i.e., plans and specifications) at several levels of design development, including expert peer review by a board of senior consultants. To date, this level of screening analysis has demonstrated that the Alternative 1, the Proposed Project, is the most practicable alternative.

- **Step 7: Issue findings and a public explanation.** To conclude the CEQA process, findings will be publically issued following release of the Final EIR. A public meeting will be conducted during the draft document stage, and project adoption by SJAFCA will be conducted at a public board meeting as a discretionary action under CEQA.
- **Step 8: Implement the action.** SJAFCA intends to construct the Smith Canal project as soon as possible based on conclusion of the project approval processes and funding commitment from the State.

The project would reduce the effect of floods on human health, safety, and welfare through construction of flood risk reduction measures. It would provide existing urban development with reduced flood risk with minimal encroachment into the floodplain, and would not create the potential for, or cause, growth. Because there is no reasonable and feasible alternative to the proposed project that would provide equivalent flood risk management for the existing property and population within the boundaries of the floodplain, it is not in conflict with Executive Order 11988.

This EIR further complies with Executive Order 11988 by identifying the most reasonable and feasible flood risk reduction alternative and disclosing the potential impacts of the project that might lead to growth or other direct and indirect effects. Additionally, Chapters 1 explain why flood risk–reduction measures are necessary for the study area, regardless of how they might affect future development and growth.

4.2 Cumulative Impacts

4.2.1 Introduction

The cumulative impacts analysis determines the combined effect of the project and other closely related, reasonably foreseeable, projects. This section introduces the methods used to evaluate cumulative impacts, lists related projects, and describes their relationship to the project, identifies cumulative impacts by resource area, and recommends mitigation for significant cumulative impacts.

4.2.2 Approach to Cumulative Impacts Analysis

4.2.2.1 Legal Requirements

The State CEQA Guidelines require lead agencies to evaluate a proposed project's potential to contribute to a cumulative impact in the project area. Analysis of cumulative impacts is needed to ensure that the project's effects are considered thoroughly in the context of impacts resulting from other similar, related, and/or neighboring projects.

The State CEQA Guidelines define *cumulative impacts* as two or more individual impacts which, when considered together, are considerable or which compound or increase other environmental impacts (Section 15355). Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (State CEQA Guidelines 15355[b]). The cumulative impacts of a project are to be addressed if the project's incremental impact is cumulatively considerable, meaning that the incremental effects of an individual project are

significant when viewed in connection with the impacts of past projects, the impacts of other current projects, and the impacts of probable future projects (State CEQA Guidelines Sections 15130[a][2] and 15065[a][3]). For the purposes of this analysis, a significant impact is one to which the project's contribution is considerable.

The discussion of cumulative impacts need not provide as much detail as the discussion of impacts attributable to the project alone. According to the State CEQA Guidelines, the level of detail should be guided by what is practical and reasonable (Section 15130). For those impacts for which cumulative impacts are identified, the contribution of the proposed project is evaluated to consider whether mitigation measures are available to reduce the potential impact. In cases where no cumulative impacts are identified or when the proposed project would have no or only limited contribution to the cumulative impact, the potential impact is addressed briefly to the extent needed to support the impacts conclusion.

4.2.2.2 Methods

According to the State CEQA Guidelines (Section 15130), an adequate discussion of significant cumulative impacts should contain:

- An analysis of related future projects or planned development that would affect resources in the project area similar to those affected by the proposed project.
- A summary of the expected environmental impacts to be produced by those projects with specific reference to additional information stating where that information is available.
- A reasonable analysis of the cumulative impacts of the relevant projects. An EIR must examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative impacts.

To identify the related projects, this analysis uses the list approach described in State CEQA Guidelines Section 15130(b)(1)(A), which requires assembly of a list of past, present, and probably future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of SJAFCA.

4.2.3 Projects Considered for the Cumulative Assessment

A list of past, current, and probable future projects was compiled for the cumulative setting. These projects (cumulative projects) include other flood management projects affecting the San Joaquin River, restoration and other water-related projects in and near the San Joaquin River that could affect fish or vegetation on the waterside of levees, development in the Stockton area, and other nearby infrastructure and transportation projects that could result in impacts and benefits similar to those of the proposed project.

In addition, regional plans were reviewed to characterize development trends and growth projections in San Joaquin County. These projects are considered with the Smith Canal project to determine whether the combined effects of all of the projects would result in significant cumulative impacts.

4.2.3.1 Flood Risk–Reduction Projects

The following descriptions of related or similar flood risk–reduction projects include those that are under active consideration, have been proposed, or have some form of environmental documentation complete. In addition, these projects have the potential to affect the same resources and fall within the same geographic scope and are therefore to be cumulatively considered. In particular, those resources are biological resources (riparian habitat and wildlife disturbance), hydrology, and geomorphology. The geographic scope of consideration for impacts on those resources is the San Joaquin Valley region and San Joaquin River system, respectively.

Central Valley Flood Protection Plan of 2012

This Department of Water Resources (DWR) comprehensive system-wide plan for the continued defense of lands currently protected from flooding in the San Joaquin River watershed by the corresponding Sacramento River Flood Control Project to the north is described under *Central Valley Flood Protection Plan* in Chapter 1.

Lower San Joaquin River Feasibility Study

The Lower San Joaquin River Feasibility Study is described in Chapter 1.

Lower San Joaquin and Delta South Regional Flood Management Plan

The Lower San Joaquin and Delta South Regional Flood Management Plan is described in Chapter 1.

Flood Control and Coastal Storm Emergency Act

The Flood Control and Coastal Storm Emergency Act (PL 84-99) authorizes the U.S. Army Corps of Engineers (USACE) to undertake activities, including disaster preparedness, advance measures, emergency operations, rehabilitation of flood management works threatened or destroyed by flood, protection or repair of federally authorized shore protective works threatened or damaged by coastal storms, and provision of emergency water because of drought or contaminated source. PL 84-99 establishes an emergency fund for emergency response preparations for natural disasters, for flood fighting and rescue operations, and for rehabilitation of flood management and hurricane protection structures. Under PL 84-99, an eligible flood management system can be rehabilitated if damaged by a flood event. USACE has the responsibility to coordinate levee repair issues with interested Federal, state, and local agencies following natural disaster events where flood management works are damaged.

FloodSAFE California

In 2006, DWR initiated FloodSAFE California, which is a multi-faceted program to improve public safety through integrated flood management. Under the FloodSAFE Program, DWR provides leadership and works with local, regional, state, tribal and federal officials to improve flood management and emergency response systems throughout California, primarily by investing funds provided by Propositions 1E and 84. Although DWR is leading FloodSAFE, successful implementation of the program depends on active participation from many key partners and substantial federal and local cost participation.

The FloodSAFE vision is a sustainable integrated flood management and emergency response system throughout California that improves public safety, protects and enhances environmental and cultural resources, and supports economic growth by reducing the probability of destructive floods, promoting beneficial floodplain processes, and lowering the damages caused by flooding.

The FloodSAFE Program is designed to help improve integrated flood management statewide with a significant emphasis on the Central Valley and Delta where communities and resources face high risk of catastrophic damage. Integrated Flood Management includes recognition of: the interconnection of flood management actions within broader water resources management and land use planning, the value of coordinating across geographic and agency boundaries, the need to evaluate opportunities and potential impacts from a system perspective, and the importance of environmental stewardship and sustainability.

FloodSAFE will guide the development of regional flood management plans that encourage regional cooperation in identifying and addressing flood hazards. The plans will emphasize multiple objectives, system resiliency, and compatibility with state goals and Integrated Regional Water Management Plans.

Levee Repair-Levee Evaluation Program

On February 24, 2006, Governor Arnold Schwarzenegger declared a State of Emergency for California's levee system, commissioning up to $500 million of state funds to repair and evaluate state/federal project levees. Following the emergency declaration, the Governor directed DWR to secure the necessary means to fast-track repairs of critical erosion sites.

Hundreds of levee sites have been identified for immediate repair throughout the Central Valley. These repairs are necessary to maintain the functionality of flood control systems that have deteriorated over time and/or do not meet current design standards. While many of the most urgent repairs have been completed or are near completion, other sites of lower priority are still in progress, and still more are in the process of being identified, planned, and prioritized.

In general, repairs to state/federal project levees are being conducted under three main programs: the Critical Erosion Repairs Program, the Sacramento River Bank Protection Project, and the PL84-99 Rehabilitation Program. A fourth program to repair critically damaged levees on the San Joaquin Flood Control System is under development by DWR.

DWR is conducting geotechnical exploration, testing, and analysis of state and federal levees that protect the highly populated urban areas of greater Sacramento, Stockton/Lathrop, and Marysville/Yuba City. This program is being implemented simultaneously with the various urgent levee repairs.

To expedite efforts to protect these communities, levee evaluations are being conducted in a fast-track manner over a 2- to 3-year period. During this time, technical specialists are reviewing existing levee historical data; mapping near-surface geology; conducting field explorations; performing engineering, stability and seepage analyses; and preparing preliminary design and construction estimates for repairing and upgrading the levees, where needed.

Delta Islands and Levees Feasibility Study

USACE and DWR propose to restore approximately 89.5 acres of lost or degraded tidal marsh habitat in the west central portion of the Sacramento-San Joaquin Delta. The restoration work

would involve transporting and placing dredged material into open water habitat to restore 80.3 acres and 9.2 acres of tidal marsh at Big Break and Little Franks Tract, respectively, in the Delta. The work would be conducted over 5 years as part of the annual operation and maintenance (O&M) dredging of the Stockton Deep Water Ship Channel (DWSC). Previously stockpiled dredged material from existing dredged material storage sites would also be placed in conjunction with O&M.

USACE released the Delta Islands and Levees Feasibility Study Draft Feasibility Report and Environmental Impact Statement in April 2014. The feasibility study addresses flood risk management, ecosystem restoration, water quality, water supply, and a variety of other issues. DWR's Delta Risk Management Strategy studies will be used to define problems, opportunities, and specific planning objectives. The feasibility study provides the mechanism by which USACE can participate in a cost-shared solution to a variety of water resources needs for which it has authority. USACE and DWR share the cost of the feasibility study equally.

Reclamation District 17 Phase 3 100-Year Levee Seepage Area Project

Reclamation District 17 (RD 17) has prepared a draft EIS/EIR for Phase 3 of the 100-Year Levee Seepage Area Project in San Joaquin County, California, which includes Rivers and Harbors Act Section 408 permission from USACE for modifications to Federal project levees. The project includes structural improvements to portions of the approximately 19-mile RD 17 levee system, starting near the southern boundary of the city of Stockton and running to the southern boundary of the city of Manteca, and could be constructed as early as 2016.

River Islands at Lathrop, Phase 2B

Phase 2B of the River Islands at Lathrop project involves the construction of a large-scale, mixed-use development, as well as open space and recreational amenities, and habitat restoration and enhancement areas on Stewart Tract in San Joaquin County. USACE released a draft EIS on October 24, 2014, and the project includes Section 408 permission for modifications to Federal project levees that include setback levees, enlargement of existing levees, and channel enlargement for flood protection. The project is anticipated to start construction in 2016.

4.2.3.2 Relevant Land Use Plans

Relevant land use plans are included to assess reasonably foreseeable development actions in the city that may affect the same resources as the Smith Canal Gate project or provide for the restoration, preservation, or enhancement of those resources.

The Delta Plan

The Delta Plan has been developed by the Delta Stewardship Council (DSC), and is a legally enforceable comprehensive management plan designed to meet the two co-equal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The Delta Plan generally covers five topic areas and goals: increased water supply reliability, restoration of the Delta ecosystem, improved water quality, reduced risks of flooding in the Delta, and protection and enhancement of the Delta. The DSC does not propose constructing, owning, or operating any facilities related to these five topic areas. Rather, the Delta Plan sets forth regulatory policies and recommendations that seek to influence the actions, activities, and projects of cities and counties and state, federal, regional, and local agencies toward meeting the goals in the five topic areas. The Delta Plan could contribute to beneficial cumulative effects by setting forth

regulatory policies and recommendations that influence projects in a manner which would improve water quality, water supply reliability, flood risk–reduction, and increase habitat for fish and wildlife species.

A revised Final Draft Delta Plan was presented to the DSC in September 2012, and the DSC adopted the Delta Plan May 16, 2013. The Plan's regulatory policies became effective on September 1, 2013.

Stockton General Plan 2035

The Stockton General Plan 2035 was adopted on December 11, 2007. The general plan provides guidance on city growth, land use, infrastructure, and planning within the city of Stockton.

San Joaquin County General Plan Update

The San Joaquin County General Plan 2010 was adopted on July 29, 1992. The general plan provides guidance for future growth in a manner that preserves the county's natural and rural assets. Most of the urban growth is directed to existing urban communities.

In June 2008, San Joaquin County began the process to update the 1992 general plan. The general plan update will provide the blueprint for growth in the county unincorporated areas through 2030.

4.2.3.3 City of Stockton Development Projects

Crystal Bay Residential Project

Crystal Bay is a planned residential community development in northwest Stockton that includes park and open space amenities, and is located next to Bishop Cut. The project site is bounded by Eight Mile Road to the north, Bishop Cut and Rio Blanco Road to the west, and abutting the Westlake at Spanos Park West to the south and east. A Final EIR was released in March of 2008, and the project was approved by the Stockton City Council on April 29, 2008.

Delta Cove Project

Delta Cove is a planned residential development in northwest Stockton, and is bounded by Bear Creek to the north, Mosher Slough to the south, and Trinity Parkway to the east. A Final EIR was released in October of 2008, and the project was approved by the Stockton City Council on October 19, 2010.

Sanctuary Master Development Plan

Sanctuary is a Master Development Plan on Shima Tract in northwest Stockton, and is bounded by Bear Creek, Mosher Slough, and Disappointment Slough to the north, Fourteen Mile Slough to the west, City of Stockton to the east, and Fourteen Mile Slough and Five Mile Slough to the south. A Final EIR for the plan was released in September of 2008, and the Stockton City Council approved the plan on November 18, 2008.

4.2.3.4 Projects Affecting Fish and Wildlife that Use the Project Area

Bay Delta Conservation Plan

The BDCP is a plan proposed by DWR to make necessary physical and operational improvements to the SWP system in the Delta to restore and protect ecosystem health, water supplies of the SWP and CVP south-of-Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations. The plan will identify and implement more ecologically friendly ways to move fresh water through or around the Delta; address toxic pollutants, invasive species, and impairments to water quality; and provide a framework and funding to implement the plan over time.

Alternatives being evaluated under the BDCP include conveyance options consisting of different infrastructure components and operational scenarios. At this time, no conveyance options are proposed within the Smith Canal project area. The final plan and the final EIS/EIR are expected to be complete in 2015.

San Joaquin River Restoration Program

The San Joaquin River Restoration Program is a comprehensive long-term effort to restore flows to the San Joaquin River from Friant Dam to the confluence of Merced River and restore a self-sustaining Chinook salmon fishery in the river while reducing or avoiding adverse water supply impacts from restoration flows. The restoration program is the product of more than 18 years of litigation, which culminated in a Stipulation of Settlement on the lawsuit known as NRDC, et al., v. Kirk Rodgers, et al. The settling parties reached agreement on the terms and conditions of the settlement, which was subsequently approved by Federal Court on October 23, 2006. The settling parties include the Natural Resources Defense Council, Friant Water Users Authority, and the U.S. Departments of the Interior and Commerce. The settlement's two primary goals are as follows.

- Restore and maintain fish populations in "good condition" in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish.
- Reduce or avoid adverse water supply impacts to all of the Friant Division long-term contractors that may result from the Interim Flows and Restoration Flows provided for in the settlement.

The settlement requires specific releases of water from Friant Dam to the confluence of the Merced River, which are designed primarily to meet the various life stage needs for spring- and fall-run Chinook salmon. The release schedule assumes continuation of the current average Friant Dam release of 116,741 acre-feet, with additional flow requirements depending on the year type. Interim flows began in October, 2009, and full restoration flows would begin no later than January 2014. Salmon will be reintroduced in the upper reaches no later than December 31, 2012. There are many physical improvements within and near the San Joaquin River that will be undertaken to fully achieve the river restoration goal. The improvements will occur in two separate phases that will focus on a combination of water releases from Friant Dam, as well as structural and channel improvements.

The project was authorized and funded with the passage of San Joaquin River Restoration Settlement Act, part of the Omnibus Public Land Management Act of 2009 (Public Law 111-11).

Egeria Densa Control Program

The Egeria Densa Control Program (EDCP) is part of the Department of Boating and Waterways' (DBW) Aquatic Pest Control Program. Cal Boating has operated the EDCP in the Sacramento-San Joaquin Delta, and its tributaries, since program inception in 2001. The program was developed in order to respond to 1997 State legislation (Rainey, AB 2193), authorizing the program. A Final EIR was published for the program in 2001. A second addendum to the 2001 EIR was published in January 2006, with 5-year program review and future operations plan. In June 2007, the National Marine Fisheries Service (NMFS) analyzed the potential effects of continued implementation of the EDCP on listed salmonids and green sturgeon and issued a Biological Opinion continuation of the program for 5 years (2007 through 2011). A Biological Opinion from USFWS and an additional Biological Opinion from NMFS were issued for the program in May of 2013.

The program includes treatment with herbicides, environmental monitoring, regulatory compliance, and surveillance.

Water Hyacinth Control Program

The Water Hyacinth Control Program is part of the California Department of Parks and Recreation, Division of Boating and Waterways' (DBW) Aquatic Pest Control Program. DBW has operated the Water Hyacinth Control Program in the Sacramento-San Joaquin Delta and its tributaries, including Smith Canal, since program inception. In 1982, state legislation made DBW the lead agency for the control of water hyacinth in the Sacramento-San Joaquin Delta, its tributaries and the Suisun Marsh. The initial control plan used both short- and-long term methods that involved chemical, mechanical, and biological control measures. While the primary and most successful control measure has been chemical spraying, DBW has increased its use of mechanical removal systems. Permits for the program were obtained in 2001.

DBW published a Draft Programmatic Environmental Impact Report on September 10, 2009. The proposed selected alternative is continuation of the program.

Ecosystem Restoration Program

The Ecosystem Restoration Program (ERP) is a multi-agency effort aimed at improving and increasing aquatic and terrestrial habitats and ecological functions in the Delta and its tributaries. The ERP Focus Area includes the Delta, Suisun Bay, the Sacramento River below Shasta Dam, the San Joaquin River below the confluence with the Merced River, and other major tributary watersheds directly connected to the Bay–Delta ecosystem below major dams and reservoirs. Principle participants overseeing ERP are CDFW, USFWS, and NMFS, collectively known as the ERP Implementing Agencies.

The goals of the ERP are as follows.

- Recover endangered and other at-risk species and native biotic communities;
- Rehabilitate ecological processes;
- Maintain or enhance harvested species populations;
- Protect and restore habitats;
- Prevent the establishment of and reduce impacts from non-native invasive species; and

- Improve or maintain water and sediment quality.

ERP actions contribute to cumulative benefits on fish and wildlife species, habitats, and ecological processes.

Invasive Species Program

The Invasive Species Program participates on efforts to prevent the introduction of non-native invasive species in California, detect and respond to introductions when they occur, and prevent the spread of non-native invasive species that have become established. Program activities include development of the California Aquatic Invasive Species Management Plan, the Marine Invasive Species Monitoring Program, and informational and education activities for quagga/zebra mussels, New Zealand mudsnails, northern pike, and dwarf eelgrass.

California Aquatic Invasive Species Management Plan

The California Aquatic Invasive Species Management Plan (CAISMP) was released in January 2008. The plan's overall goal is to identify the steps that need to be taken to minimize the harmful ecological, economic, and human health impacts of aquatic invasive species in California. This plan provides the state's first comprehensive, coordinated effort to prevent new invasions, minimize impacts from established aquatic invasive species and establish priorities for action statewide. In addition, it proposes a process for annual plan evaluation and improvement so that aquatic invasive species can continue to be managed in the most efficient manner in the future. Eight major objectives and 163 actions were identified in the CAISMP.

San Francisco Bay to Stockton Deep Water Ship Channel Project

The San Francisco Bay to Stockton DWSC Project is a congressionally authorized project being implemented by USACE, the Port of Stockton, and Contra Costa County Water Agency. A joint EIS/EIR will evaluate the action of navigational improvements to the Stockton DWSC. A General Reevaluation Report is being prepared to determine the feasibility of modifying the current dimensions of the West Richmond, Pinole Shoal, Suisun Bay, and Stockton Ship Channels, which are currently maintained to 35 feet and provide access to oil terminals, industry in Pittsburg, and the Port of Stockton. The proposed action consists of altering the depth of the deep draft navigation route.

Stockton Deep Water Ship Channel Demonstration Dissolved Oxygen Project

The Stockton DWSC Demonstration Dissolved Oxygen Project is a multiple-year study of the effectiveness of elevating dissolved oxygen (DO) concentrations in the channel. DO concentrations drop as low as 2 to 3 milligrams per liter (mg/L) during warmer and lower water flow periods in the San Joaquin River. The low DO levels can adversely affect aquatic life including the health and migration behavior of anadromous fish (e.g., salmon). The objective of the study is to maintain DO levels above the minimum recommended levels specified in the State of California Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River basins. The Basin Plan water quality objectives for DO are 6.0 mg/l in the San Joaquin River (between Turner Cut and Stockton, 1 September through 30 November) and 5.0 mg/l the remainder of the year.

The project's full-scale aeration system includes two 200-foot-deep u-tube aeration tubes; two vertical turbine pumps capable of pumping over 11,000 gallons of water each; a liquid-to-gas oxygen

supply system; and numerous pieces of ancillary equipment and control systems. The system has been sized to deliver approximately 10,000 pounds of oxygen per day into the Stockton DWSC. The aeration system is anticipated to be operated only when channel DO levels are below the Basin Plan DO water quality objectives (approximately 100 days per year). The project study includes an ongoing assessment of DO levels in the channel and vicinity and a study of potential adverse effects of low DO on salmon.

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

Permitted in 2000, the key purpose of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (Plan) is to provide a strategy for balancing the need to conserve open space and the need to convert open space to non-open space uses. These goals are intended to be met while protecting the region's agricultural economy; preserving landowner property rights; providing for the long-term management of plant, fish and wildlife species, especially those that are currently listed, or may be listed in the future, under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA); providing and maintaining multiple-use open spaces that contribute to the quality of life of the residents of San Joaquin County; and accommodating a growing population while minimizing costs to project proponents and society at large.

The conservation strategy relies on minimizing, avoiding, and mitigating impacts on the species covered by the Plan. Minimization of impacts on covered species takes a species-based approach emphasizing the implementation of measures to minimize incidental take by averting the actual killing or injury of individual covered species and minimizing impacts to habitat for such species on open space lands converted to non-open space uses. Unavoidable impacts to covered species are addressed through a habitat-based approach that emphasizes compensation for habitat losses through the establishment, enhancement and management-in-perpetuity of preserves composed of a specific vegetation types or association of vegetation types (habitats) upon which discrete groups of covered species rely. The purchase of easements from landowners willing to sell urban development rights is the primary method for acquiring preserves. The Plan identifies zones distinguished by a discrete association of soil types, water regimes (e.g., Delta lands subject to tidal influence, irrigated lands, lands receiving only natural rainfall), elevation, topography and vegetation types. In general, impacts within a particular zone are mitigated within the same zone.

Emergency Drought Barriers Project

DWR's Emergency Drought Barriers Project involves the construction of temporary barriers in the Sacramento-San Joaquin Delta that are designed to prevent salinity intrusion into freshwater areas of the Delta. The project would install a rock barrier across West False River in early May of 2015 and would be removed six months later to avoid the flood season and harm to migratory fish. The project includes long-term programmatic permits that enable DWR to install emergency drought barriers up to three times over 10 years, under the direction of state and Federal agencies, if needed due to extreme drought conditions.

4.2.3.5 Other Projects

Interstate 5 Rehabilitation Project

The Interstate 5 (I-5) Rehabilitation Project is an ongoing Caltrans project that includes repairs and improvements to several sections of I-5 in the City of Stockton. The project started in May of 2013

and is expected to continue through fall of 2015. The purpose of the project is to extend the life of the roadway by up to 40 years.

Bridge Projects

The City of Stockton and City of Lathrop have several bridges either proposed or under construction. A list of these bridge projects is provided below.

- Manthey Road Bridge
- Bacon Island Road Bridge
- Sutter Street Pedestrian and Bicycle Bridge Project
- Bridge Scour Countermeasure at McKinley Avenue and French Camp Slough
- Eight Mile Road Bridge across Bishop Cut

4.2.4 Cumulative Effects by Resource

The following section describes the potential contribution to cumulative effects on each resource.

4.2.4.1 Flood Risk Management and Geomorphic Conditions

Implementation of the project is not expected to contribute to significant cumulative effects on flood risk management or geomorphic conditions

The potential for the project to cause local sedimentation or erosion is caused by project modification to local hydrodynamics under all three proposed alternatives. However, these impacts would occur locally within Atherton Cove and Smith Canal. There are no known plans for other construction projects in the area that would cause additional changes to local sedimentation and erosion patterns. Project impacts to flood risk management are primarily beneficial. No cumulative effects related to an increase in flood risk by confining local stormwater runoff are expected because the Smith Canal drainage area is almost completely developed, so no future projects are expected to increase the amount of local runoff that might have to be retained behind the dual sheet pile wall and flood gate(s). There is some chance that the pumping stations that move water from surface streets to Smith Canal would be upgraded. If so, this would need to be considered in the gate operation plan, but it would not cause a cumulatively significant impact.

4.2.4.2 Water Quality and Groundwater Resources

The project is not expected to contribute to a significant cumulative impact on water quality or groundwater resources.

In general, most relevant recent or future projects would improve water quality. For example, increases in flow associated with the San Joaquin River restoration program and actions associated with the Stockton DWSC TMDL for low DO (e.g., a new nitrification system at the City of Stockton wastewater treatment facility) help increase DO levels in the Stockton DWSC. DBW has a water hyacinth control program, which could help to reduce the water hyacinth impact. This program utilizes herbicide (also a water quality concern), but DBW conducts a water quality monitoring program that demonstrates that their control program meets water quality standards for herbicide applications.

Some development projects have the potential to increase inflow of poor quality water to the Delta by increasing storm water and irrigation runoff from pavement, roofs, and lawns. However, because none of the proposed Smith Canal project alternatives would be altering the amount of urban or suburban runoff, the project would not contribute to a cumulative water quality impact.

Some construction projects (e.g., bridge improvements) in the Delta have the potential to temporarily affect water quality in the same manner that the Smith Canal project could temporarily affect water quality, which could potentially result in a cumulative impact. However, because no known construction projects would occur at the same time and location than the Smith Canal project, there would be no cumulative impact for construction-related water quality impacts. The project would, therefore, not result in a significant cumulative impact.

4.2.4.3 Transportation and Navigation

The project is not expected to contribute to a significant cumulative impact on transportation or navigation.

A review of City, County, Port of Stockton, and Caltrans websites for reasonably foreseeable future projects revealed one ongoing project in the project area, which is the I-5 Rehabilitation Project. The I-5 Rehabilitation Project is scheduled to be completed in 2015, prior to the start of this project. No other on-going or developmental projects are identified at this time along state highways or within the City of Stockton or San Joaquin County.

As project construction would be temporary, the project impacts to the transportation and navigation would cease once the project has been constructed. The project, in combination with the I-5 Rehabilitation Project which is scheduled to be completed in 2015, prior to the start of this project, would have no considerable contribution to cumulative impact on transportation and navigation in the project area under any of the proposed project alternatives. Therefore, there would be no cumulative impacts on transportation and navigation.

4.2.4.4 Air Quality

The project is not expected to contribute to cumulative air quality impacts.

The San Joaquin Valley Air Pollution Control District (SJVAPCD) has identified project-level thresholds to evaluate impacts on air quality (see Section 3.4, *Air Quality*, Section 3.4.2.2, *Thresholds of Significance*). In developing these thresholds, the air district considered levels at which project emissions would be cumulatively considerable. For example, as noted in the SJVAPCD's 2015 GAMAQI, "any proposed development project that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact." Although the project is not a development project, this statement is interpreted as being applicable to the proposed project. A development project would generate long-term emissions over its operational lifetime; construction-related emissions (such as those associated with the proposed project) would be far less than those associated with a long-term development project.

The criteria pollutant thresholds presented in Section 3.4.2.2, *Thresholds of Significance,* represent the maximum emissions the project may generate before contributing to a cumulative impact on regional air quality, as determined by the SJVAPCD. Therefore, exceedances of the project-level thresholds would be cumulatively considerable. As discussed in Impact AQ-1 under all three proposed alternatives, with implementation of mitigation measures AQ-MM-1b and AQ-MM-1c,

construction emissions associated with the project are not expected to exceed the SJVAPCD's quantitative thresholds. Consequently, the project's incremental contribution is not cumulatively considerable.

4.2.4.5 Greenhouse Gases and Climate Change

The project is not expected to contribute to cumulative impacts on greenhouse gases and climate change.

In accordance with scientific consensus regarding the cumulative nature of GHGs, the analysis provides a cumulative evaluation of GHG emissions. Unlike traditional cumulative impact assessments, this analysis is still project-specific in that it only evaluates direct emissions generated by the project; given the global nature of climate change, the analysis does not include emissions from past, present, and reasonably foreseeable projects in the project area.

As discussed in Section 3.5, *Greenhouse Gases and Climate Change*, Section 3.5.5.2, GHG impacts are inherently cumulative. Accordingly, because implementation of the project would not exceed the San Joaquin Valley Air Pollution Control District's GHG threshold under all three proposed alternatives, it would not result in a cumulatively considerable impact on GHGs or climate change.

4.2.4.6 Noise

The project is not expected to contribute to significant cumulative noise and vibration impacts.

Some construction projects (e.g., bridge improvements) in the Delta have the potential to temporarily increase noise levels in the area. However, present and reasonably foreseeable construction projects would occur at a different time and location than the Smith Canal Gate Project. Construction noise would be temporary and highly localized, and implementation of any of the project alternatives is not anticipated to contribute to significant cumulative noise effects and groundborne vibration levels in the project area.

4.2.4.7 Vegetation and Wetlands

The project is not expected to contribute to a significant cumulative impact on vegetation and wetlands.

Reasonably foreseeable future projects in the city of Stockton and the surrounding region in San Joaquin County include a number of bridge construction projects that have or will affect riparian habitat, tidal emergent wetlands, tidal perennial drainages, and native oak trees; could affect special-status plants; and would potentially spread invasive plant species. These bridge locations cross various Sacramento–San Joaquin Delta drainages, including San Joaquin River at Manthey Road, Middle River at Bacon Island Road, Calaveras River at Sutter Street, French Camp Slough at Sperry Road and McKinley Avenue, and Bishop Cut at Eight Mile Road. Regionally, any losses of riparian habitat, tidal emergent wetlands, and tidal perennial drainages as a result of project construction are cumulatively significant because of the current scarcity of these habitats in comparison with their historical extent, the importance of these habitats to wildlife, the potential habitat they provide for special-status plants and animals, and their role in maintaining water quality. Losses of native oaks and special-status plants could be cumulatively significant due to the scarcity of these species in comparison with their historical extent. The spread of invasive species

could be cumulatively significant due to the increasing spread of invasive plants and the resulting adverse effects on the quality of riparian habitat and persistence of native species.

The No Project Alternative would have no impacts on riparian habitat, tidal emergent wetlands, tidal perennial drainages, special-status plants, or invasive plants and therefore, would not have cumulatively considerable impacts on these resources.

Alternative 1 would have impacts on riparian habitat, tidal emergent wetlands, tidal perennial drainages, and native oaks, could potentially have impacts on special-status plants, and could introduce new or spread existing invasive plant species. Without project-specific mitigation, the losses of the sensitive resources and spread of invasive species would contribute to the cumulative impacts on these resources. However, with implementation of the proposed mitigation measures, which would result in no net loss of the sensitive resources and their functions, the incremental contribution of Alternative 1 to impacts on riparian habitat, tidal emergent wetlands, tidal perennial drainages, native oaks, and special-status plants would not be cumulatively considerable. Proposed mitigation for reducing the threat of introducing and spreading invasive plant species would prevent this alternative from having a cumulatively considerable impact with respect to invasive plants.

Alternative 2 would have greater impacts than Alternative 1 on tidal perennial drainage and similar impacts on riparian habitat, native oaks, and special-status plants. Alternative 2 would avoid impacts on tidal emergent wetland. Without project-specific mitigation, the losses of riparian habitat, tidal perennial drainage, and native oaks, and the potential loss of special-status plants would contribute to the cumulative impacts on these resources. However, with implementation of the proposed mitigation measures, which would result in no net loss of the resources and their functions, the incremental contribution of Alternative 2 to impacts on riparian habitat, tidal perennial drainages, native oaks, and special-status plants would not be cumulatively considerable. Proposed mitigation for reducing the threat of introducing and spreading invasive plant species would prevent this alternative from having a cumulatively considerable impact with respect to invasive plants.

Alternative 3 would have slightly smaller impacts than Alternative 1 on tidal perennial drainage, slightly greater impacts on native oaks, and similar impacts on riparian habitat and special-status plants. Alternative 3 would avoid impacts on tidal emergent wetland. Without project-specific mitigation, the losses of riparian habitat, tidal perennial drainage, and native oaks, and the potential loss of special-status plants would contribute to the cumulative impacts on these resources. However, with implementation of the proposed mitigation measures, which would result in no net loss of the resources and their functions, the incremental contribution of Alternative 3 to impacts on riparian habitat, tidal perennial drainages, native oaks, and special-status plants would not be cumulatively considerable. Proposed mitigation for reducing the threat of introducing and spreading invasive plant species would prevent this alternative from having a cumulatively considerable impact with respect to invasive plants.

Other existing and reasonably foreseeable projects in the county have the potential to contribute to the cumulative loss of riparian habitat, wetlands and other waters of the United States, native trees, and special-status plants. To fully address the cumulative effect on these resources, other local agencies would need to require and implement mitigation to protect and restore riparian habitat, wetlands and other waters of the United States, native trees, and special-status plants affected by other existing and reasonably foreseeable projects in the project region.

4.2.4.8 Fish and Aquatic Resources

The project is not expected to contribute to a significant cumulative impact on fish resources and aquatic habitat.

The project alternatives would result in construction-related temporary affects to aquatic habitat and the potential for construction-related degradation of fish habitat as a result of sedimentation and turbidity, accidental release of contaminants, or other disturbances. However, the project's contribution to these cumulative effects is temporary and minimized by implementing a SWPPP, limiting construction activities to times when species are not present; and re-seeding and restoring temporarily affected habitat to pre-project conditions. Because the aquatic habitat is disturbed by existing boat traffic and docks, postproject conditions are not expected to be worse and would not contribute to cumulative impacts.

4.2.4.9 Wildlife

The project is not expected to contribute to a significant cumulative impact on wildlife.

The No Project Alternative would have no impacts on wildlife resources or special-status wildlife and therefore, would not have cumulatively considerable impacts on these resources.

Alternative 1 would have impacts on riparian habitat, tidal emergent wetlands, tidal perennial drainages, and native oaks, and could potentially have impacts on special-status wildlife. Without project-specific mitigation, the losses of the sensitive resources would contribute to the cumulative impacts on these resources. However, with implementation of the proposed mitigation measures, which would result in no net loss of the sensitive resources and their functions, the incremental contribution of Alternative 1 to impacts on riparian habitat, tidal emergent wetlands, tidal perennial drainages, native oaks, and special-status wildlife would not be cumulatively considerable.

Alternative 2 would have greater impacts than Alternative 1 on tidal perennial drainage and similar impacts on riparian habitat, native oaks, and special-status plants. Alternative 2 would avoid impacts on tidal emergent wetland. Without project-specific mitigation, the losses of riparian habitat, tidal perennial drainage, and native oaks, and the potential loss of special-status wildlife would contribute to the cumulative impacts on these resources. However, with implementation of the proposed mitigation measures, which would result in no net loss of the resources and their functions, the incremental contribution of Alternative 2 to impacts on riparian habitat, tidal perennial drainages, native oaks, and special-status wildlife would not be cumulatively considerable.

Alternative 3 would have slightly smaller impacts than Alternative 1 on tidal perennial drainage, slightly greater impacts on native oaks, and similar impacts on riparian habitat and special-status wildlife. Alternative 3 would avoid impacts on tidal emergent wetland. Without project-specific mitigation, the losses of riparian habitat, tidal perennial drainage, and native oaks, and the potential loss of special-status wildlife would contribute to the cumulative impacts on these resources. However, with implementation of the proposed mitigation measures, which would result in no net loss of the resources and their functions, the incremental contribution of Alternative 3 to impacts on riparian habitat, tidal perennial drainages, native oaks, and special-status wildlife would not be cumulatively considerable.

4.2.4.10 Visual Resources

The project may contribute to a significant cumulative impact on visual resources.

The project would result in temporary changes in the visual quality of construction areas and access routes as a result of construction activities and equipment in areas that do not normally include construction-associated views under all three proposed alternatives. This effect may contribute to a significant cumulative impact on visual resources because of the potential to compound viewer response when factoring this project with other large-scale flood and water control projects that could occur in the region. The increasing number of such projects is likely to result in negative public opinion, and thus negative viewer response, to the amount of large-scale projects being constructed and affecting local waterways and private properties that are highly valued.

The proposed project and two alternatives would have adverse cumulative impacts in conjunction with existing and proposed flood and drought control and water supply projects. Flood control projects primarily consist of levee projects that require that levee slopes be maintained free of woody vegetation in perpetuity, resulting in the loss of a highly valued regional aesthetic landscape component. The mature vegetation along the levees is characteristic of the region and is a striking, distinctive element in the landscape. The existing vegetation that is removed would be replaced with herbaceous vegetation and, often, rock revetment. Maintaining the levees devoid of the characteristic riparian vegetation and mature landscaping and replacing it with grass and potentially rock would highly degrade the visual character and quality of the area and increase glare. Projects in the area would combine to slowly transform the vegetated waterways to channel-like water conveyances. This would lead to the eventual denuding of the waterway and be a severe effect on the visual environment.

Emergency drought barrier projects, such as the proposed rock barrier across False River, would introduce temporary barriers that are 7 to 9.5 feet tall that would be installed and removed yearly, as needed (AECOM 2015). This would restrict physical and visual access at affected locations and introduce large visual barriers across Delta waterways, increasing glare and degrading the existing visual character and viewer experience while in place.

Water supply projects, such as the Bay-Delta Conservation Plan (BDCP), would introduce large-scale industrial features across waterways and along shorelines in the Delta at various locations, depending on the alternative (Bay-Delta Conservation Plan 2015). While the project would also include habitat conservation and restoration measures, it would also result in large landform alterations and large areas of vegetation removal that would be replaced with industrial looking intake facilities or operable barriers. This would greatly alter the existing visual character at a number of locations within the Delta and would introduce large, industrial looking on-bank structures and visual barriers across Delta waterways that would substantially increase glare and degrade the existing visual character and negatively affect viewer experience.

Therefore, visual impacts associated with construction and operation of the proposed project would be cumulatively considerable, and would be similar under all three proposed alternatives.

4.2.4.11 Recreation

The project is not expected to contribute to a significant cumulative impact on recreation.

Past, present, and reasonably foreseeable future projects, specifically Stockton area development projects may involve such actions as annexing project sites and adjoining areas into the City of

Stockton, amending the Stockton General Plan, pre-zoning, approval of residential development, and the establishment of open spaces. Such changes could result in increasing the residential population in the project vicinity that might utilize the City and County public parks and other public recreational facilities (e.g., boat launches). This could result in exceeding service ratios or other performance objectives for parks, accelerated physical deterioration of other recreational facilities, or limited availability of such facilities. However, none of the Smith Canal project alternatives would result in any of these effects. The Smith Canal project would contribute to waterway congestion for boating in the project area, possible parking limitations, and boat launch access restrictions. No relevant past, present, or reasonably foreseeable future projects have similar effects. Therefore, the incremental contribution of Alternatives 1, 2, and 3 of the proposed project to impacts on recreation would not be cumulatively considerable.

4.2.4.12 Utilities and Public Resources

The project is not expected to contribute to a significant cumulative impact on utilities and public services.

There are no reasonably foreseeable future projects that could result in a cumulative impact on utilities and public services in the project area under any of the three proposed alternatives, including the unincorporated Country Club neighborhood and areas north of Smith Canal. Review of city and county websites revealed that there no foreseeable projects in the project area, and that the proposed project would have no considerable contribution to cumulative impact on utilities and public services. Therefore, there would be no cumulative impacts on utilities and public services.

4.2.4.13 Public Health and Environmental Hazards

The project is not expected to contribute to a significant cumulative impact on public health or result in environmental hazards.

The project combined with foreseeable future projects that would not result in a cumulative impact on public health and environmental hazards under any of the three proposed alternatives. The geographic context of projects considered included the unincorporated Country Club neighborhood and areas south of Smith Canal. Review of City, County and Port of Stockton websites revealed that there no projects in the project area, and that the proposed project would have no considerable contribution to cumulative impact on public health and environmental hazards. Therefore, there would be no cumulative impacts on public health and environmental hazards.

4.2.4.14 Cultural Resources

The project is not expected to contribute to a significant cumulative impact on cultural resources.

The project combined with reasonably foreseeable future projects that would not result in a cumulative impact on cultural resources. The cumulative analysis considered impacts on three historical resources—the DWSC, Smith Canal, and Pixie Woods amusement park—as implemented in Alternatives 1, 2, and 3. Since no other cumulative projects with potential to affect cultural resources were identified, there would be no cumulative impact on these historical resources to which the project would contribute. Though the possibility remains that the project and its alternatives, could result in impacts on unidentified archaeological material or human remains, project compliance with CEQA, including identified mitigation measures, would reduce project-level impacts to a less-than-significant level. Because no significant impact on archaeological historical

resources or human remains would result from implementation of the project, the project would not contribute to an overall cumulative impact on these resource types.

Chapter 5
Regulatory Framework and Compliance

To supplement the regulatory information in the resource chapters of this draft environmental impact report (Draft EIR), this chapter provides preliminary information on the major requirements for permitting and environmental review for implementation of the project. Certain local, state, and Federal regulations require issuance of permits before project implementation; other regulations require agency consultation but may not require issuance of any authorization or entitlements before project implementation.

5.1 Federal

5.1.1 Clean Air Act

The Clean Air Act (CAA) was first enacted in 1963 and has been amended numerous times in subsequent years (1965, 1967, 1970, 1977, and 1990). The CAA establishes Federal air quality standards, known as National Ambient Air Quality Standards (NAAQS), and specifies future dates for achieving compliance. The CAA also mandates that the state submit and implement a State Implementation Plan (SIP) for local areas that fail to meet those standards. The plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA identify specific emissions reduction goals for areas that fail to meet the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. The sections of the CAA that would most substantially affect development of the project include Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions).

Table 5-1 shows the NAAQS that are currently in effect for each criteria pollutant. The California Ambient Air Quality Standards (CAAQS) are also provided for reference.

Table 5-1. Federal and State Ambient Air Quality Standards

			National Standards[a]	
Criteria Pollutant	Average Time	California Standards	Primary	Secondary
Ozone	1 hour	0.09 ppm	None[b]	None[b]
	8 hours	0.070 ppm	0.075 ppm	0.075 ppm
Particulate Matter (PM10)	24 hours	50 μg/m^3	150 μg/m^3	150 μg/m^3
	Annual mean	20 μg/m^3	None	None
Fine Particulate Matter (PM2.5)	24 hours	None	35 μg/m^3	35 μg/m^3
	Annual mean	12 μg/m^3	12.0 μg/m^3	15 μg/m^3
Carbon Monoxide	8 hours	9.0 ppm	9 ppm	None
	1 hour	20 ppm	35 ppm	None
Nitrogen Dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1 hour	0.18 ppm	0.100 ppm	None

Criteria Pollutant	Average Time	California Standards	National Standards[a] Primary	National Standards[a] Secondary
Sulfur Dioxide[c]	Annual mean	None	0.030 ppm	None
	24 hours	0.04 ppm	0.014 ppm	None
	3 hours	None	None	0.5 ppm
	1 hour	0.25 ppm	0.075 ppm	None
Lead	30-day average	1.5 μg/m^3	None	None
	Calendar quarter	None	1.5 μg/m^3	1.5 μg/m^3
	3-month average	None	0.15 μg/m^3	0.15 μg/m^3
Sulfates	24 hours	25 μg/m^3	None	None
Visibility-Reducing Particles	8 hours	—[d]	None	None
Hydrogen Sulfide	1 hour	0.03 ppm	None	None
Vinyl Chloride	24 hours	0.01 ppm	None	None

Source: California Air Resources Board 2013.

ppm = parts per million.

μg/m^3 = micrograms per cubic meter.

[a] National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.

[b] The Federal 1-hour standard of 12 parts per hundred million was in effect from 1979 through June 15, 2005. The revoked standard is referenced because it was employed for such a long period and is a benchmark for State Implementation Plans.

[c] The annual and 24-hour NAAQS for SO_2 apply only for 1 year after designation of the new 1-hour standard to those areas that were previously in nonattainment for 24-hour and annual NAAQS.

[d] The CAAQS for visibility-reducing particles are defined by an extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more due to particles when relative humidity is less than 70%.

5.1.2 Clean Water Act

The CWA is administered by the U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE). The State Water Resources Control Board (State Water Board) is the state agency with primary responsibility for implementing the Federal Clean Water Act (CWA) in California, which establishes regulations relating to water resource issues.

5.1.2.1 Section 303: Impaired Waters

Section 303 requires states to develop lists of water quality–limited segments of waters that do not meet water quality standards, and EPA approves each state's impaired waters list (which, in California, is developed by the State Water Board). Section 303(d) also establishes the total maximum daily load (TMDL) process to improve water quality in listed waterways.

5.1.2.2 Section 401: Water Quality Certification

Under CWA Section 401, applicants for a Federal license or permit to conduct activities that might result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water

pollution control agency with jurisdiction over affected waters at the point where the discharge would originate.

5.1.2.3 Section 402: Permits for Discharge to Surface Waters

CWA Section 402 regulates discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, administered by EPA.

Construction Activities

Most construction activities that disturb 1 acre of land or more are required to obtain coverage under the NPDES General Permit for Construction Activities (General Construction Permit) (Order No. 2009-0009-DWQ), which requires the applicant to file an Notice of Intent (NOI) to discharge stormwater and to prepare and implement a stormwater pollution prevention plan (SWPPP).

Dewatering Activities

While small amounts of construction-related dewatering are covered under the General Construction Permit, the Regional Water Board also has adopted a General Order for Dewatering and Other Low Threat Discharges to Surface Waters (General Dewatering Permit) (General Permit Order No. R5-2008-0081).

5.1.2.4 Section 404: Permits for Fill Placement in Waters and Wetlands

Section 404 of the CWA requires that a permit be obtained from USACE for the discharge of dredged or fill material into "waters of the United States, including wetlands."

5.1.3 National Flood Insurance Program

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 were intended to reduce the need for large, publicly funded flood risk management structures and disaster relief by restricting development on floodplains. The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to subsidize flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA issues Flood Insurance Rate Maps (FIRMs) for communities participating in the NFIP. These maps delineate flood hazard zones in the community. These maps are designed for flood insurance purposes only and do not necessarily show all areas subject to flooding. The maps designate lands likely to be inundated during a 100-year flood event and elevations of this flooding. They also depict areas between the limits affected by 100-year and 500-year flood events and areas of minimal flooding.

5.1.4 U.S. Army Corps of Engineers Levee Design Criteria

Structures included in the project area are Federally authorized and fall within the jurisdiction of USACE. The evaluation for the project area conforms to the engineering criteria established by USACE for the assessment and repair of flood risk–reduction structures. The technical criteria in the following list of USACE publications should be used as guidance unless noted otherwise.

- *Overtopping of Flood Control Levees and Floodwalls* (Publication ETL 1110-2-299, August 22, 1986).
- *Structural Design of Closure Structures for Local Flood Protection Projects* (Publication EM 1110-2-2705, March 31, 1994).
- *Design of Coastal Revetments, Seawalls, and Bulkheads* (Publication EM 1110-2-1614, June 30, 1995).
- *Design Guidance on Levees* (Publication ETL 1110-2-555, November 30, 1997).
- *Guidelines on Ground Improvement for Structures and Facilities* (Publication ETL 1110-1-185, February 1, 1999).
- *Engineering and Design for Civil Works Projects* (Publication ER 1110-2-1150, August 31, 1999).
- *Design and Construction of Levees* (Publication EM 1110-2-1913, April 30, 2000).
- *Geotechnical Investigations* (Publication EM 1110-1-1804, January 1, 2001).
- *USACE CESPK Levee Task Force, Recommendations for Seepage Design Criteria, Evaluation and Design Practices* (2003).
- *Geotechnical Levee Practice* (Publication SOP EDG-03, June 28, 2004).
- *Engineering and Design—Design Guidance for Levee Underseepage* (Publication ETL 1110-2-569, May 1, 2005).
- *Quality Management* (Publication ER 1110-1-12, September 30, 2006).

5.1.5 Rivers and Harbors Act

The River and Harbors Appropriation Act of 1899 addresses activities that involve the construction of dams, bridges, dikes, and other structures that cross any navigable water; that place obstructions to navigation outside established Federal lines; that use or alter public works; and that excavate from or deposit material in such waters. Such activities require permits from USACE.

5.1.6 Executive Order 11990: Protection of Wetlands

Executive Order (EO) 11990, signed May 24, 1977, directs all Federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately owned wetlands. It further requires that Federal agencies support a policy to minimize the destruction, loss, or degradation of wetlands.

5.1.7 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) of 1958 requires that all Federal agencies consult with the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), and the affected state wildlife agency for activities that affect, control, or modify surface waters, including wetlands and other waters.

5.1.8 Executive Order 13112: Invasive Species

EO 13112, signed February 3, 1999, directs all Federal agencies to prevent and control the introduction of invasive species in a cost-effective and environmentally sound manner. The EO requires consideration of invasive species in National Environmental Policy Act analyses, including their identification and distribution, their potential effects, and measures to prevent or eradicate them.

5.1.9 Endangered Species Act

The Endangered Species Act (ESA) protects fish and wildlife species and their habitats that have been identified by NMFS or FWS as threatened or endangered. *Endangered* refers to species, subspecies, or distinct population segments (DPSs) that are in danger of extinction through all or a significant portion of their range. *Threatened* refers to species, subspecies, or DPSs that are likely to become endangered in the near future.

ESA is administered by FWS and NMFS. In general, NMFS is responsible for protection of ESA-listed marine species and anadromous fish, and FWS is responsible for other listed species. Provisions of Sections 9 and 7 of the ESA are relevant to this project and are summarized below.

5.1.9.1 Section 9: ESA Prohibitions

Section 9 of the ESA prohibits the take of any fish or wildlife species listed under ESA as endangered. Take of threatened species also is prohibited under Section 9, unless otherwise authorized by Federal regulations.[1] *Take*, as defined by the ESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Harm* is defined as "any act that kills or injures the species, including significant habitat modification." In addition, Section 9 prohibits removing, digging up, cutting, and maliciously damaging or destroying Federally listed plants on sites under Federal jurisdiction.

5.1.9.2 Section 7: ESA Authorization Process for Federal Actions

Section 7 of the ESA provides a means for authorizing take of threatened and endangered species by Federal agencies. Under Section 7, the Federal agency conducting, funding, or permitting an action (the lead Federal agency, such as USACE) must consult with NMFS or FWS, as appropriate, to ensure that the proposed project will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat.

5.1.9.3 Critical Habitat

Critical habitat, as defined in ESA Section 3, is the specific area within the geographic area occupied by a species, at the time it is listed in accordance with ESA, on which are found those biological features essential to the conservation of the species, and may require special management considerations or protection; it also includes specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

[1] In some cases, exceptions may be made for threatened species under ESA Section 4(d); in such cases, FWS or NMFS issues a "4(d) rule" describing protections for the threatened species and specifying the circumstances under which take is allowed.

5.1.10 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires all Federal agencies to consult with NMFS regarding all actions or proposed actions permitted, funded, or undertaken that may adversely affect essential fish habitat (EFH). EFH is defined as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

5.1.11 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 United States Code [USC] 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union (now Russia). The MBTA prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase, or barter any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 Code of Federal Regulations [CFR] 21.11). EO 13186 (January 10, 2001) directs each Federal agency taking actions that have or may have a negative effect on migratory bird populations to work with FWS to develop a memorandum of understanding (MOU) that will promote the conservation of migratory bird populations.

5.1.12 Marine Mammal Protection Act

The Marine Mammal Protection Act of 1972 (MMPA) (16 USC 31) is implemented by NMFS and prohibits, with certain exceptions, the take of marine mammals in waters of the United States and by U.S. citizens on the high seas, as well as the importation of marine mammals and marine mammal products into the U.S. Under MMPA, *take* is defined as to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.

5.1.13 Noise Control Act of 1972

The Noise Control Act of 1972 (Public Law 92 574) established a requirement for all Federal agencies to administer their programs in a manner that promotes an environment that is free of noise that jeopardizes public health or welfare. EPA was given the following responsibilities.

- Providing information to the public regarding the identifiable effects of noise on public health and welfare.
- Publishing information on the levels of environmental noise to protect the public health and welfare with an adequate margin of safety.
- Coordinating Federal research and activities related to noise control.
- Establishing Federal noise emission standards for selected products distributed in interstate commerce.

5.1.14 U.S. Environmental Protection Agency Standards for Environmental Noise

In 1974, EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*," a comprehensive document that identifies

noise levels consistent with the protection of public health and welfare against hearing loss, annoyance, and activity interference.

In response to the requirements of the Noise Control Act, EPA identified indoor and outdoor noise limits to protect public health and welfare. Outdoor day-night sound level (L_{dn}) limits of 55 decibels (dB) and indoor L_{dn} limits of 45 dB were identified as desirable for protecting against speech interference and sleep disturbance in residential areas and at educational and health care facilities. The sound-level criterion for protecting against hearing damage in commercial and industrial areas is identified as the 24-hour equivalent sound level (L_{eq}) value of 70 dB (both outdoors and indoors). Based on attitudinal surveys, EPA determined that a 5 dB increase in L_{dn} or L_{eq} is the minimum required for a change in community reaction (U.S. Environmental Protection Agency 1974).

The Noise Control Act also directed Federal agencies to comply with applicable Federal, state, interstate, and local noise control regulations. Although EPA was given a major role in disseminating information to the public and coordinating with Federal agencies, each Federal agency retained authority to adopt noise regulations pertaining to agency programs. EPA can, however, require Federal agencies to justify their noise regulations in terms of Noise Control Act policy requirements.

Key Federal agencies that have adopted noise regulations and standards include those listed below.

- Housing and Urban Development: Noise standards for Federally funded housing projects.
- Federal Aviation Administration: Noise standards for aircraft.
- Federal Highway Administration (FHWA): Noise standards for Federally funded highway projects.
- Federal Transit Administration (FTA): Noise standards for Federally funded transit projects.
- Federal Railroad Administration: Noise standards for Federally funded rail projects.

5.1.15 Federal Highway Administration Standards for Construction Noise

FHWA has developed methods for evaluating construction noise, which are discussed in the *Roadway Noise Construction Model User's Guide* (Federal Highway Administration 2006). FHWA does not recommend specific noise-level criteria for construction activities.

5.1.16 Federal Transit Administration Standards for Construction Noise

FTA has developed methods for evaluating construction noise levels, which are discussed in the FTA Manual (Federal Transit Administration 2006). The FTA Manual does not contain standardized criteria for assessing construction noise impacts but includes guidelines for suggested noise limits for residential uses exposed to construction noise to describe levels that may result in an adverse community reaction. These guidelines are summarized in Table 5-2.

Table 5-2. FTA Construction Noise Impact Guidelines

Land Use	8-hour L_{eq} (dBA), Day	8-hour L_{eq} (dBA), Night
Residential	80	70
Commercial	85	85
Industrial	90	90

Source: Federal Transit Administration 2006.

Thresholds for construction noise may be set at the local level according to expected hours of equipment operation and the noise limits specified in the noise ordinances of the applicable jurisdictions.

5.1.16.1 Potential Damage to Fragile Buildings

Construction activity can result in varying degrees of ground vibration depending on the equipment and method used. Equipment such as air compressors, light trucks, and hydraulic loaders generate little or no ground vibration. Pile drivers, vibratory compactors, and demolition equipment have the potential to generate substantial vibration, which may present a concern if close to buildings (Federal Transit Administration 2006).

Dynamic construction equipment, such as pile drivers, can create vibrations that radiate along the surface and downward into the earth. These surface waves can be felt as groundborne vibration. Vibration can result in effects ranging from annoying people to damaging structures. Variations in geology and distance result in different vibration levels comprising different frequencies and displacements. In all cases, vibration amplitudes will decrease with increasing distance from the vibration source.

As vibration waves travel outward from a source, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second) at which these particles move is the commonly accepted definition of the vibration amplitude, referred to as the peak particle velocity (PPV).

FTA analysis guidelines call for an investigation of the potential for vibration-induced damage to "fragile" or "extremely fragile" buildings (Federal Transit Administration 2006). The criteria for acceptable groundborne vibration are based on the maximum levels for a single event (L_{max}) and expressed in terms of root-mean square (RMS) velocity levels. Damage to a building is possible (but not necessarily probable) if groundborne vibration levels exceed the following criteria.

- A 0.20-inch-per-second PPV (approximately 100 vibration decibels [VdB]) for non-engineered timber and masonry buildings.
- A 0.12-inch-per-second PPV (approximately 95 VdB) for buildings that are extremely susceptible to vibration damage.

5.1.17 Boating Law Enforcement

While boating law enforcement is often performed at the local level by local agencies such as county sheriff and municipal marine patrols, the U.S. Coast Guard and other Federal regulators have enforcement authority in Federally navigable waters. Title 14 of the USC, CFR Title 33 and other

portions of the CFR, give the U.S. Coast Guard authority for maritime law enforcement on the navigable waters of the United States, as well as responsibilities for search and rescue and the maintenance of river aids to navigation, among other roles. Included within the U.S. Coast Guard's authority are inland waters, which are those waters shoreward of the territorial sea baseline, as defined within Title 33, Part 2. Furthermore, Title 33, Part 162—Inland Waterways Navigation Regulations, Section 162.205, addresses the San Joaquin River and connecting waters within which the U.S. Coast Guard has authority and jurisdiction. Specific to the Sacramento–San Joaquin Delta (Delta), 33 CFR 162 provides regulations for the navigation by both commercial and noncommercial vessels on the Stockton Deep Water Ship Channel (DWSC).

5.1.18 U.S. Army Corps of Engineers 2004 Engineering Manual 1110-1-400

USACE prepared the 2004 Engineering Manual 1110-1-400 to achieve a nationwide standard for park and recreation facilities managed by USACE. The manual provides guiding principles for ensuring consideration of the design, use, accessibility, sustainability, and cost of facilities; the health, safety, recreation needs, and welfare of the intended users; and the long-term harmony of the facility with the environment and maintenance requirements.

5.1.19 Federal Water Project Recreation Act

This act requires Federal agencies that have authority to approve water projects to include recreation development as a condition of approving permits. Recreation development must be considered along with any navigation, flood control, reclamation, hydroelectric, or multipurpose water resource project. The act states that "consideration shall be given to opportunities, if any, which the project affords for outdoor recreation and for fish and wildlife enhancement . . . wherever any such project can reasonably serve either or both purposes consistently" (16 USC 4601–12).

5.1.20 Toxic Substances Control Act

The Toxic Substances Control Act of 1976 (15 USC 2601 et seq. 1976) gives EPA authority to establish reporting, recordkeeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. The Toxic Substances Control Act addresses the production, import, use, and disposal of specific chemicals, including polychlorinated biphenyl, asbestos, radon, and lead-based paint.

5.1.21 Hazardous Materials Transportation Act

The primary objective of the Hazardous Materials Transportation Act of 1975 (HMTA) (49 USC 5101-5127) is to provide adequate protection against risks to life and property inherent in commercial transportation of hazardous materials by improving the regulatory and enforcement authority of the Secretary of the Department of Transportation (DOT). Hazardous materials, as defined by the Secretary of the DOT, are any "particular quantity or form" of a materials that "may pose an unreasonable risk to health and safety or property." Among the material designated as hazardous are explosives; radioactive materials; infectious substances; flammable or combustible liquids, solids, or gases; toxic, oxidizing, or corrosive materials; and compressed gases in specific forms and quantities. The regulations cited in the HMTA apply, but are not limited to, a person who transports hazardous materials, designs containers for, or prepares or accepts hazardous materials

for transportation. HMTA governs safety aspects, including security, of the transportation of hazardous materials that the Secretary of the DOT considers appropriate.

Enforcement of the HMTA is shared by each of the following administrations under delegations from the Secretary of the DOT.

- Research and Special Programs Administration is responsible for container manufacturers, reconditioners, and retesters and shares authority over shippers of hazardous materials.
- Federal Highway Administration enforces all regulations pertaining to motor carriers.
- Federal Railroad Administration enforces all regulations pertaining to rail carriers.
- Federal Aviation Administration enforces all regulations pertaining to air carriers.
- U.S. Coast Guard enforces all regulations pertaining to shipments by water.

5.1.22 Resource Conservation and Recovery Act

The Federal Resource Conservation and Recovery Act (RCRA) (42 USC Section 6901 et seq. 1976) provides EPA with the authority to control hazardous waste from cradle to grave. This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. The 1984 Federal Hazardous and Solid Waste Amendments to RCRA focus on waste minimization and phasing out land disposal of hazardous waste, as well as corrective actions for releases. Other mandates of this law include increased enforcement authority for EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program. The 1986 RCRA amendments enabled EPA to address environmental problems from underground tanks storing petroleum and other hazardous substances. RCRA also set forth a framework for the management of non-hazardous solid wastes. RCRA Section 3006 allows EPA to authorize state hazardous waste programs. Once authorized, the state program operates in lieu of the Federal program, although EPA retains enforcement authority even after a state program has been authorized.

5.1.23 Comprehensive Environmental Response, Compensation, and Liability Act, As Amended

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC Section 9601 et seq. 1980) provides Federal funds to clean up uncontrollable or abandoned hazardous waste sites, accidents, spills, discharges, and other emergency releases of pollutants and contaminants into the environment. Through CERCLA, EPA was given the authority to seek out those parties responsible for any hazardous release and assure their cooperation in the cleanup.

5.1.24 Occupational Safety and Health Act

The Occupational Safety and Health Administration administers the Occupational Safety and Health Act, (29 USC 15) which requires special training of handlers of hazardous materials, notification to employees who work in the vicinity of hazardous materials, and acquisition from the manufacturer of material safety data sheets (MSDS). An MSDS describes the proper use of hazardous materials and is intended to provide workers and emergency personnel with procedures for handling or working with that material. The Act also requires the training of employees to remediate any hazardous materials accidental releases.

5.1.25 National Historic Preservation Act

The National Historic Preservation Act of 1966 (as amended) is Federal legislation intended to preserve historical and archaeological sites throughout the United States. The act established several institutions, including the Advisory Council on Historic Preservation, the Section 106 review process, the National Register of Historic Places (NRHP), the list of National Historic Landmarks, and the State Historic Preservation Offices and Officers.

5.2 State

5.2.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) as codified in California Public Resources Code (PRC) Sections 21000 et seq. and implemented via the State CEQA Guidelines (14 California Code of Regulations [CCR] Section 15000 et seq.) is the principal statute governing the environmental review of projects in the state. CEQA requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. The environmental review required imposes both procedural and substantive requirements. At a minimum, an initial review of the project and its environmental effects must be conducted. CEQA's primary objectives are to:

- Disclose to decision makers and the public the significant environmental effects of proposed activities.
- Identify ways to avoid or reduce environmental damage.
- Prevent environmental damage by requiring implementation of feasible alternatives or mitigation measures.
- Disclose to the public reasons for agency approval of projects with significant environmental effects.
- Foster interagency coordination in the review of projects.
- Enhance public participation in the planning process.

CEQA applies to all discretionary activities proposed to be carried out or approved by California public agencies, including state, regional, county, and local agencies, unless an exemption applies. The act requires that public agencies comply with both procedural and substantive requirements. Procedural requirements include the preparation of the appropriate public notices (including notices of preparation), scoping documents, alternatives, environmental documents (including mitigation measures, mitigation monitoring plans, responses to comments, findings, and statements of overriding considerations), completion of agency consultation and State Clearinghouse review, and provisions for legal enforcement and citizen access to the courts.

CEQA's substantive provisions require agencies to address environmental impacts disclosed in an appropriate document. When avoiding or minimizing environmental damage is not feasible, CEQA requires agencies to prepare a written statement of overriding considerations when they decide to approve a project that will cause one or more significant effects on the environment that cannot be mitigated. CEQA establishes a series of action-forcing procedures to ensure that agencies accomplish

the purposes of the law. In addition, under the direction of CEQA, the California Resources Agency has adopted regulations, known as the State CEQA Guidelines, which provide detailed procedures that agencies must follow to implement the law.

5.2.2 California Clean Air Act

In 1988, the state legislature adopted the California Clean Air Act (CCAA), which established a statewide air pollution control program. The CCAA requires all air districts in the state to endeavor to meet the CAAQS by the earliest practical date. Unlike the Federal CAA, the CCAA does not set precise attainment deadlines. Instead, the CCAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards. The CAAQS are generally more stringent than the NAAQS and incorporate additional standards for sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride. The CAAQS and NAAQS are listed together in Table 5-1.

The California Air Resources Board (ARB) and local air districts bear responsibility for achieving California's air quality standards, which are to be achieved through district-level air quality management plans and incorporated into the SIP. In California, EPA has delegated authority to prepare SIPs to ARB, which, in turn, has delegated that authority to individual air districts. Traditionally, ARB has established state air quality standards and maintained oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emissions inventories, collecting air quality and meteorological data, and approving SIPs.

The CCAA adds substantially to the authority and responsibilities of the air districts. The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants the air districts authority to implement transportation control measures. The CCAA also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and establish traffic control measures.

5.2.3 State Tailpipe Emission Standards

ARB established a series of increasingly strict emissions standards for new off-road diesel equipment, on-road diesel trucks, and harbor craft. New construction equipment used for the project, including heavy-duty trucks and off-road construction equipment, will be required to comply with the standards.

5.2.4 Toxic Air Contaminant Regulations

California regulates toxic air contaminants (TACs) (equivalent to hazardous air pollutants at the Federal level) primarily through the Toxic Air Contaminant Identification and Control Act (Tanner Act) and the Air Toxics "Hot Spots" Information and Assessment Act of 1987 ("Hot Spots" Act). In the early 1980s, ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created California's program to reduce exposure to air toxics. The "Hot Spots" Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people who have been exposed to a significant health risk, and facility plans to reduce these risks.

In August 1998, ARB identified diesel particulate matter (DPM) from diesel-fueled engines as TACs. In September 2000, ARB approved a comprehensive Diesel Risk Reduction Plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan was to reduce

DPM emissions (i.e., respirable particulate matter) and the associated health risk by 75% by 2010 and by 85% by 2020. The plan identifies 14 measures that ARB will implement over the next several years. Because the ARB measures would be enacted before any phase of construction, the project would be required to comply with the applicable diesel control measures.

5.2.5 Assembly Bill 1493—Pavley Rules (2002, Amendments 2009, 2012 rulemaking)

Known as "Pavley I," Assembly Bill (AB) 1493 standards are the nation's first GHG standards for automobiles. AB 1493 requires the ARB to adopt vehicle standards that will lower GHG emissions from new light-duty autos to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards (referred to previously as "Pavley II," now referred to as the "Advanced Clean Cars" measure) has been proposed for vehicle model years 2017 through 2025. Together, the two standards are expected to increase average fuel economy to roughly 43 miles per gallon by 2020 and reduce GHG emissions from the transportation sector in California by approximately 14%. In June 2009, EPA granted California's waiver request, enabling the state to enforce its GHG emissions standards for new motor vehicles beginning with the current model year.

5.2.6 Assembly Bill 32—California Global Warming Solutions Act (2006)

AB 32 codified the state's GHG emissions target by requiring that the state's global warming emissions be reduced to 1990 levels by 2020. Since being adopted, ARB, the California Energy Commission, California Public Utilities Commission, and the Building Standards Commission have been developing regulations that will help meet the goals of AB 32 and EO S-03-05. The AB 32 Scoping Plan identifies specific measures to reduce GHG emissions to 1990 levels by 2020 and requires ARB and other state agencies to develop and enforce regulations and other initiatives for reducing GHGs. Specifically, the scoping plan articulates a key role for local governments, recommending they establish GHG reduction goals for both their municipal operations and the community that are consistent with those of the state.

5.2.7 Executive Order S-01-07—Low Carbon Fuel Standard (2007)

EO S-01-07 mandates (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020 and (2) that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established in California.[2]

5.2.8 Central Valley Flood Protection Plan

The Central Valley Flood Protection Plan (CVFPP) is one of the two primary projects of the Central Valley Flood Management Planning Program, the purpose of which is to develop a sustainable,

[2] ARB approved the LCFS on April 23, 2009, and the regulation became effective on January 12, 2010 (California Air Resources Board 2011). The U.S. District Court for the Eastern District of California ruled in December 2011 that the LCFS violates the Commerce Clause of the U.S. Constitution. ARB appealed this ruling in 2012, and on September 18, 2013, a 9th U.S. Circuit Court of Appeals panel upheld the LCFS, ruling that the program does not violate the Commerce Clause and remanded the case to the Eastern District.

integrated flood risk management plan for areas protected by facilities of the Federal-state flood risk management system in the Central Valley of California. The program is one of several the Department of Water Resources (DWR) is implementing within FloodSAFE California to accomplish the goals of Propositions 1E and 84.

The CVFPP was adopted in 2012. According to California Government Code Sections 65302.9 and 65860.1, every jurisdiction located in the Sacramento–San Joaquin Valley is required to update its general plan and zoning ordinance in a manner consistent with the CVFPP within 24 months after the CVFPP's adoption. The locations of the state and local flood risk management facilities, locations of flood hazard zones, and the properties located in these areas must be mapped and be consistent with the CVFPP. In addition, the CVFPP requires 200-year level of flood protection for urbanized or urbanizing areas (defined by a population of 10,000 or more) protected by facilities of the state-Federal flood risk management system in the Central Valley of California by the year 2025.

Part of the CVFPP is a strategy for managing levee vegetation. Based on this strategy, existing trees on levees will be allowed to live out their normal life cycles, unless they pose an unacceptable threat to levee integrity.

5.2.9 Urban Levee Design Criteria

The Urban Levee Design Criteria (ULDC) are intended to provide engineering guidance and criteria for levees required to provide an urban level of flood protection (200-year flood) (California Department of Water Resources 2012). The ULDC also correspond to the CVFPP levee vegetation management strategy. With regard to levee improvements, the ULDC state the following:

> In cases of levee repair or improvement, vegetation shall be removed as required to meet objectives of the specific project. Vegetation removed as part of direct construction activities may not be replaced in the vegetation management zone. However, vegetation on other sections of the levee, not affected by the construction activity may remain in place, natural revegetation may be allowed outside of the vegetation management zone, and replanting may be allowed. . . Trees and other woody vegetation may be: (1) planted, and (2) allowed to naturally revegetate on a landside planting berm. Only the portion of the landside planting berm that is both 15 feet or more from the landside levee slope and 15 feet or more from the landward top of the planting berm may be planted and allowed to naturally revegetate.

5.2.10 Water Quality Control Plan for the Sacramento River and San Joaquin River Basin

Each Regional Water Board in California is responsible for implementing its water quality control plan. The Regional Water Board's Water Quality Control Plan for the Sacramento River and San Joaquin River Basin (Basin Plan) (Central Valley Regional Water Quality Control Board 2011) covers the entire Sacramento and San Joaquin River Basins, including the Sacramento–San Joaquin River Delta. The Basin Plan identifies beneficial uses of the river and its tributaries and water quality objectives to protect those uses. Numerical and narrative criteria are contained in the Basin Plan for several key water quality constituents, including dissolved oxygen, water temperature, trace metals, turbidity, suspended material, pesticides, salinity, and radioactivity.

5.2.11 Urban Water Management Planning Act

In 1983, the California Legislature enacted the Urban Water Management Planning Act (Water Code, Section 10631). The act states that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet of water annually, should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. A water supplier is required to prepare an Urban Water Management Plan to document water supplies available during normal, single dry, and multiple dry water years during a 20-year projection and the existing and projected future water demand during a 20-year projection. The water supplier must update the Urban Water Management Plan every 5 years (by December 31 in years ending in five and zero).

5.2.12 Porter-Cologne Water Quality Act

The State of California's Porter-Cologne Water Quality Control Act (California Water Code, Sections 13000 et seq.) establishes the basis for water quality regulation within California. The act requires that a "report of waste discharge" be compiled for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface water or groundwater of the state. The San Francisco Bay Regional Water Quality Control Board (Regional Water Board) has set water quality objectives for all surface waters in the region concerning bacteria, biostimulatory substances, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, and turbidity. Water quality objectives for groundwater include standards for bacteria, chemical constituents, radioactivity, tastes and odors, and toxicity. The State Water Board and Regional Water Boards have permitting and enforcement authority to prevent and control waste discharges that could affect waters of the state through the issuance of NPDES permits and waste discharge requirements.

5.2.13 California Native Plant Protection Act

The California Endangered Species Act (CESA) defers to the California Native Plant Protection Act (CNPPA) to ensure that state-listed plant species are protected when state agencies are involved in projects subject to CEQA. Plants listed as rare under CNPPA are not protected under CESA, but rather under CEQA.

5.2.14 California Fish and Game Code

5.2.14.1 California Endangered Species Act

CESA (California Fish and Game Code [Fish & Game Code] Sections 2050–2116) states that all native species or subspecies of a fish, amphibian, reptile, mammal, or plant and their habitats that are threatened with extinction and those experiencing a significant decline that, if not halted, would lead to a threatened or endangered designation, will be protected or preserved.

Under Fish & Game Code Section 2081, a permit from the California Department of Fish and Wildlife (CDFW) is required for projects that could result in take of a species that is state-listed as threatened or endangered. Under CESA, *take* is defined as an activity that would directly or indirectly kill an individual of a species. The definition does not include harm or harass, as the definition of take

under ESA does. As a result, the threshold for take under CESA is higher than that under ESA. For example, habitat modification is not necessarily considered take under CESA.

Section 2090 of Fish & Game Code requires state agencies comply with endangered species protection and recovery and to promote conservation of these species. CDFW administers the act and authorizes take through Fish & Game Code Section 2081, incidental take agreements (except for species designated as fully protected), and Section 2080.1, consistency determinations. If it is determined that a project would result in take of a state-listed species, an incidental take permit or consistency determination would be obtained through consultation with CDFW.

5.2.14.2 Lake and Streambed Alteration Agreement (Sections 1600–1603)

Sections 1600–1603 of Fish & Game Code state that it is unlawful for any person or agency to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources or to use any material from the streambeds without first notifying CDFW. A Lake and Streambed Alteration Agreement must be obtained if effects are expected to occur. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports wildlife, fish, or other aquatic life. This definition includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife extending to the tops of banks and often including the outer edge of riparian vegetation canopy cover. Riparian trees that have a diameter of 6 inches or greater also fall within CDFW's jurisdiction.

5.2.14.3 California Fully Protected Species (Sections 3511, 3513, 4700, 5050)

Fish & Game Code Sections 3511, 3513, 4700, and 5050 pertain to fully protected wildlife species (birds in Sections 3511 and 3513, mammals in Section 4700, and reptiles and amphibians in Section 5050) and strictly prohibit the take of these species. CDFW cannot issue a take permit for fully protected species, except under narrow conditions for scientific research or the protection of livestock, or if a Natural Communities Conservation Plan has been adopted.

5.2.14.4 Avian Species and their Nests (Sections 3503, 3503.5, 3513)

These Fish & Game Code sections protect all native birds, birds of prey, and all nongame birds, including eggs and nests, that are not already listed as fully protected and that occur naturally within the state. Eggs and nests of all birds are protected under Section 3503, while Fish & Game Code 3503.5 protects all birds of prey as well as their eggs and nests. Migratory non-game birds are protected under Section 3513. Except for take related to scientific research, take as described above is prohibited.

5.2.14.5 Nongame Mammals (Sections 4150–55)

Fish & Game Code section 4150 protects native nongame mammals from take, except in specific circumstances related to "pest" mammals as described in the code. The Fish & Game Code defines *take* as to "hunt, pursue, capture, or kill, or attempt to hunt, pursue, catch, capture or kill." (Fish & Game Code Section 86).

5.2.15 Delta Protection Act of 1992

The Delta Protection Act of 1992 (PRC Section 29703.5[a]) established the Delta Protection Commission (DPC), a state entity to plan for and guide the conservation and enhancement of the Delta's natural resources while sustaining agriculture and meeting increased recreational demand. The act includes a series of findings and declarations related to the quality of the Delta environment and emphasizes the national, state, and local importance of protecting the unique resources of the Delta. The act states that the protection of these resources will best be achieved if local governments implement land use planning and management practices in compliance with a comprehensive, long-term resource management plan. DPC issued an *Economic Sustainability Plan for the Sacramento–San Joaquin Delta* and *A Proposal to Enhance and Sustain Unique Cultural, Historical, Recreational, Agricultural, and Economic Values of the Sacramento-San Joaquin Delta as an Evolving Place* in 2012.

The Delta Protection Act defines a *primary zone* of the Delta that comprises the principal jurisdiction of the DPC. The *secondary zone* is the area outside the Primary Zone but within the legal Delta.

5.2.15.1 Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta

The Delta Protection Act of 1992 directs the DPC to prepare a comprehensive resource management plan for land uses within the Primary Zone of the Delta. The Land Use and Resource Management Plan (LURMP) for the Primary Zone of the Delta contains policies that seek to "protect, maintain, and where possible, enhance and restore the overall quality of the Delta environment" (Delta Protection Commission 2014). The Legislature has determined that local plans and decisions affecting the Primary Zone must be in conformance with the DPC's plan; and local decisions will be subject to appellate review by the DPC. The proposed project is located within the Secondary Zone of the Delta, as identified by the LURMP, and the DPC also comments on projects in the Secondary Zone that have the potential to impact the Primary Zone. The LURMP contains the following goals and policies that pertain to the proposed project.

Levees

Goal. Support the improvement, emergency repair, and long-term maintenance of Delta levees and channels. Promote levee maintenance and rehabilitation to preserve the land areas and channel configurations in the Delta as consistent with the objectives of the Act.

P-3. Support efforts to address levee encroachments that are detrimental to levee maintenance.

Land Use

P-1. The rich cultural heritage, strong agricultural/economic base, unique recreational resources, and biological diversity of the Delta shall be preserved and recognized in public/private facilities, such as museums, recreational trails, community parks, farm stands, community centers, and water access facilities within the Delta.

Natural Resources

P-1. Preserve and protect the natural resources of the Delta. Promote protection of remnants of riparian and aquatic habitat. Encourage compatibility between agricultural practices, recreational uses and wildlife habitat.

P-8. Promote ecological, recreational and agricultural tourism in order to preserve the cultural values and economic vitality that reflect the history, natural heritage and human resources of the Delta including the establishment of National Heritage Area designations.

5.2.16 The Delta Plan

The Delta Plan has been developed by the Delta Stewardship Council (DSC), and is a legally enforceable comprehensive management plan designed to meet the goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The Delta Plan generally covers five topic areas and goals: (1) increased water supply reliability, (2) restoration of the Delta ecosystem, (3) improved water quality, (4) reduced risks of flooding in the Delta, and (5) protection and enhancement of the Delta. The Delta Plan sets forth regulatory policies and recommendations that seek to influence the actions, activities, and projects of cities and counties and state, Federal, regional, and local agencies toward meeting the goals in the five topic areas.

As stated in the Delta Plan, the "California Delta is a unique place distinguished by its geography, legacy communities, a rural and agricultural setting, vibrant natural resources, and a mix of economic activities. Its 839,640 acres of land, sometimes centered on a wide river but laced with a network of narrow channels and sloughs, stretch to the horizon, are bounded only by the levees that were built to drain the Delta's marshes and floodprone riversides. The Legislature has found that the Delta's uniqueness is particularly characterized by its hundreds of miles of meandering waterways and the many islands adjacent to them, and has described the Delta's highly productive agriculture, recreational assets, fisheries, and wildlife as invaluable resources (Water Code section 12981[b])." (Delta Stewardship Council 2013).

State and local agencies are required to comply with the set of 14 regulatory policies contained within the Delta Plan. Under the Act, it is the state or local agency approving, funding, or carrying out the project in the Delta that must determine if a project is a "covered action" subject to regulations of the Delta Plan, and if so, certify consistency of the project with Delta Plan policies through submission of a written certification to the Delta Stewardship Council, with detailed findings demonstrating that the covered action is consistent with the Delta Plan. (Water Code section 85225).

The Smith Canal Gate Project, located on the San Joaquin River in the secondary Delta zone, is expected to be considered a "covered action," as defined in the Delta Reform Act (California Water Code Section 85057.5(a)). The project has been preliminarily determined to be consistent with the Delta Plan's policies and objectives. In accordance with the Delta Plan and in coordination with DSC staff, SJAFCA will prepare a Certificate of Consistency that will discuss with specificity the Delta Plan policies applicable to the Smith Canal project and submit it for public review through the DSC's website prior to implementation of the project.

5.2.17 Constitution of the State of California

The California law principle of a public right to access navigable waterways runs parallel to the Federal concept of a navigable servitude, described above. Article X, Section 4 of the California Constitution guarantees members of the public a right of access to the navigable waters of the state, which are held in trust for the benefit of the people:

No individual, partnership, or corporation, claiming or possessing the frontage of tidal land of a harbor, bay, inlet, estuary, or other navigable water in this State, shall be permitted to exclude the right of way to such water whenever it is required for any public purpose, nor to destroy or obstruct the free navigation of such water; and the Legislature shall enact such laws as will give the most liberal construction to this provision, so that access to navigable waters of this State shall always be attainable for the people thereof.

5.2.18 California Boating Law

California boating laws and regulations concerning recreational boating, including public access, safety and education, law enforcement, and consumer and environmental protection are comprised of element of several codes, including: Harbors and Navigation, Business and Professions, Corporations, Education, Fish and Game, Government, Health and Safety, Penal, Public Resources, Vehicle, and Water Codes. The California Code of Regulations and the Federal Inland Navigation Rules are also included in this grouping of laws. One of the primary missions of the California Division of Boating and Waterways (DBW) is to promote a safer and more enjoyable boating environment by (1) providing for adequate boating law enforcement through local agencies, and (2) ensuring uniform enforcement of California boating laws throughout the state (California Division of Boating and Waterways 2014). DBW conducts a variety of programs to fulfill its mission.

California boating law does not replace the U.S. Coast Guard and other Federal regulations in force on Federally navigable waters and is in general conformity with such regulations (California Division of Boating and Waterways 2012).

5.2.19 Recreation Proposal for the Sacramento–San Joaquin Delta and Suisun Marsh

The 2009 Sacramento–San Joaquin Delta Reform Act mandated that the California Department of Parks and Recreation develop recommendations to expand state recreation areas in the region. To comply with the legislation, the Department of Parks and Recreation issued the *Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh* (Recreation Proposal) in May 2011. While the Recreation Proposal is not a binding policy document and it concedes that funding is not currently available to implement the recommendations, it does represent the department's vision for the region (California State Parks 2011). The document states, "The proposal recommends a network of recreation areas, including parks, resorts, boating facilities, historic communities, agritourism attractions, and other visitor-oriented businesses. These areas would be connected by scenic driving routes, boating trails, or bicycling and hiking trails" (California State Parks 2011).

The Recreation Proposal recommends improvement and, in some cases, expansion of four recreation areas in the Delta and six state parks near the Delta and Suisun Marsh. The Recreation Proposal further recommends creation of four new state parks in the region, including one near Stockton at the Wright-Elmwood Tract.

5.2.20 California Public Utilities Commission Regulations

The California Public Utilities Commission regulates privately owned telecommunication, electric, natural gas, water, railroad, rail transit, and passenger transportation companies in the state.

5.2.21 Title 22, Water Reclamation

In California, water reclamation is regulated under Title 22 of the CCR, Division 4, Sections 60301 et seq. (hereafter referred to as Title 22). Title 22 was promulgated in 1978 by the Department of Health Services to assure protection of public health where water use is involved. Title 22 criteria include water quality standards, as well as treatment processes and operational and treatment reliability requirements. In addition, the State Water Board has adopted Resolution No. 77-1, *Policy with Respect to Water Reclamation in California*. This policy states that the State Water Board and Regional Water Boards will consider and recommend for funding, water reclamation projects that do not impair water rights or beneficial in-stream uses. The Department of Health Services establishes the recycled water uses allowed in the state, and designates the level of treatment (i.e., un-disinfected secondary, disinfected secondary or disinfected tertiary) required for each of these designated uses (Title 22, CCR).

5.2.22 California Integrated Waste Management Act (AB 939)

To minimize the amount of solid waste that must be disposed of by transformation and land disposal, the State legislature passed AB 939, the California Integrated Waste Management Act of 1989, effective January 1990. According to AB 939, all cities and counties in California were required to divert 25 percent of all solid waste to recycling facilities from landfill or transformation facilities by January 1, 1995, and 50 percent by January 1, 2000. The California Integrated Waste Management Board's Department of Resources Recycling and Recovery (now CalRecycle) is the state department designated to oversee, manage, and track California's 92 million tons of waste generated each year.

5.2.23 Hazardous Waste Control Act

The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to but more stringent than the Federal Resource Conservation and Recovery Act program. The act is implemented by regulations contained in Title 26 of the CCR. In California, the Department of Toxic Substances Control administers the Federal RCRA program. The Hazardous Waste Control Act regulates the transportation and disposal of hazardous wastes and establishes standards for hazardous waste facilities.

5.2.24 Emergency Services Act

Under the Emergency Services Act, the state developed an emergency response plan to coordinate emergency services provided by Federal, state, and local agencies. The California Office of Emergency Services administers the plan and coordinates the responses of other agencies, including EPA, California Highway Patrol (CHP), Regional Water Boards, air quality management districts, and county disaster response offices.

5.2.25 California Department of Transportation

5.2.25.1 Transportation Concept Report

The California Department of Transportation (Caltrans) is the responsible agency for management of transportation infrastructure and transportation improvements in California. Caltrans manages

the state highway system, and works with Federal and local transportation agencies to coordinate funding highway and transit improvements.

Each Caltrans district prepares a Transportation Concept Report for every state highway, or portion thereof, in its jurisdiction, to facilitate long-term planning and to determine how a highway will be developed and managed to deliver the targeted level of service (LOS) and quality of service envisioned. Typical concept LOS standards for Stockton (within Caltrans District 10 jurisdiction) are LOS C in rural areas and LOS D in urban areas (California Department of Transportation District 10 2012). Local jurisdictions (counties and cities) have the option of adopting a higher LOS standard for freeway segments within their limits.

5.2.25.2 Transportation of Hazardous Materials

Caltrans regulates the transportation of hazardous materials, including contaminated soil, between states. The CHP and Caltrans are the state agencies with primary responsibility for enforcing Federal and state regulations related to transportation within California. These agencies respond to transportation emergencies related to hazardous materials (including contaminated soil). Together, these agencies determine the container types to be used and grant licenses to hazardous waste haulers for hazardous waste transportation on public roads.

5.2.25.3 Vibration Standards

For continuous/frequent intermittent sound sources such as pile driving, Caltrans recommends a threshold of a 0.25-inch-per-second PPV for "historic and some old buildings" and a 0.3-inch-per-second PPV for "older residential structures" (California Department of Transportation 2004). These criteria are directed primarily toward, but not limited to, all construction related to pile driving, demolition, and pavement-breaking activities.

5.2.26 Fire Hazard Severity Zones

In accordance with PRC Sections 4201–4204 and Government Code sections 51175 to 51189, the California Department of Forestry and Fire Prevention (CAL FIRE) has mapped areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. The zones are referred to as Fire Hazard Severity Zones and represent the risks associated with wildland fires. Under CAL FIRE regulations, areas within very high fire hazard severity zones must comply with specific building and vegetation requirements intended to reduce property damage and loss of life.

5.2.27 Discovery of Human Remains

Section 7050.5 of the California Health and Safety Code provides the following guidance regarding the discovery of human remains.

(a) Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the [PRC]. The provisions of this subdivision shall not apply to any person carrying out an agreement developed pursuant to subdivision (l) of Section 5097.94 of the [PRC] or to any person authorized to implement Section 5097.98 of the [PRC].

(b) In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby

area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the [California] Government Code [CGC], that the remains are not subject to the provisions of Section 27491 of the [CGC] or any other related provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the [PRC]. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

(c) If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the [Native American Heritage Commission]. (Health and Safety Code Section 7050.5).

Of particular note to cultural resources is subsection (c), requiring the coroner to contact the Native American Heritage Commission (NAHC) within 24 hours if discovered human remains are determined to be Native American in origin. After notification, the NAHC will follow the procedures outlined in PRC Section 5097.98, which include notification of most likely descendants, if possible, and recommendations for treatment of the remains. The most likely descendants will have 24 hours after notification by the NAHC to make their recommendation (PRC Section 5097.98). In addition, knowing or willful possession of Native American human remains or artifacts taken from a grave or cairn is a felony under state law (PRC Section 5097.99).

5.2.28 California State Lands Commission

The State Lands Commission has jurisdiction and management control over public trust lands of the State. These lands include all ungranted tidelands and submerged lands, beds of navigable rivers, streams, lakes, bays, estuaries, inlets, and straits. The State Lands Commission manages these lands for the benefit of the people of the State, subject to the Public Trust for water related commerce, navigation, fisheries, recreation, open space, and other recognized Public Trust uses. The State Lands Commission's Land Management Division, located in Sacramento, administers the leasing of these lands. The issuance of any lease, permit, or other entitlement for use of State lands by the State Lands Commission requires review for compliance with CEQA, and no proposed project may be approved until the requirements of CEQA are met. Placement of fill material within navigable waterways requires compliance with State Lands Commission regulations by submitting an application for a lease for the use of public trust lands.

5.3 Regional and Local

5.3.1 San Joaquin Valley Air Pollution Control District CEQA Emission Thresholds

Air quality districts have local responsibility in overseeing stationary-source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents required by CEQA. The air quality districts are also responsible for establishing and enforcing local air quality

rules and regulations that address the requirements of Federal and state air quality laws and for ensuring that NAAQS and CAAQS are met.

The air quality study area falls under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). SJVAPCD (2002) has adopted CEQA emission thresholds in its *Guide for Assessing and Mitigating Air Quality Impacts* to assist lead agencies in determining the level of significance of project-related emissions. According to the SJVAPCD handbook, emissions that exceed the recommended threshold levels are considered potentially significant and should be mitigated where feasible.

Under the CCAA, SJVAPCD is required to develop an air quality plan for nonattainment criteria pollutants in the air district. The air district has adopted attainment plans to address ozone, particulate matter (PM), and carbon monoxide (CO). The *2007 Ozone Plan* contains a comprehensive list of regulatory and incentive-based measures to reduce reactive organic gases (ROG) and nitrogen oxides (NO_X) emissions. In particular, plan purposes a 75% reduction in NO_X and 25% reduction in ROG by 2023. SJVAPCD's *2007 PM10 Maintenance Plan* and *2008 PM2.5 Plan* likewise include strategies to reduce PM emissions throughout the air basin. Finally, the *2004 California State Implementation Plan for Carbon Monoxide* addresses CO emissions throughout the state.

The alternatives may be subject to the following district rules. This list of rules may not be all encompassing, as additional SJVAPCD rules may apply to the alternatives as specific components are identified. These are rules that have been adopted by SJVAPCD to reduce emissions throughout the San Joaquin Valley.

- Rule 2201 (New and Modified Stationary-Source Review Rule). This rule applies to all new stationary sources and all modifications to existing stationary sources subject to SJVAPCD permit requirements that, after construction, emit or may emit one or more pollutants regulated by the rule.
- Rule 3135 (Dust Control Plan Fees). This rule requires the applicant to submit a fee in addition to a dust control plan. The purpose of this rule is to recover SJVAPCD's cost for reviewing these plans and conducting compliance inspections.
- Rule 4101 (Visible Emissions). This rule prohibits emissions of visible air contaminants to the atmosphere and applies to any source operation that emits or may emit air contaminants.
- Rule 4102 (Nuisance). This rule applies to any source operation that emits or may emit air contaminants or other materials. In the event that the project or construction of the project creates a public nuisance, it could be in violation and subject to SJVAPCD enforcement action.
- Rule 4641 (Cutback, Slow-Cure, and Emulsified Asphalt, Paving, and Maintenance Operations). This rule applies to the manufacture and use of cutback asphalt, slow-cure asphalt, and emulsified asphalt for paving and maintenance operations.
- Rule 4701 (Internal Combustion Engines—Phase 1). This rule limits the emissions of NO_X, CO, and ROG from internal combustion engines. These limits are not applicable to standby engines as long as they are used fewer than 200 hours per year (e.g., for testing during non-emergencies).
- Rule 4702 (Internal Combustion Engines—Phase 2). This rule limits the emissions of NO_X, CO, and ROG from spark-ignited internal combustion engines.

- Regulation VIII (Fugitive PM10 Prohibitions). This is a series of rules (Rules 8011–8081) designed to reduce PM emissions (predominantly dust/dirt) generated by human activity, including construction, road construction, bulk materials storage, landfill operations, and other activities.

SVJAPCD (2009) adopted GHG guidance that is intended to streamline CEQA review by pre-quantifying emissions reductions that would be achieved through the implementation of best performance standards (BPS). Projects are considered to have a less-than-significant cumulative impact on climate change if any of the following conditions are met.

1. Comply with an approved GHG reduction plan (see below).
2. Achieve a score of at least 29[3] using any combination of approved operational BPS.
3. Reduce operational GHG emissions by at least 29% over business-as usual conditions (demonstrated quantitatively).

The SJVAPCD guidance recommends quantification of GHG emissions for all projects in which an EIR is required, regardless of whether the BPS achieve a score of 29 (San Joaquin Valley Air Pollution Control District 2009a). The SJVAPCD does not have an adopted or recommended significance threshold for construction-related GHG emissions. However, lead agencies should quantify and disclose GHG emissions that would occur during construction and make a determination on the significance of these construction-generated GHG emission impacts in relation to meeting AB 32 GHG emissions reduction goals (San Joaquin Valley Air Pollution Control District 2009b).

5.3.2 Lower San Joaquin River and Delta South Regional Flood Management Plan

In 2014, SJAFCA created the Lower San Joaquin River and Delta South Regional Flood Management Plan in order to evaluate flood risk and potential future flood control measures in the region (San Joaquin Area Flood Control Agency 2014). The development of this plan, along with five other regional plans, was funded by DWR in accordance with the CVFPP. Stakeholder input was used to evaluate desired level of flood protection, timing of implementation, and sources of funding for potential future flood control measures. The plan also includes actions to minimize damage in the event of flooding. The Smith Canal project was already in design phase prior to the completion of this plan.

5.3.3 San Joaquin County General Plan

In 2008, San Joaquin County began the process of updating the *San Joaquin 2010 County Wide General Plan*, released in 1992, and is expected to conclude the update process in 2015. Information on aspects of the County General Plan specific to each resource can be found in the individual resource sections of Chapter 3 under *Regulatory Setting*.

[3] A score of 29 represents a 29% reduction in GHG emissions relative to unmitigated conditions (1 point = 1%). This goal is consistent with the reduction targets established by AB 32.

5.3.4 San Joaquin County Tree Ordinance

The San Joaquin County tree ordinance (Chapter 9-1505 of the San Joaquin County Code) protects native oak trees, heritage oak trees, and historical trees. Native oak trees include valley oaks (*Quercus lobata*) 6 to 32 inches in diameter for a single trunk or a combined trunk diameter of 8 inches or more for a multi-trunk tree, as measured 4.5 feet above the average ground elevation of the tree; interior live oaks (*Quercus wislizenii*), California live oaks (*Quercus agrifolia*), and blue oaks (*Quercus douglasii*) with a trunk diameter of 4 to 32 inches for a single trunk or a combined trunk diameter of 6 inches or more, as measured 4.5 feet above the average ground elevation of the tree. Heritage oaks include these same species with trunk diameters of 32 inches or more. Historical trees are designated by the County Planning Commission due to size, age, location, or history.

Removal of any trees protected under this ordinance requires an approved Improvement Plan application. Removed trees must be replaced by the same species or another approved species between October 1 and December 31 within 12 months of the tree removal and maintained for at least 3 years. Replacement requirements for native oaks are 3 trees, acorns, or combination thereof and for heritage or historical trees are 5 trees, acorns, or combination thereof.

The tree ordinance also includes standards for grading, protective fencing, trenching, construction of retaining walls, paving, and landscaping under or near protected trees. Exemptions to the ordinance include removals for emergency situations, protection of public utilities, compliance with other legal requirements, dead or diseased trees.

5.3.5 San Joaquin County Riparian Habitat Ordinance

The San Joaquin County riparian habitat ordinance (Chapter 9-1510 of the County Code) protects riparian habitat by requiring a mitigation plan to replace, preserve, or develop new riparian habitat for any that is removed or degraded. The required plan must show the existing habitat, the proposed removal or degradation of the habitat, and any habitat to be retained, and also describe the measures that will be used to protect retained habitat. For mitigation, either the plan must identify mitigation sites, which can be on-site or off-site, or the applicant must contribute a fee to establish and maintain off-site riparian habitat.

5.3.6 City of Stockton General Plan

The *2035 Stockton General Plan* (2007) sets forth goals and policies to guide development within the City of Stockton (City). Information on aspects of the General Plan specific to each resource can be found in the individual resource sections of Chapter 3, under *Regulatory Setting*.

5.3.7 City of Stockton Climate Action Plan

On December 2, 2014, the City adopted the *City of Stockton Climate Action Plan* (CAP), which details the City's efforts to reduce GHG emissions consistent with AB 32. The CAP estimates current (2010) and future (2020) GHG emissions generated by community activities. The CAP specifies 2020 emission reduction goals and identifies a list of mitigation measures recommended to achieve these goals. The City intends for the CAP to serve as a streamlining tool for CEQA analysis, in which projects consistent with applicable mitigation measures can tier from the CAP and associated EIR.

5.3.8 City of Stockton Municipal Stormwater Permit and Stormwater Management Plan

The City has its own NPDES municipal stormwater permit under the CWA Section 402 for the regulation of stormwater discharges from construction activities. This permit requires that controls be implemented to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible, including management practices, control techniques, system design and engineering methods, and other measures as appropriate. As part of permit compliance, the City has created a stormwater management plan (SWMP). The SWMP outlines stormwater requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. These requirements may include multiple measures to control pollutants in stormwater discharge. During implementation of specific projects, project applicants would be required to follow the guidance contained in the SWMP.

5.3.9 Stockton Heritage Tree Protection Ordinance

The City of Stockton Municipal Code (Chapter 16.72.245) would apply to Smith Canal, Atherton Island, Atherton Cove, and the Stockton Golf and Country Club. The code protects heritage trees from harm, injury, defacing, destruction, or removal. Heritage trees are defined as any valley oak, coast (California) live oak, or interior live oak tree with a trunk diameter of 16 inches or more, as measured at 24 inches above grade. The diameter for trees with multiple trunks equals the combined diameter of all trunks measuring 6 inches or more. A permit is required for removal of a heritage tree under Chapter 16.130.010 of the code, except in the case of an emergency. Permitted removal of a heritage tree requires replacement of the tree at a ratio of 3 replacement trees for each heritage tree removed. Replacements must be at least 15-gallon container stock and planted on the same parcel as the removed heritage tree, if possible. If replacement cannot be on the same parcel, it can be planted in a City park or another approved site.

Chapter 6
References

6.1 Chapter 1, Introduction

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Spurr, Crystal. Senior Environmental Scientist (Supervisor) Bay Delta Region. California Department of Fish and Wildlife. February 24, 2015. Email crystal.spurr@wildlife.ca.gov to Stephanie Myers, Wildlife Biologist, ICF International, Sacramento, CA regarding the habitat suitability and potential for giant garter snake in the study area.

Swinney, Heather. Fish and Wildlife Biologist. U.S. Fish and Wildlife Service San Francisco Bay-Delta Fish and Wildlife Office, Sacramento, CA, February 23, 2015. Email heather_swinney@fws.gov to Stephanie Myers, Wildlife biologist, ICF International, Sacramento, CA regarding the habitat suitability and potential for giant garter snake in the study area.

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Chapter 7
List of Preparers

This EIR was prepared by ICF International at the direction of SJAFCA, as the CEQA lead agency. The following individuals participated in the preparation of this EIR.

7.1 San Joaquin Area Flood Control Agency

Name	Education/Experience	Responsibility
Jim Giottonini	M.B.A., B.S. Civil Engineering; Professional Civil Engineer, 47 years' experience	Executive Director
Roger Churchwell	B.S. Civil Engineering; Professional Civil Engineer, 27 years' experience	Deputy Executive Director
Juan Niera	M.S. Civil Engineering, B.S. Civil Engineering, Professional Civil Engineer; 21 years' experience	Civil Engineer

7.2 ICF International

Name	Education/Experience	Responsibility
Christopher Elliott	B.S. Landscape Architecture; California Licensed Landscape Architect, Certified Arborist; 19 years' experience	Project Director
Megan Smith	J.D., B.A. English 18 years' experience	Project Manager
Stefanie Lyster	M.P.A., B.A. Journalism & Political Science; 14 years' experience	Deputy Project Manager
Jasmin Mejia	M.A. Natural Resources and Sustainable Development, M.A. International Relations, B.S. Environmental Management and Protection; 7 years' experience	Project Coordinator and Utilities and Public Services
Stephanie Monzon	M.A. English, B.A. English; 14 years' experience	Recreation and Lead Editor
Leila Harris	B.A. Environmental Studies, B.A. English; 13 years' experience	Wildlife
Anne Huber	M.S. Ecology, B.S. Biology ; 25 years' experience	Flood Risk Management and Geomorphic Conditions, and Water Quality and Groundwater Resources
Andrew Humphrey	B.A. History; 7 years' experience	Project Description, Public Health and Hazards, and Minimally Impacted Resources
Jennifer Rogers	B.A. Journalism; 10 years' experience	Scoping Report
Jody Job	35 years' experience	Publication Specialist

Name	Education/Experience	Responsibility
Monte Kim	Ph.D. History, M.A. History, B.A. History; 10 years' experience	Cultural Resources
Donna Maniscalco	B.S. Wildlife, Fish, and Conservation Biology; 14 years' experience	Fish and Aquatics
Paul Weller	BLA, Landscape Architecture; 17 years' experience	Recreation, Project Description
Lenny Grimaldo	Ph.D., Ecology, M.S., Marine Biology, B.S., Wildlife and Fisheries Biology; 21 years' experience	Fish and Aquatics
Jennifer Stock	BLA Landscape Architecture; 13 years' experience	Visual
Antero Rivasplata	B.S. Environmental Planning and Management; 37 years' experience	Transportation and Navigation
Darrin Trageser	M.S. Atmospheric Science, B.S. Atmospheric Science; 6 months' experience	Air Quality and Climate Change
Shannon Hatcher	B.S. Environmental Science and Environmental Health and Safety; 15 years' experience	Air Quality and Climate Change
Jason Volk	B.S. Mechanical Engineering; 14 years' experience	Noise
Lisa Webber	M.S. Botany, B.A. Biology; 25 years' experience	Vegetation and Wetlands
Dave Buehler	B.S. Civil Engineering; 32 years' experience	Noise
Stephanie Myers	M.S. Avian Science, B.A. Biology; 27 years' experience	Wildlife
Edward Douglas	B.A. Geography; 6 years' experience	GIS technician
Senh Saelee	B.S. Visual Communications Design; 13 years' experience	Graphic designer
Jessie Shen	B.S. Environmental Policy Analysis, M.A. Urban Planning; 3 years' experience	Transportation and Navigation
Meg Scantlebury	M.A. Historic Preservation, B.S. Environmental Design; 15 years' experience	Cultural Resources

7.3 Other Contributors

Name	Education/Experience	Responsibility
David Peterson (Peterson Brustad, Inc.)	M.S. Civil Engineering, B.S. Civil Engineering; 32 years' experience	Program Management and Design
David Murbach (Peterson Brustad, Inc.)	B.S. Chemical Engineering; 30 years' experience	Program Management and Design
Ryan Dunne (Peterson Brustad, Inc.)	B.S. Civil Engineering; 1 year experience	Program Management and Design

Name	Education/Experience	Responsibility
Ken Anderson (KD Anderson & Associates, Inc.)	B.S. Civil Engineering; 35 years' experience	Traffic Impact Analysis Report
Jonathan Flecker (KD Anderson & Associates, Inc.)	M.S. Civil Engineering, B.S. Civil Engineering; 33 years' experience	Traffic Impact Analysis Report
Weixia Jin (Moffat & Nichol)	Ph.D. Hydraulics and Water Resources, M.S. Coastal Engineering; 26 years' experience	Hydrology Report
Adam Keen (Moffat & Nichol)	M.S. Civil Engineering; 2 years' experience	Hydrology Report
Mark Dortch (Moffat & Nichol)	Ph.D. Civil Engineering; 41 years' experience	Hydrology Report
Gerry Houlahan (Moffat & Nichol)	B.S. Civil Engineering; 43 years' experience	Hydrology Report
Christoffer Brodbaek (Moffat & Nichol)	M.S. Civil and Structural Engineering; 14 years' experience	Hydrology Report

Chapter 8
List of Recipients

The following Federal, state, and local agencies, and individuals who may be affected by the project or have expressed interest through the public involvement process have received either a copy of the Draft EIR or notification of document availability. Members of the public also have been notified through publication of a legal notice in the Stockton Record, a daily newspaper of general circulation in the project area.

8.1 Government Departments and Agencies

8.1.1 Federal Agencies

- Federal Emergency Management Agency
- National Marine Fisheries Service
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S.D.A. Natural Resources Conservation Service

8.1.2 State Agencies

- California Air Resources Board
- California Department of Conservation
- California Department of Fish and Wildlife
- California Department of Parks and Recreation, Division of Boating and Waterways
- California Department of Parks and Recreation, Office of Historic Preservation
- California Department of Transportation
- California Department of Water Resources
- California Native American Heritage Commission
- California State Lands Commission
- Central Valley Flood Protection Board
- Central Valley Regional Water Quality Control Board
- Delta Protection Commission
- Delta Stewardship Council
- Governor's Office of Planning and Research

8.1.3 Regional, County, and City Agencies

- City of Stockton
- Reclamation District 1614
- Reclamation District 828
- San Joaquin County Flood Management Division
- San Joaquin County Mosquito and Vector Control District
- San Joaquin Valley Air Pollution Control District
- Stockton - San Joaquin County Public Library

8.2 Members of the Public

SJAFCA has provided written notification of document availability to all members of the general public who requested information in writing about the project. Additionally, such notice has been provided to those who submitted comments during the CEQA scoping process and provided complete mailing addresses and to those who reside or own property near the proposed project.

Chapter 9
Response to Comments

9.1 Introduction

As described in Appendix J, Public Comment Period Summary Report, the Smith Canal Gate Project (project) draft environmental impact report (Draft EIR) was circulated for public review in June 2015 for a public comment period of 45 days, between June 25, 2015 and August 10, 2015. In compliance with the requirements set forth in CEQA, the San Joaquin Area Flood Control Agency (SJAFCA), as the lead agency, released a Notice of Availability for Public Review (NOA) to signal the availability of the Draft EIR to the public on June 24, 2015. The NOA contained a brief description of the proposed project; probable environmental effects; the date, time, and place of the public meeting; locations where the Draft EIR could be viewed; and contact information for SJAFCA. The NOA was filed with the San Joaquin County Clerk Recorder's office on June 24, 2015, effectively beginning the 45-day review period on June 25, 2015.

On June 25, 2015, SJAFCA submitted a Notice of Completion (NOC) to the State Clearinghouse using the State Clearinghouse standard NOC form. The NOC briefly described the project, project issues discussed in the document, and requested distribution of the Draft EIR to pertinent responsible and trustee agencies. Along with the NOC, SJAFCA also submitted 15 copies of the Draft EIR on compact disc for State Clearinghouse distribution to responsible and trustee agencies.

To expand public involvement, on June 24, 2015, SJAFCA mailed approximately 9,000 postcards to all property owners that are a part of SJAFCA's assessment district to make them aware of the availability of the document for review in both hard copy and online and to encourage attendance at the public meeting on July 8, 2015. Postcards were also sent to anyone who had previously attended a scoping meeting, commented during the scoping period, or otherwise inquired about the project. Legal notice was also published in the *Stockton Record*, describing the document's availability and the schedule and location of the planned meeting.

In response to this outreach effort, 23 comment letters were submitted on the Draft EIR, including those from the following commenters.

- Four state agencies.
- One regional agency.
- Three non-governmental entities.
- Fifteen individuals (written comments and audible oral comments recorded at one public meeting).

The majority of comments received related to, or requested more information on, the following topic areas.

- Project construction and implementation would affect wildlife and aquatic resources. Specifically, the project could lead to an increase in invasive, nonnative species.
- The project would have adverse impacts on water quality from a reduction in tidal exchange, siltation, an increase in invasive aquatic plant species, and possibly eutrophication caused by invasive plant species.

- The project would result in adverse impacts on recreation due to reduced access to Smith Canal.
- The project alternatives need to be compatible with rising sea levels.
- The hydrodynamic modeling conducted for the proposed project is misleading.
- SJAFCA was predecisional in selecting Alternative 1 and proceeding with project design prior to adoption of the Final EIR and did not adequately consider additional alternatives that had been proposed during scoping.
- The project alternatives would have permanent and adverse impacts on visual resources.
- The project is not necessary because the area around Smith Canal has not flooded previously.
- Concerns as to whether the gate design meets Urban Levee Design Criteria.
- Desire for greater detail on cost and funding mechanisms for proposed mitigation measures.
- Concern as to whether construction of the gates will result in flooding in upstream portions of Smith Canal.

The comment letters are subdivided by level of government or other entity type (non-governmental organization or individual). Each letter has been assigned a unique code. Each comment within the letter has also been assigned a unique code, noted on the right margin. For example, the code "2–4" indicates the fourth distinct comment (indicated by the "4") in the letter from the Delta Stewardship Council, which was the second letter (indicated by the "2") recorded. The letters are organized in four sections:

- 9.2, *State Agency Comments and Responses*
- 9.3, *Regional and Local Agency Comments and Reponses*
- 9.4, *Non-Governmental Organization Comments and Responses*
- 9.5, *Individual Comments and Responses*

The sections are organized by presentation of each comment letter immediately followed by the responses to that letter. Table 9-1 summarizes the commenting party, comment letter signatory, and date of the comment letter.

Table 9-1. List of Comment Letters

Letter #	Commenter	Date
Section 9.2—State Agency Comments and Responses		
01	Erik Vink, Delta Protection Commission	July 27, 2015
02	Cindy Messer, Delta Stewardship Council	August 10, 2015
03	Cy R. Oggins, California State Lands Commission	August 7, 2015
17	Len Merino, Central Valley Flood Protection Board	August 13, 2015
Section 9.3—Regional and Local Agency Comments and Reponses		
04	Sharla Yang for Chay Thao, San Joaquin Valley Air Pollution Control District	August 11, 2015
Section 9.4—Non-Governmental Entity Comments and Responses		
05	John Briscoe, Briscoe Ivester & Bazell LLP	August 6, 2015
06	Maxwell M. Freeman, Atherton Cove Property Owners Association, and Michael D. Hakeem, Hakeem, Ellis & Marengo	August 7, 2015
07	Dominick Gulli, Green Mountain Engineering	August 10, 2015
Section 9.5—Individual Comments and Responses		
08	W. Gregory Mullally	July 29. 2015
09	Bob and Janet Kavanaugh	July 21, 2015
10	David C. Hui	July 13, 2015
11	John and Elaine Bradbury	August 9. 2015
12	Don Coelho	July 8, 2015
13	Louie Diaz	July 8, 2015
14	John Neal	July 8, 2015
15	Sharon E. Nordstrom	July 8. 2015
16	Art and Florencia Sanchez Smith	July 3, 2015
18	Don Coelho	July 8, 2015
19	Richard Gacer	July 8, 2015
20	Lou Diaz	July 8, 2015
21	Jim Hoblitzell	July 8, 2015
22	David Hui	July 8, 2015
23	Paul Guerrero	July 8, 2015

Each comment in this chapter has been considered and responded to individually. If a comment resulted in a change to the text of the Final EIR, it is noted within the comment's response.

9.2 State Comments and Responses

9.2.1 Letter 01—Erik Vink, Delta Protection Commission

STATE OF CALIFORNIA – NATURAL RESOURCES AGENCY EDMUND G. BROWN, JR., *Governor*

DELTA PROTECTION COMMISSION
2101 Stone Blvd., Suite 210
West Sacramento, CA 95691
Phone (916) 375-4800 / FAX (916) 376-3962
www.delta.ca.gov

Received
JUL 31 2015
SJAFCA
San Joaquin Area Flood Control Agency

Contra Costa County Board of Supervisors
Sacramento County Board of Supervisors
San Joaquin County Board of Supervisors
Solano County Board of Supervisors
Yolo County Board of Supervisors
Cities of Contra Costa and Solano Counties
Cities of Sacramento and Yolo Counties
Cities of San Joaquin County
Central Delta Reclamation Districts
North Delta Reclamation Districts
South Delta Reclamation Districts
CA State Transportation Agency
CA Department of Food and Agriculture
CA Natural Resources Agency
CA State Lands Commission

July 27, 2015

Roger Churchwell
San Joaquin Area Flood Control Agency
22 E. Weber Avenue, Room 301
Stockton, CA 95202

Re: Smith Canal Gate Project Draft Environmental Impact Report, SCH #2014062079

Dear Mr. Churchwell:

Thank you for providing the Delta Protection Commission (Commission) the opportunity to review the Draft Environmental Impact Report (DEIR) for the Smith Canal Gate Project (Project). The Commission previously commented on the proposed Project's Notice of Preparation by letter dated July 23, 2014 (copy enclosed).

Section 5.2.15.1 of the DEIR correctly summarizes the Commission's Land Use Resource Management Plan (LURMP) and the Commission's jurisdiction under the Delta Protection Act; however, the listed LURMP policies which the DEIR states pertain to visual resources appear out-of-place. We suggest reference to LURMP policies be replaced with the Levees Goal, as provided in our prior correspondence. 01-01

Thank you for the opportunity to provide comment on the DEIR. Please contact Adele Lagomarsino, Senior Environmental Planner, at (916) 375-4534, if you have any questions concerning the comment provided.

Sincerely,

Erik Vink
Executive Director

Attachment: DPC letter July 23, 2014
cc: Bob Elliott, Commission Member and Board of Supervisors, San Joaquin County
Susan Lofthus, Commission Member and Councilmember, City of Stockton

STATE OF CALIFORNIA – NATURAL RESOURCES AGENCY EDMUND G. BROWN, JR., *Governor*

DELTA PROTECTION COMMISSION
2101 Stone Blvd., Suite 210
West Sacramento, CA 95691
Phone (916) 375-4800 / FAX (916) 376-3962
Home Page: www.delta.ca.gov

Contra Costa County Board of Supervisors

Sacramento County Board of Supervisors

San Joaquin County Board of Supervisors

Solano County Board of Supervisors

Yolo County Board of Supervisors

Cities of Contra Costa and Solano Counties

Cities of Sacramento and Yolo Counties

Cities of San Joaquin County

Central Delta Reclamation Districts

North Delta Reclamation Districts

South Delta Reclamation Districts

CA State Transportation Agency

CA Department of Food and Agriculture

CA Natural Resources Agency

CA State Lands Commission

July 23, 2014

COPY

Juan Niera
San Joaquin County Area Flood Control Agency
22 E. Weber Avenue, Suite 301
Stockton, CA 95202

Re: Smith Canal Gate Project

Dear Mr. Niera:

Thank you for providing the Delta Protection Commission (Commission) the opportunity to review the Notice of Preparation for the Smith Canal Gate Project (Project). Proposed projects within the Primary Zone of the Legal Delta must be consistent with the Land Use and Resource Management (LURMP). Staff also provides comments on proposed projects in the Secondary Zone that have the potential to affect the resources of the Primary Zone. After careful review, we find that the Smith Canal Gate Project provides necessary improvements to the Delta's levees and flood management system promoting the protection of life and property. The following LURMP goal supports the proposed project:

> Levees Goal: Support the improvement, emergency repair, and long-term maintenance of Delta levees and channels. Promote levee maintenance and rehabilitation to preserve the land areas and channel configurations in the Delta as consistent with the objectives of the Act.

Thank you for the opportunity to provide input. Please contact Raymond Costantino, Associate Environmental Planner, at 916-375-4534 for any questions regarding the comments provided.

Sincerely

Erik Vink
Executive Director

CC: Larry Ruhstaller, San Joaquin County Board of Supervisor and Commission Chair

1

9.2.1.1 Response to Letter 01

01-01

The Levees goal and Policy P-3 have been added to Section 5.2.15.1, *Delta Protection Commission Land Use and Resource Management Plan for the Primary Zone of the Delta*.

9.2.2 Letter 02—Cindy Messer, Delta Stewardship Council

DELTA STEWARDSHIP COUNCIL
A California State Agency

980 NINTH STREET, SUITE 1500
SACRAMENTO, CALIFORNIA 95814
HTTP://DELTACOUNCIL.CA.GOV
(916) 445-5511

August 10, 2015

Chair
Randy Fiorini

Members
Aja Brown
Frank C. Damrell, Jr.
Phil Isenberg
Patrick Johnston
Mary Piepho
Susan Tatayon

Executive Officer
Jessica R. Pearson

Mr. Juan Neira
San Joaquin Area Flood Control Agency
22 East Weber Avenue, Suite 301
Stockton, California 95202
Juan.Neira@stocktongov.com

RE: Draft Environmental Impact Report for the Smith Canal Gate Project, SCH# 2014062079

Dear Mr. Neira:

Thank you for the opportunity to comment on the Draft Environmental Impact Report (DEIR) for the Smith Canal Gate Project, which will install an operable gate structure at the mouth of Smith Canal. We appreciate the assistance from you and your consultant in helping us to gain a better understanding of the scope of this project, background information, and project-related planning and coordination activities. Delta Stewardship Council (Council) staff is pleased to see that this project will reduce flood risk in developed areas adjacent to Smith Canal and make the Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP) flood insurance requirements optional for residents in the areas protected by the project.

As mentioned in the DEIR, the Council has a legally enforceable management framework for the Delta and Suisun Marsh called the Delta Plan. The Delta Plan applies a common sense approach based on the best available science to restore habitat, increase the diversity and efficiency of California's water supplies, improve the Delta's risk management, and preserve the Delta's agricultural values. In many cases, the Delta Plan calls for balancing competing needs in the Delta, e.g., protecting and restoring habitat while reducing flood risk. Since the proposed project lies within the Legal Delta and plays a role in reducing flood risk to people and property in the Delta, it is essential that our agencies coordinate closely on these types of efforts.

"Coequal goals" means the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place."
– CA Water Code §85054

Delta Plan Covered Actions and Certification of Consistency

Through the Delta Reform Act, the Council was granted specific regulatory and appellate authority over certain actions that take place in whole or in part in the Delta and Suisun Marsh. The Council exercises that authority through development and implementation of the Delta Plan. State and local agencies are required to comply with the set of 14 regulatory policies contained within the Delta Plan.

According to the Delta Reform Act, it is the state or local agency approving, funding, or carrying out the project that must determine if a project is a "covered action" subject to regulations of the Delta Plan, and if so, certify consistency of the project with Delta Plan policies (Water Code Section 85225). Generally the California Environmental Quality Act (CEQA) lead agency, San Joaquin Area Flood Control Agency (SJAFCA), in the case of the Smith Canal Project, makes the determination if a project is a covered action. As mentioned in the DEIR, the project has been preliminarily determined by SJAFCA to be a covered action and SJAFCA will prepare a certification of consistency for the project. Information and analysis needed to support a consistency certification could be taken directly from the Environmental Impact Report (EIR), as appropriate.

Council staff met with SJAFCA representatives on October 27, 2014 for early consultation to discuss the preparation of the certification of consistency for the proposed activity as well as to discuss our comments on the Notice of Preparation for the DEIR for this project. We appreciate your agency's efforts to achieve consistency of the project with the Delta Plan and we offer our continuing assistance during the covered action process as needed.

For the purposes of compliance with both the Delta Reform Act and CEQA, we offer comments below that you should consider as you finalize the EIR.

Regional and Local Regulatory Setting

The DEIR identifies the San Joaquin 2010 County Wide General Plan (1992) and the 2035 Stockton General Plan (2007) as references for the regional and local regulatory setting for the environmental impact assessment of the project. According to California Government Code (CGC) Section 65302.9, each city and county within the Sacramento–San Joaquin Valley is required to update its general plan in a manner consistent with the Central Valley Flood Protection Plan (CVFPP) within 24 months of July 2, 2013. As you may be aware, San Joaquin County and the City of Stockton are working on mandated amendments to their general plans and zoning ordinances. SJAFCA should coordinate with the city and the county to use the most current regulatory standards for the CEQA analysis and include this information as a part of the final EIR. 02-01

The following comments are organized by subject area. Within each subject area we have included information on the Delta Plan policy (or policies) possibly implicated by this project and the requirements of these policies, as well as specific comments on the DEIR. Where appropriate, we have also provided information on mitigation measures from the Delta Plan's EIR that should be considered for this project as SJAFCA finalizes its EIR and develops its certification of consistency with the Delta Plan.

Risk Reduction and Agency Coordination

Delta Plan Policy **RR P1** (23 California Code of Regulations [CCR] Section 5012) calls for the prioritization of state investments in Delta flood risk management, including levee operation, maintenance and improvements. This policy includes interim priorities categorized as specific goals to guide budget and funding allocation for levee improvements and to assist the California Department of Water Resources (DWR) in achieving a balance in funding the various goals. According to SJAFCA staff, part of the construction funding for the Smith Canal Gate Project will be from DWR's Urban Flood Risk Reduction Program (UFRRP). To achieve consistency with the Delta Plan, the State of California's investment in Delta flood risk management (i.e., the State's cost share for the project) must be consistent with Delta Plan Recommendation RR P1. One objective of this project, as described in the DEIR, appears to be consistent with one of the goals contained in Delta Plan Policy RR P1 to "Protect existing urban and adjacent urbanizing areas by providing 200-year level flood protection." 02-02

According to the DEIR, the proposed activity will provide the minimum 200-year level of flood protection for the target area. We support SJAFCA's goal of improving flood risk for the developed area. However, it is unclear from the DEIR whether the completion of the proposed project will have a positive or negative cumulative impact to areas upstream and downstream of the project area and how the outcome of this project will ultimately contribute towards the region's 200-year level of flood protection.

It is important to demonstrate the project's ability to provide adequate flood protection for the region as required by state regulation. This information should be aligned with that of the U.S. Army Corps of Engineers' Lower San Joaquin River Feasibility Study (2015) Tentatively Selected Plan (TSP), and this information will help inform important ongoing efforts to update the Central Valley Flood Protection Plan in 2017 as well as for the Council as it updates its Delta levees investment strategy (http://deltacouncil.ca.gov/delta-levees-investment-strategy). 02-03
In addition, as part of the analysis of growth inducing impacts, the DEIR should further describe the potential for any additional development in the project area as a result of the successful completion of the Smith Canal Gate Project. All of the above information should be included and addressed in the final EIR. 02-04

Invasive Species

Delta Plan Policy **ER P5** (23 CCR Section 5009) calls for avoiding introductions and habitat improvements for invasive nonnative species. This policy states, "The potential for new introductions of or improved habitat conditions for nonnative invasive species, striped bass, or bass must be fully considered and avoided or mitigated in a way that appropriately protects the ecosystem." Analysis on this matter should address both nonnative wildlife species (e.g., introduced sport fish species), as well as nonnative vegetation, including both aquatic and terrestrial weeds. In-water structures, like sheet pilings, can potentially provide shelter for nonnative fish like striped bass that may predate on native listed fish like Chinook salmon and opertation of the gates could influence movement of aquatic plant. In the final EIR, please describe how the project will avoid or mitigate these types of impacts. 02-05

Delta Plan Biological Resources Mitigation Measure 4-1 includes a requirement that an invasive species management plan be developed and implemented for any projects where construction or operation could lead to introduction or facilitation of invasive species establishment. We appreciate your effort to coordinate with U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and the California Department of Fish and Wildlife (CDFW) to develop the proposed project and its alternatives. However, based on the concerns raised above regarding invasive species, we believe that such an invasive species management plan is necessary and should be developed in consultation with CDFW and local experts. 02-06

Water Quality Impacts

The DEIR mentioned that there are potential impacts to water quality during and after the construction of the project. Although the Delta Plan recommendations for water quality are non-regulatory, the Council hopes that the proposed mitigation measures in the final EIR are consistent with the entire framework of the Delta Plan such as Delta Plan Recommendation **WQ R1** which states that water quality in the Delta should be maintained to protect beneficial uses identified in applicable State Water Resources Control Board or regional water quality control board water quality control plans and Delta Plan Recommendation **WQ R2** which states that Delta Plan covered actions should identify any significant impacts to water quality. 02-07

Visual Resources

As identified in the DEIR, the gated fixed wall structure near Atherton Cove will cause potential impacts to the visual resources of the adjacent residences. In addition to the proposed mitigation measures, including working with affected stakeholders to determine appropriate sheet pile wall aesthetic treatments and applying aesthetic surface treatments to ancillary project features, SJAFCA should also consider the Delta Plan Visual Resources Mitigation Measure 8-1 which includes using vegetation screening to soften views of structures with landscaping that complements the surrounding landscape. 02-08

Encourage Recreation

The Delta Plan recommends protecting and improving existing recreation opportunities while seeking ways of providing new, and better coordinated, opportunities. The Delta region offers diverse recreation experiences, such as fishing, boating, birdwatching, and other nature-based activities. The Delta has a variety of recreational facilities, such as campgrounds, parks, picnic areas, and historic towns and buildings. Delta Plan Recommendation **DP R11** calls for providing new and protecting existing recreational opportunities in the Delta and Delta Plan Recommendation **DP R16** calls for increasing opportunities for recreation on public lands. 02-09

Construction-related activities including staging, operation, and maintenance for the gated fixed wall structure will interfere with access to public recreation facilities and disrupt boating activities in the area, mainly in and around the Louis Park parking area. We recommend SJAFCA consider Delta Plan Recreation Mitigation Measure 18-2, which states that if substantial temporary or permanent impairment, degradation, or elimination of recreational facilities causes users to be directed towards other existing facilities, lead agencies shall coordinate with impacted public and private recreational providers to direct displaced users to under-utilized recreational facilities. 02-10

Best Available Science and Adaptive Management

Delta Plan Policy **G P1** (23 CCR Section 5002) states that actions subject to Delta Plan regulations must document use of best available science. Best available science should be consistent with six criteria: relevance, inclusiveness, objectivity, transparency and openness, timeliness, and peer review. The detailed criteria can be found in Table 1A-1 in Appendix 1A of the Delta Plan (available at http://deltacouncil.ca.gov/sites/default/files/documents/files/AppB_Combined_2013.pdf). Best available science should be applied during the development, implementation and monitoring of the project. 02-11

Additionally, this policy calls for water management and ecosystem restoration projects to include adequate provisions for continued implementation of adaptive management, appropriate to the scope of the action. This requirement can be satisfied through the development of an adaptive management plan that is consistent with the framework described in Appendix 1B of the Delta Plan, along with documentation of adequate resources to implement the proposed adaptive management process. We recommend that adaptive management for this project incorporate a monitoring, evaluation and reporting program that evaluates whether the project is successfully achieving its goals and objectives and whether the proposed mitigation measures achieve their purpose of preventing and redressing impacts to water quality, vegetation, and fish and wildlife.

Council staff, including staff from the Delta Science Program, can provide additional consultation to help in your preparation of documentation of use of best available science and

adaptive management. We also suggest including documentation of 1) where and how best available science was applied in this project and 2) an adaptive management plan appropriate to the scope of the action, as appendices to the final EIR in order to have it available for use in a consistency certification. 02-11 cont'd

Delta Plan EIR Mitigation Measures

Delta Plan Policy **G P1** (23 CCR Section 5002) also requires that actions not exempt from CEQA and subject to Delta Plan regulations must include applicable feasible mitigation measures consistent with or more effective than those identified in the Delta Plan EIR (These mitigation measures can be found in the Delta Plan Mitigation and Monitoring Reporting Program document available at http://deltacouncil.ca.gov/sites/default/files/documents/files/Agenda%20Item%206a_attach%202.pdf). 02-12

Inconsistencies with the Delta Plan

The final EIR should discuss any inconsistencies between the proposed plan and the Delta Plan, as required by 15125(d) of the CEQA Guidelines. Please note that the CEQA guidelines' Appendix G states that a project that is inconsistent with any applicable land use plan, policy, or regulations may result in a finding of significant impact on biological resources. Based on our initial review of the project, we have found potential implications of Delta Plan Policies **RR P1**, **ER P5**, and **G P1** as described above. 02-13

Next Steps

We look forward to continuing to work with your agency and other local, state, and federal agencies on the development of this project and providing assistance to SJAFCA in filing a Delta Plan consistency determination. I encourage you to contact You Chen (Tim) Chao at YouChen.Chao@deltacouncil.ca.gov or Daniel Huang at Daniel.Huang@deltacouncil.ca.gov with your questions, comments, or concerns. We look forward to working with you to ensure consistency of the Smith Canal Gate Project with the Delta Plan while also avoiding, minimizing, or mitigating potential environmental impacts.

Sincerely,

for Cindy Messer

Cindy Messer
Deputy Executive Officer
Delta Stewardship Council

cc: Ms. Megan Smith
ICF International
630 K Street, Suite 400,
Sacramento, CA 95814
megan.smith@icfi.com

cc: Michael Sabbaghian
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Urban Flood Risk Reduction Program
3464 El Camino Avenue, Suite 200
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1

9.2.2.1 Response to Letter 02

02-01

The Draft EIR regulatory setting reflects the City and County General Plans in place at the time of the Draft EIR circulation. It also addresses other relevant flood planning documents, such as the Lower San Joaquin River and Delta South Regional Flood Management Plan. SJAFCA will continue to coordinate with the City of Stockton and County of San Joaquin to incorporate the policies and requirements of any relevant newly adopted City or County plan amendments as the project development process continues.

02-02

Due to the limited capacity of Smith Canal and its function as a stormwater conveyance system that drains to the San Joaquin River, project operation would not result in any transference of flood risk to adjacent areas. During a flood event, the proposed project would prevent San Joaquin River flows from entering Smith Canal. However, project operation would not result in flood risk transference upstream or downstream on the San Joaquin River, as Smith Canal is a dead end slough with a volume that is negligible relative to the volume of the Delta. Further, during a storm event, Smith Canal acts as a stormwater outflow to the river, resulting in little to no available inflow capacity during a high water event.

See Section 1.4.2 (Page 1-8, lines 8-12) for a discussion of how the project fits into SJAFCA's and the region's overall plan for achieving 200-year flood risk reduction protection.

02-03

The Smith Canal Gate Project is included in USACE's Lower San Joaquin River Feasibility Study as part of the National Economic Development Plan and the Tentatively Selected Plan. SJAFCA will continue to coordinate with USACE, DWR, and DSC in developing the Smith Canal project and ensuring its consistency with federal and state regulation. For instance, as described in Chapter 1 of the Draft EIR, SJAFCA is requesting Urban Flood Risk Reduction Program funding from DWR for the balance of the design, environmental analysis, and construction costs. Among other requirements, proposals for UFRR funding must demonstrate that the project is consistent with the Central Valley Flood Protection Program, regional priorities, and the Basin Plan for the area.

02-04

As described under the *Proposed Project* portion of Section 4.1.3.1, *Impacts and Mitigation Measures*, construction of the proposed project would not create the potential for any additional development in the project area. Text has been added to Section 4.1.3.1, *Impacts and Mitigation Measures*, under *Proposed Project*, clearly state that there is no potential for additional development in the project area.

02-05

As discussed in Comment 03-17, removal of invasive plants (described under each alternative in Chapter 2, *Proposed Project and Alternatives* as well as under Impact VEG-7 in Section 3.7, *Vegetation and Wetlands*) and efforts to avoid introduction of such species during construction (see Mitigation

Measure VEG-MM-7) would result in an overall decrease in predatory fish (e.g., black bass) habitat in the project area. Project operation under all alternatives would include construction of in-water structures that could provide shelter to nonnative species and increase predation of native species, if any are present. Atherton Cove and Smith Canal have low quality native fish habitat (i.e., riprapped banks, poor water quality), and it is unknown if native fish species occur in Atherton Cove and Smith Canal and what the rate of predation would be on those species.

02-06

See response to Comment 02-05.

02-07

The project alternatives meet the Delta Plan recommendations concerning the maintenance of beneficial uses as identified in the Basin Plan. Beneficial uses and water quality will be protected, and significant impacts on water quality will be avoided, by precautionary construction measures (e.g., use of cofferdams, vibratory hammers, and bag filters for dewatering), the mitigations measures to minimize water quality effects associated with construction (Mitigation Measures WQ-MM-1a, WQ-MM-1b, and WQ-MM-1c), the debris removal program, the water hyacinth control program, and a project design that does not reduce tidal circulation within Smith Canal.

02-08

The project alternatives have integrated the use of vegetation that complements the surrounds landscape, where feasible. Under Impact VIS-2, Alternative 1, only shrubs and grasses would be replanted because Urban Levee Design Criteria Section 7.16.3, Newly Constructed Levees, requires that new levees be designed, constructed, and maintained according to ETL 110-2-571, which limits vegetation to native grasses on levee crowns, slopes, and within 15 feet of the levee toe. Under Impact VIS-2, Alternatives 2 and 3, trees, shrubs, and grasses would be replanted on Dad's Point. However, areas behind the Alternative 2 floodwall would not usable for planting. Impact VIS-2, in Section 3.10.3.3, *Impacts and Mitigation Measures*, has been modified to more clearly explain the effect of ULDC compliance on the visual impacts that could result from Alternative 2. As described in the analysis, "While the area behind the floodwall may be able to accommodate planter beds, ULDC Section 7.16.3, Newly Constructed Levees, requires that new levees be designed, constructed, and maintained according to ETL 110-2-571, which limits vegetation to native grasses on levee crowns, slopes, and within 15 feet of the levee toe. The ULDC would therefore not allow for new plantings of woody vegetation behind the wall, preventing mitigation that could be set forth to reduce visual impacts through landscaping. Therefore, as shown in the simulation, there would be a stark contrast between the existing softened, vegetated shoreline and the proposed hardened, industrial fixed dual sheet pile floodwall." However, Mitigation Measure VIS-MM-2c*, Replace or Relocate Site Features and Landscaping Affected by Project*, would replace landscaping where feasible. In addition, Mitigation Measure VIS-MM-2d, *Implement Project Landscaping around Control Building(s)*, would soften views of the control buildings.

02-09

The Smith Canal project would be consistent with the Delta Plan Recommendation DP R11. Under all three project alternatives, the project would protect existing recreational opportunities on public lands. Louis Park boat launch access would only be intermittently limited during construction, and

boaters would still be able to launch their boats at this location. The effect on access to the other recreational opportunities in Louis Park would be less than significant, as described in the Draft EIR analysis.

Consistent with DP R16, the project would provide new recreation opportunities on Dad's Point, including ADA-compliant fishing and wildlife viewing platforms and a multi-use interpretive trail with kiosks and benches.

02-10

As discussed in the Draft EIR analysis, while increased use of other City and County parks and public boat launches in the project vicinity may result from more limited access to the Louis Park boat launch during construction, this change in use patterns would be minimal and temporary and would not cause physical deterioration or lead to exceeding the City park service ratios and performance objectives discussed in Section 3.11.1.2, *Environmental Setting*.

However, to incorporate the recommended mitigation measure, the impact determination for Alternative 1, Impact REC-1, has been changed from less than significant to less than significant with mitigation, with the addition of Mitigation Measure REC-MM-1: Direct Displaced Recreationists to Under-Utilized Recreation facilities. SJAFCA or its Contractor will Coordinate with Affected Public and Private Recreation Providers to Direct Displaced Users of Recreational Facilities in the Project Area to Under-Utilized Recreational Facilities in the Project Vicinity. This mitigation is not necessary for Alternatives 2 or 3 because the effects on access to public recreation facilities would be of a lesser degree.

Alternative 1, Impact REC-1, as well as Mitigation Measure REC-MM-1 in Section 3.11.2.3, *Impacts and Mitigation Measures*, have been modified in response to this comment.

02-11

SJAFCA has reviewed and considered Table 1A-1 in Appendix 1A of the Delta Plan and has confirmed its analysis has been developed and conducted using the best available science. Through agency consultation with DFW, USACE, NMFS, and USFWS, among others, design of any restoration element of the project would be accompanied by development of an adaptive management plan, as appropriate, to support successful implementation of compensation and mitigation measures.

02-12

The Delta Plan Mitigation and Monitoring Reporting Program has been carefully considered in development of project mitigation measures. All applicable feasible measures identified in the Delta Plan EIR have been included in the project or exceeded in effectiveness by alternate mitigation measures.

02-13

SJAFCA will prepare a consistency determination as required under the Delta Plan for public review upon project approval. SJAFCA has reviewed the Plan Policies and has found the project alternatives to be consistent with the Plan.

9.2.3 Letter 03—Cy R. Oggins, California State Lands Commission

STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

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August 7, 2015

File Ref: SCH #2014062079

ICF International
Megan Smith, Project Manager
630 K Street, Suite 400
Sacramento, CA 95814

Subject: Draft Environmental Impact Report (EIR) for Smith Canal Gate Project, San Joaquin County

Dear Ms. Smith:

The California State Lands Commission (CSLC) staff has reviewed the subject EIR for the Smith Canal Project (Project), which is being prepared by the San Joaquin Area Flood Control Agency (SJAFCA). The SJAFCA, as a public agency proposing to carry out a project, is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The CSLC is a trustee agency for projects that could directly or indirectly affect sovereign lands and their accompanying Public Trust resources or uses. Additionally, because the Project involves work on sovereign lands, the CSLC will act as a responsible agency.

CSLC Jurisdiction and Public Trust Lands

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The CSLC also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6301, 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion

or where the boundary has been fixed by agreement or a court. On navigable non-tidal waterways, including lakes, the State holds fee ownership of the bed of the waterway landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high water mark, except where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

After reviewing the information contained in the EIR, CSLC staff has determined that the Project is proposed to take place waterward of the Ordinary High Water (OHW) mark in the historic, natural riverbed of the San Joaquin River at the mouth of the Smith Canal. At this location, any submerged land waterward of the OHW mark is State-owned sovereign land under the jurisdiction of the CSLC; therefore, a lease will be required from the CSLC prior to construction. CSLC's lease application is available online at http://www.slc.ca.gov/. Please contact Nick Lavoie, Public Land Manager (see contact information below), for further information about the CSLC leasing process. 03-01

Description

SJAFCA proposes to build, operate, and maintain a fixed wall with gate structures near the mouth of Smith Canal to meet its objectives and needs as follows:

- Improve flood performance to secure Federal Emergency Management Agency accreditation within the funding capability of SJAFCA;
- Reduce flood risk to contribute to minimum 200-year level of performance as mandated by Senate Bill 5 within the funding capability of SJAFCA;
- Construct improvements in accordance with Department of Water Resources' Urban Levee Design Criteria;
- Integrate compatibly with regional flood risk–reduction projects, including the Lower San Joaquin River Feasibility Study and the Lower San Joaquin and Delta South Regional Flood Management Plan;
- Construct a project that considers the potential effects of climate change and is resilient to sea-level rise while consistent with other Project objectives;
- Provide multi-objective benefits where consistent with other Project objectives, such as water quality and recreation enhancements; and
- Facilitate compatibility with recreation goals for the area, including continued recreational boating access.

From the Project Description, CSLC staff understands that the Project would include the following components:

- Double Door Gate Structure. A 50-foot-wide gate structure would be constructed that would be opened and closed outwards towards the San Joaquin River by electric motors located above water on top of each gate hinge. The gate panels would be attached to a concrete foundation using stainless steel anchor bolts. The gate panels would be gasket-sealed at their connection to the fixed dual

sheet pile wall structure and at the point where two panels come together. The gate would remain open to allow for recreation, navigation, and tidal movement in Smith Canal. It would only be closed as needed for flood control during high flow events forecast to approach or exceed design operating water surface elevations.

- Fixed Dual Sheet Pile Wall Structure. A fixed wall would extend 800 feet from the north tip of Dad's Point Levee to the bank of the San Joaquin River, at the Stockton Golf Course and Country Club. The top elevation of this fixed wall would be 14.9 feet extending 10 feet above the mean water level at the entrance to Smith Canal. The wall would be constructed by driving sheet piles into San Joaquin River bed approximately 25 feet apart from each other. The space between the sheet pile walls would be filled with approximately 1 inch granular material consisted of a sand and gravel mixture to the level of the culverts.
- Gate Structure Control Building. A single-story masonry building, approximately 400 square feet, with a roof peak elevation of 15 feet above ground would be located at the tip of Dad's Point to house the gate structure controls.
- Moreing Road Culverts. The culverts under Moreing Road would be 48-inch corrugated metal pipes, each 75 feet in length.
- Dad's Point Improvements. The improvements would include raising the grade of Dad's Point to match that of Louis Park and habitat and recreation improvements such as fishing access/wildlife platforms, invasive species removal and landscaping, bat boxes, and multi-use interpretive trail.

The EIR identifies the Alternative 1–Single Gated Wall to Dad's Point as the Environmentally Superior Alternative.

Environmental Review

CSLC staff requests that the SJAFCA consider the following comments on the Project's final EIR.

General Comments

1. CSLC's Jurisdiction: While CSLC's jurisdiction is correctly described on page 1-13 as "State-owned 'sovereign' lands," there is no statement in the EIR that a lease will be required from the CSLC for the components of the Project that would be placed on lands under CSLC's jurisdiction. CSLC staff recommends adding a discussion section to Section 5.2 – Regulatory Framework and Compliance that describes CSLC's authority and jurisdiction over public trust lands ("sovereign" lands) and indicates that a lease would need to be obtained for the Project, similar to the discussions concerning other regulatory permits and applicable laws. 03-02

2. Mitigation Monitoring and Reporting Program: The EIR does not appear to include a Mitigation Monitoring and Reporting Program (MMRP). As stated on page ES-5, the Responsible agencies (like CSLC) would need to rely on the final EIR to approve 03-03

aspects of the Project falling under their jurisdictions; MMRPs can help facilitate responsible agency review and approval. Additionally, adoption of a MMRP is required as part of the project approval (see State CEQA Guidelines, §§ 15074, subd. (d), 15097). MMRPs are commonly included in EIRs to facilitate public review but are not required to be included; the EIR circulated for public review for this Project did not include a MMRP. CSLC staff recommends a MMRP be included as part of the final EIR to ensure transparency and public disclosure. 03-03 cont'd

The MMRP should include mitigation measure numbers, complete mitigation measure text, methods for coordination, timing for implementation of mitigation measures and a list of all parties and/or agencies, in addition to the SJAFCA, responsible for ensuring compliance and enforcement through permit conditions, agreements or other measures of the Project. CSLC staff highly recommends that a fully developed MMRP be part of the final EIR to avoid additional CSLC staff (or other responsible agency staff) costs to gather the necessary mitigation measures text from the EIR to identify the relevant mitigation measures before issuing a lease for structures under CSLC's jurisdiction.

Climate Change

3. Sea-Level Rise: A tremendous amount of State-owned lands and resources under the Commission's jurisdiction will be impacted by rising sea levels. Because of their nature and location, these lands and resources are already vulnerable to a range of natural events, such as storms and extreme high tides. The SJAFCA correctly notes on page 3.5-8 of the EIR that published case law (*Ballona Wetlands Land Trust v. City of Los Angeles*, 201 Cal. App. 4th 455) dictates that lead agencies need not analyze the effects of sea-level rise on a project; the EIR also acknowledges that this issue is currently pending in the California Supreme Court in California Building Industry Association v. Bay Area Air Quality Management District, which should settle the issue of whether CEQA requires analysis of how existing environmental conditions will affect a proposed project. 03-04

   Notwithstanding the somewhat uncertain judicial context, there are a number of reasons the SJAFCA should consider including a robust evaluation and discussion of the Project's sea-level rise resiliency in the EIR. Note that the State of California released the final "Safeguarding California: Reducing Climate Risk, an Update to the 2009 California Climate Adaptation Strategy" (Safeguarding Plan) on July 31, 2014, to provide policy guidance for state decision-makers as part of continuing efforts to prepare for climate risks. The Safeguarding Plan sets forth "actions needed" to safeguard ocean and coastal ecosystems and resources as part of its policy recommendations for state decision-makers.

   In addition, Governor Brown issued Executive Order B-30-15 in April 2015, which directs state government to fully implement the Safeguarding Plan and factor in climate change preparedness in planning and decision making. Please note that when considering lease applications, CSLC staff will (1) request information from applicants concerning the potential effects of sea-level rise on their proposed

projects, (2) if applicable, require applicants to indicate how they plan to address sea-level rise and what adaptation strategies are planned during the projected life of their projects, and (3) where appropriate, recommend project modifications that would eliminate or reduce potentially adverse impacts from sea-level rise, including adverse impacts on public access. Comments 5 and 6, below, should be addressed in the final EIR to facilitate CSLC staff's evaluation of the proposed Project for leasing purposes. 03-04 cont'd

4. Greenhouse Gases and Climate Change: Page 3.5-10 of the EIR states that the Project would be "designed, engineered, and constructed in anticipation of the potential effects of climate change and rising water levels to ensure that the project area would be unlikely to be affected by flooding." CSLC staff suggests that additional detail be provided in the final EIR that describes and substantiates the above statement, including the range of sea-level rise projections[1] over expected life-span of the Project and the specific design and engineering features (e.g., height of structures and walls) and how they compare to projected sea-level rise. Additional climate-change related challenges related to changes to the timing and intensity of snow-melt and river flows should also be discussed as potential compounding factors, as well as whether the houses (which are now elevated above the street) and street have been dropping in elevation due to compaction and subsidence from groundwater removal, or have remained stable. The SJAFCA should consider additional discussion of groundwater removal in this area or potential for subsidence for any other reason, as this is another important consideration when considering sea-level rise vulnerability. 03-05

Hydrology and Water Quality

5. Flood Risk, Hydrology, and Geomorphology: Page 3.1-5 states "Smith Canal receives tidal waters from the San Joaquin River; however the tidal exchange is relatively small at the upstream end of the canal." With projected sea-level rise, SJAFCA can expect that tidal exchange will increase at the upstream end of the canal for the foreseeable future, and should discuss whether that change over time would affect the function or safety of the proposed facilities. 03-06

According to pages 3.1-6 to 3.1-7, water depths in Smith Canal have changed over time due to silt accumulation in some locations and dredging in others. CSLC staff recommends SJAFCA discuss whether the rate of silt deposition is expected to change as a result of climate change (from changes in storm intensity/timing), whether dredging activities are expected to remain the same in the future or need to change, and how changing water depths in the canal may affect surrounding areas (e.g. widening of the channel), especially as sea level rises. 03-07

The assessment methods description on page 3.1-7 indicates the EIR's evaluation of flood risk and hydrodynamics was based on the MIKE-21 software; however, it 03-08

[1] CSLC staff generally considers the 2012 National Research Council Report *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* to be the best available information at this time.

does not appear that sea-level rise was considered in the MIKE-21 model, which could means that the findings do not accurately predict future conditions and stressors. CSLC staff recommends the assessment be redone using sea-level rise projections, if possible. Otherwise, a different model should be used to evaluate the effects of the project under a predictable future sea-level rise scenario. 03-08 cont'd

6. Mercury/Methylmercury: The Project area includes the San Joaquin River, which is listed by the Central Valley Regional Water Quality Control Board (CVRWQCB) as impaired for mercury contamination. Mercury is a sediment-associated pollutant, and activities that disturb sediment may contribute to mercury transport in the Delta. Although the EIR states on page 3.8-10 that mercury/methylmercury is one of the sources of contaminants for this Project, it does not identify how releases of mercury/methylmercury would be avoided or minimized during implementation of proposed Project-related activities such as driving sheet piles into the San Joaquin River. CSLC staff requests that the final EIR include avoidance and minimization measures to reduce potential release from Project activities of mercury and other toxins into waterways and onto State lands underlying those waterways. 03-09

   To provide some background, on April 22, 2010, the CVRWQCB identified the CSLC as both a State agency that manages open water areas in the Sacramento-San Joaquin Delta Estuary and a nonpoint source discharger of methylmercury (Resolution No. R5-2010-0043), because subsurface lands under the CSLC's jurisdiction are impacted by mercury from legacy mining activities dating back to California's Gold Rush. Pursuant to a CVRWQCB Total Maximum Daily Load (TMDL), the CVRWQCB is requiring the CSLC to fund studies to identify potential methylmercury control methods in the Delta and to participate in an Exposure Reduction Program. The goal of the studies is to evaluate existing control methods and evaluate options to reduce methylmercury in open waters under jurisdiction of the CSLC. Any action taken that may result in mercury or methylmercury suspension within the Sacramento-San Joaquin Delta Estuary may affect the CSLC's efforts to comply with the CVRWQCB TMDL.

Cultural Resources

7. Submerged Resources: While the EIR indicates (page 3.14-5) the CSLC shipwrecks database was searched in 2014, this database contains only known and potential vessels located on the State's tide and submerged lands. The EIR should also acknowledge that the locations of many shipwrecks remain unknown. Please note that any submerged archaeological site or submerged historic resource that has remained in State waters for more than 50 years is presumed to be significant. 03-10

8. Title to Resources: The EIR (page 3.14-5) does not specify that the title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged land of California is vested in the State and under the jurisdiction of the CSLC (Pub. Resources Code, § 6313). This information should be added to the final EIR, either in this section or in Section 5.2 – Regulatory Framework and Compliance. CSLC staff requests that the SJAFCA consult with 03-11

Assistant Chief Counsel Pam Griggs (see contact information below) should any cultural resources on state lands be discovered during construction of the proposed Project. In addition, CSLC Staff requests that the following statement be included in the final EIR mitigation measure CUL-MM-2: "The final disposition of archaeological, historical, and paleontological resources recovered on State lands under the jurisdiction of the CSLC must be approved by the Commission." 03-11 cont'd

Thank you for the opportunity to comment on the EIR for the Project. As a responsible and trustee agency, the CSLC will need to rely on the final EIR for the issuance of any new lease as specified above and, therefore, we request that you consider our comments prior to certification of the final EIR.

Please send copies of future Project-related documents, including electronic copies of the final EIR, MMRP, Notice of Determination (NOD), CEQA Findings and, if applicable, Statement of Overriding Considerations when they become available, and refer questions concerning environmental review to Afifa Awan, Environmental Scientist, at (916) 574-1891 or via e-mail at Afifa.Awan@slc.ca.gov. For questions concerning archaeological or historic resources under CSLC jurisdiction, please contact Assistant Chief Counsel Pam Griggs at (916) 574-0452 or via email at Pamela.Griggs@slc.ca.gov. For questions concerning CSLC leasing jurisdiction, please contact Nick Lavoie, Public Land Manager, at (916) 574-1869 or via email at Nicholas.Lavoie@slc.ca.gov.

Sincerely,

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

Enclosure: CSLC July 24, 2014 Comment Letter

cc: Office of Planning and Research
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S. Blackmon, CSLC
J. DeLeon, CSLC
P. Griggs, CSLC
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STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

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Established in 1938

July 24, 2014

File Ref: SCH # 2014062079

ICF International
Attention: Megan Smith
630 K Street, Suite 400
Sacramento, CA 95814

Subject: Notice of Preparation (NOP) for a Draft Environmental Impact Report (EIR) for the Smith Canal Gate Project, San Joaquin County

Dear Ms. Smith:

The California State Lands Commission (CSLC) staff has reviewed the subject NOP for a Draft EIR for the Smith Canal Gate Project (Project), which is being prepared by San Joaquin Area Flood Control Agency (SJFCA). SJFCA, as a public agency proposing to carry out the Project, is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The CSLC is a trustee agency because of its trust responsibility for projects that could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters. Additionally, because the Project involves work on sovereign lands, the CSLC will act as a responsible agency.

CSLC Jurisdiction and Public Trust Lands

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The CSLC also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6301, 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. On navigable non-tidal

waterways, including lakes, the State holds fee ownership of the bed of the waterway landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high water mark, except where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

After reviewing the information contained in the NOP, CSLC staff has determined that the Project is proposed to take place waterward of the Ordinary High Water (OHW) mark in the historic, natural riverbed of the San Joaquin River at the mouth of the Smith Canal. At this location, any submerged land waterward of the OHW mark is State-owned sovereign land under the jurisdiction of the CSLC. If at any time the Project alternatives identified in the Draft EIR impact sovereign land waterward of the OHW mark in the San Joaquin River adjacent to the Smith Canal, a lease will be required from the CSLC prior to construction. CSLC's lease application is available online at http://www.slc.ca.gov/. Please contact Jonathan Sampson, Public Land Management Specialist (see contact information below) for further information about the CSLC leasing process.

Please also be advised that the waterways involved in the Project are subject to a public navigational easement. This easement provides that the public has the right to navigate and exercise the incidences of navigation in a lawful manner on State waters that are capable of being physically navigated by oar or motor-propelled small craft. Such uses may include, but are not limited to, boating, rafting, sailing, rowing, fishing, fowling, bathing, skiing, and other water-related public uses. The activities completed under the Project must not restrict or impede the easement right of the public.

This conclusion is without prejudice to any future assertion of State ownership or public rights, should circumstances change, or should additional information come to our attention. This letter is not intended, nor should it be construed as, a waiver or limitation of any right, title, or interest of the State of California in any lands under its jurisdiction.

Project Description

The proposed Project is to design and construct a gate-type closure structure at the mouth of Smith Canal adjacent to the San Joaquin River/Stockton Deep Water Ship Channel (DWSC) in and adjacent to the city of Stockton in San Joaquin County.

The Project is necessary because the Federal Emergency Management Agency (FEMA) has determined that Smith Canal levees do not meet its standards for protection against a 100-year storm event, or a storm that has a one percent chance of happening in any given year. The Project objectives are:

- Reacquire FEMA accreditation that was revoked in 2008, placing approximately 8,000 properties and approximately 24,000 people at increased risk from flooding; causing a large portion of central Stockton to be mapped as a Special Flood Hazard Area; and
- Provide water quality and recreation enhancements.

The proposed Project will provide 100-year flood protection to the areas in the Smith Canal floodplain through the following components:

- Use of neighboring roadways for Project ingress and egress;
- Construction of new roadways;
- Resurfacing and/or relocation of existing roadways;
- Removal of vegetation adjacent to the riverfront;
- Disposal of excess construction material at identified disposal sites; and
- Relocation of public and private utilities.

Although not included in the Project description, the Figure "Smith Canal Closure Structure Preliminary Design for Conditional Letter of Map Revision" shows the locations of proposed sheet pile walls in the Project area.

Environmental Review

CSLC staff requests that the following potential impacts be analyzed in the EIR.

General Comments

1. Project Description: A thorough and complete Project Description should be included in the Draft EIR in order to facilitate meaningful environmental review of potential impacts, mitigation measures, and alternatives. The Project Description should be as precise as possible in describing the details of all allowable activities. For example, the Draft EIR should provide details that include:
   - Types of equipment or methods that may be used;
   - Maximum area of impact or volume of sediment removed or disturbed;
   - Seasonal work windows;
   - Locations for material disposal; and
   - Timing and length of activities.

   Thorough descriptions will facilitate CSLC staff's determination of the extent and locations of its leasing jurisdiction, and make for a more robust analysis of the work that may be performed.

03-12

2. Maps/Images: CSLC staff requests that current Project maps (like Figure 2) in the Draft EIR or similar maps the Draft EIR be superimposed with the proposed structures to illustrate changes to existing lands. Other maps or images should also be included to illustrate the sensitive resources (biological, etc.) in and around the proposed Project area.

03-13

Biological Resources

3. Sensitive Species: The Draft EIR should disclose and analyze all potentially significant effects on sensitive species and habitats in and around the Project area, including special-status wildlife, fish, and plants. The SJFCA should conduct queries of the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) and U.S. Fish and Wildlife Service's (USFWS) Special-Status Species Database to identify any special-status plant or wildlife species that may occur in the Project area. CSLC staff recommends contacting appropriate agency staff for consultations.

03-14

4. Resource Agencies Consultations: The Draft EIR should document and discuss the consultation outcomes with CDFW, USFWS, National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS), and other appropriate agencies. These consultations should also discuss the feasibility of the proposed mitigation measures, and other potentially required permits identified by these agencies. 03-15

5. Underwater Noise: As noted above, if installation of one or more sheetpile walls is proposed as indicated in the Figure "Smith Canal Closure Structure Preliminary Design for Conditional Letter of Map Revision" (but not discussed in the Project Description), then the Draft EIR should evaluate noise and vibration impacts on fish and birds from underwater construction, and other restoration or flood control activities in the water, on levees, and for land-side supporting structures. It should also discuss how the noise levels will be monitored to keep below recommend noise vibration thresholds. Possible mitigation measures can include species-specific work windows as defined by CDFW, USFWS, and NMFS. Again, staff recommends early consultation with these agencies to minimize the impacts of the Project on sensitive species. 03-16

6. Aquatic Invasive Species: One of the major stressors in California waterways is introduced species. Therefore, the Draft EIR should consider the Project's potential to encourage the establishment or proliferation of aquatic invasive species (AIS) such as the quagga mussel, or other nonindigenous, invasive species including aquatic and terrestrial plants. For example, construction boats and barges brought in from long stays at distant projects may transport new species to the Project area via hull biofouling, wherein marine and aquatic organisms attach to and accumulate on the hull and other submerged parts of a vessel. If the analysis in the Draft EIR finds potentially significant AIS impacts, possible mitigation could include contracting vessels and barges from nearby, or requiring contractors to perform a certain degree of hull-cleaning. The CDFW's Invasive Species Program could assist with this analysis as well as with the development of appropriate mitigation (information at www.dfg.ca.gov/invasives/). 03-17

   In addition, in light of the recent decline of native pelagic organisms and in order to protect at-risk fish species, the Draft EIR should examine if any elements of the Project (e.g., changes in bankside vegetative cover) would favor non-native fisheries within the DWSC. 03-18

Water Quality

7. Mercury/Methylmercury Release. If in-water installation of sheetpile walls or other activities related to suspended soil disturbance will be proposed (see comments above), CSLC staff requests that the Draft EIR should analyze potential impacts to biological resources and water quality from proposed Project-related activities that may result in disturbing the suspended sediments. For example, disturbance of fine sediments may generate turbidity, wherein suspended particulates can impede light penetration and photosynthesis of submerged vegetation. Suspended sediment may also react with and reduce dissolved oxygen in the water column, making less 03-19

available for marine organisms. If impacts prove to be potentially significant, possible proposed mitigation measures could include the employment of silt curtains or other best management practices 03-19 cont'd

Climate Change

8. Greenhouse Gases: A greenhouse gas (GHG) emissions analysis consistent with the California Global Warming Solutions Act (Assembly Bill [AB] 32) and required by the State CEQA Guidelines should be included in the Draft EIR. This analysis should identify a threshold for significance for GHG emissions, calculate the level of GHGs (including vehicle trips for bringing and taking away equipment, and disposal of material) that will be emitted as a result of construction and ultimate build-out of the Project. The Draft EIR should also determine the significance of the impacts of these emissions. If impacts are significant, appropriate mitigation measures should be proposed that will help reduce these impacts to less than significant. 03-20

Vessel Traffic

9. The Draft EIR should provide a discussion of the possible increase in vessel traffic on DWSC from barges used to carry equipment needed for carrying out Project-related activities. Disclosing this information is important because it is also needed when assessing possible recreational impacts from proposed Project-related activities. CSLC also requests that this information be included (or at least referenced) in the "Recreation" section of the Draft EIR. 03-21

Recreation

10. As stated in the NOP on page 2 that recreational boating access to DWSC will not be allowed during high flow events or structure testing and maintenance activities. Because of the public navigational easement (see "CSLC Jurisdiction and Public Trust Lands" section above), CSLC staff requests the Draft EIR include evaluation of temporary and permanent loss of access to DWSC, and other public trust uses such as (but not limited to) boating, rafting, sailing, rowing, fishing, fowling, bathing, skiing, kayaking, bird watching, etc. If potential impacts are identified, CSLC requests appropriate mitigation measures be proposed and logically explained how they will result in reducing impacts to less than significant. A possible mitigation measure could be posting signs (in advance) in and around the proposed Project area with information regarding the duration of impeded public access to DWSC, and possible alternate routes. 03-22

Cultural Resources

11. Submerged Resources: The Draft EIR should evaluate potential impacts to submerged cultural resources in the Project area. The CSLC maintains a shipwrecks database that can assist with this analysis. CSLC staff requests that the SJAFCA contact Assistant Chief Counsel Pam Griggs (see contact information below) to obtain shipwrecks data from the database and CSLC records for the Project site. The database includes known and potential vessels located on the State's tide and 03-23

submerged lands; however, the locations of many shipwrecks remain unknown. Please note that any submerged archaeological site or submerged historic resource that has remained in State waters for more than 50 years is presumed to be significant. Because of this possibility, please add a mitigation measure requiring that in the event cultural resources are discovered during any construction activities, Project personnel shall halt all activities in the immediate area and notify a qualified archaeologist to determine the appropriate course of action. 03-23 cont'd

12. Title to Resources: The Draft EIR should also mention that the title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the CSLC. CSLC staff requests that the SJAFCA consult with Assistant Chief Counsel Pam Griggs (see contact information below), should any cultural resources on state lands be discovered during any construction activities. 03-24

Thank you for the opportunity to comment on the NOP for the Project. As a responsible agency, the CSLC will need to rely on the Final EIR for the issuance of any amended/new lease as specified above and, therefore, we request that you consider our comments when preparing the Draft EIR. Please send additional information on the Project to the CSLC as plans become finalized.

Please send copies of future Project-related documents, including electronic copies of the Draft EIR, Mitigation Monitoring and Reporting Program (MMRP), Notice of Determination (NOD), CEQA Findings and, if applicable, Statement of Overriding Considerations when they become available, and refer questions concerning environmental review to Afifa Awan, Environmental Scientist, at (916) 574-1891 or via e-mail at Afifa.Awan@slc.ca.gov. For questions concerning archaeological or historic resources under CSLC jurisdiction, please contact Assistant Chief Counsel Pam Griggs at (916) 574-1854 or via email at Pamela.Griggs@slc.ca.gov. For questions concerning CSLC leasing jurisdiction, please contact Jonathan Sampson, Public Land Management Specialist, at (916) 574-0909, or via email at Jonathan.Sampson@slc.ca.gov.

Sincerely,

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
Afifa Awan, DEPM, CSLC
Eric Gillies, DEPM, CSLC
Pamela Griggs, Legal, CSLC
Eric Milstein, Legal, CSLC
Jonathan Sampson, LMD, CSLC

9.2.3.1 Response to Letter 03

03-01

SJAFCA acknowledges that a lease from the California State Lands Commission would be required for any of the three proposed project alternatives.

03-02

A description of the California State Lands Commission's jurisdiction and authority has been added to Chapter 5, *Regulatory Framework and Compliance*, Section 5.2, *State.*

03-03

SJAFCA will prepare and adopt a Mitigation Monitoring and Reporting Plan (MMRP) as part of its findings document at the time of project approval. In the Final EIR, all proposed mitigation measures can be found in Table ES-2, Summary of Impacts and Mitigation Measures for the Smith Canal Gate Project, for CSLC staff use.

03-04

SJAFCA, as the CEQA lead agency, has included resilience to sea-level rise as a project objective to assist in selecting a project alternative that may best resist the effects of rising sea levels. Further, Chapter 2, *Proposed Project and Alternatives*, describes what design consideration were included in the project alternatives to increase the sea level rise resiliency of the project. Accommodation of sea-level rise in project design is also discussed in Section 2.3.1, *Alternative 1 – Single Gated Wall to Dad's Point (Proposed Project)* and illustrated in Plate 2-8.

03-05

The CEQA analysis contained in the Draft EIR addressed the impacts on the existing environment that may result from implementation of the project. Any lowering of the base elevation of the surrounding community that could result from potential subsidence would not result in any increased impacts from the project or lessen the project's effectiveness to reduce regional flood risk.

USACE Circular No. 1165-2-211, "Water Resources Policies and Authorities Incorporating Sea-Level Change Considerations in Civil Works Programs," states that planning studies and engineering designs should consider alternatives that are developed and assessed for the entire range of possible future rates of sea level rise. Alternatives should be analyzed using "low," "intermediate," and "high" rates of future sea level rise, based on the following:

Low —use local historic rate of sea level rise; assumed to be 0.66 feet/100-year (2.0 mm/year) per the value measured at San Francisco, California.

Intermediate—use the modified National Research Council (NRC) Curve I for estimating future sea level rise.

High—use the modified NRC Curve III for estimating future sea level rise.

Sea level rise in relation to the Smith Canal Gate Project was evaluated through 2050 (30 years from the project's proposed completion) assuming the "high" rate of sea level rise. The calculated rise was

1.4 feet, which is incorporated into the project design (Plate 2.8). As project development continues and the project design is refined, specific design and engineering features will be included that are consistent with the project objective of sea level rise resiliency over the project's lifespan. See responses to comments 03-06 and 03-07.

03-06

With sea level rise, both high tides and low tides are expected to be higher but will not change the day to day tidal fluctuations. As a result, the total amount of water entering and leaving Smith Canal during a tidal cycle will not change greatly. The primary mode by which sea level rise would affect tidal exchange is by an increase in the surface area at higher sea levels. However, because most of Smith Canal has steep banks, sea level rise will not cause a large increase in tidal exchange.

The project design takes into account projected sea-level rise through 2050, as well as hydraulic uncertainty, as described for each alternative in Chapter 2, *Proposed Project and Alternatives*. Section 3.5, *Greenhouse Gases and Climate Change*, also includes a discussion concerning sea level rise, as excerpted below.

"… as indicated above, ocean expansion associated with rising sea levels could affect the San Joaquin Delta and the proposed project. Therefore, the proposed project would be designed, engineered, and constructed in anticipation of the potential effects of climate change and rising water levels to ensure that the project area would be unlikely to be affected by flooding."

03-07

As discussed in Impact GHG-2: "Climate change is a complex phenomenon that has the potential to alter local climatic patterns and meteorology. Although modeling indicates that climate change will result globally and regionally in sea-level rise, as well as changes in climate and rainfall, among other effects, there remains uncertainty with regard to characterizing precise *local* climatic characteristics and predicting precisely how various ecological and social systems will react to any changes in the existing climate at the local level."

If storm intensity increases as a result of climate change, it could increase scour in some locations and siltation in others. Exact climate change effects on Smith Canal are uncertain. If siltation in Smith Canal increases, then dredging activity might need to increase. However, the construction of the gated fixed wall structure is unlikely to have a widespread effect on siltation within Smith Canal because the tidal exchange is unlikely to change significantly as a result of either climate change or the presence of the structure. Most siltation occurs below the level of low tide, so it would not significantly affect the ability of Smith Canal to hold local runoff. Flood stage occurs when high flows in the San Joaquin River combine with high tides, so siltation would not affect the likelihood of a major flood event because it wouldn't affect tidal elevation. In addition, siltation in Smith Canal due to storm water pumping should not increase with climate change since the area is completely built out and sediment sources have been covered with urbanization. Also, see response to Comment 03-06.

03-08

See response to Comment 03-06. The main reason for the modeling was to assess how construction may affect typical tidal circulation within Smith Canal in order to evaluate currents, velocity, water quality, and potential for scour. The conclusions are unlikely to change in response to higher water

surface elevations resulting from sea level rise as sea level rise will only change the mean tide level and not the volume of tidal exchange. The model would present similar results if the 1.4 feet of sea level rise was added to the model, and the project has been designed to accommodate this increase in sea levels.

03-09

Mercury/methylmercury is among the water quality constituents included in Impact WQ-2, described in Section 3.2, *Water Quality and Groundwater Resources*. As described for Impact WQ-2: "Contaminants could enter the water as a result of spills during construction, contamination of stormwater runoff from the construction site, or disturbance of sediments that contain contaminants."

The methods used to minimize increases in turbidity (Impact WQ-1) would minimize re-suspension of mercury or methylmercury. These methods include precautionary construction measures (e.g., use of cofferdams, vibratory hammers, and bag filters for dewatering) and mitigation measure WQ-MM-1a (prepare and implement a turbidity monitoring program).

A 401 water quality certification would be necessary for project construction. As part of the certification process, the Regional Water Board would determine if monitoring of mercury concentrations would be necessary. It is unlikely that a construction project in the San Joaquin River would significantly increase turbidity in the Delta given the limited area covered by the project and the temporary nature of construction.

03-10

As described in Section 3.14.1.2, *Records Search*, which includes modified language in response to this comment, the CSLC shipwrecks database's scope is only for state tide and submerged lands. Regulatory language was added in Section 3.14.1.1, *Regulatory Setting—State*, on cultural resources in state waters that discusses presumed significance.

Language was added under Impact CUL-2 for all alternatives stating that there is the potential that project ground-disturbing activities in currently submerged areas could disturb or destroy as yet unrecorded shipwrecks. The corresponding Mitigation Measure CUL-MM-2 for all alternatives still mitigates Impact CUL-2 to a less-than-significant level.

03-11

See response to Comment 03-10.

Also, modified requested language was added to Mitigation Measure CUL-MM-2 for all alternatives—"historical, and paleontological" language was removed in order to reflect archaeology-related discussion.

03-12

The Draft EIR contains a thorough and complete description of all three project alternatives. The project description includes the types of equipment and construction methods to be used, construction schedules, and material disposal locations. Impact quantities are provided in resource sections, as relevant.

03-13

Figures showing the proposed structures have been prepared for all three project alternative (Plates 2-2, 2-3, and 2-6). Plate 3.7-1 shows land cover types in the study area.

03-14

Impacts on sensitive species and habitats in and around the project area are described in Sections 3.7, 3.8, and 3.9 of the Draft EIR. Impact analyses for these sections included results from the California Natural Diversity Database and the U.S. Fish and Wildlife Service's Special Status Species Database queries.

03-15

The Draft EIR contains a description of applicable regulations that require consultation with the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and the National Marine Fisheries Service. Any future consultations with these agencies will include a discussion of the feasibility of proposed mitigation measures.

03-16

The Draft EIR discusses in detail the noise disturbance to fish during construction activities (Impact AQU-2). The mitigation measures to reduce noise impacts on fish include limiting construction activities to times of year when fish are absent, various measures during pile driving to minimize exceedance of interim threshold sound levels, and hydroacoustic monitoring.

03-17

See response to Comment 02-05.

Impacts WQ-5 and VEG-7 discuss impacts of water hyacinth. The project O&M plan would monitor and remove water hyacinth from behind the proposed sheet pile wall. Impact VEG-7 also considers two other invasive aquatic plants, Brazilian waterweed and water-milfoil, which are not expected to change as a result of the project.

The project area is adjacent to the Port of Stockton, which receives ships from around the world that have the potential to expose the project area to aquatic invasive species. The project area is also located in the Sacramento-San Joaquin River Delta, which is receives heavy boat traffic from vessels originating from both California and foreign waters. The risk of exposing the project area to aquatic invasive species posed by the volume of ships received at the Port of Stockton from foreign ports far exceeds that of the proposed project, which would use only a few vessels. If any ships originating from foreign or non-California waters were to be used as part of project construction they would be subject to the same restrictions as other ships originating from non-California waters. The project would therefore pose a negligible risk of establishing or proliferating aquatic invasive species.

03-18

As discussed in Comment 03-17, and as described under each alternative in Chapter 2, *Proposed Project and Alternatives*, SJAFCA would remove invasive plants as part of operations and maintenance, which would decrease predatory fish (e.g. black bass) habitat in the project area.

Therefore, implementation of the project is not expected to favor non-native fish within the San Joaquin River.

03-19

The Draft EIR analyzes potential impacts on water quality under Impacts WQ-1 and WQ-2, although silt curtains might not be one of the specific methods used. See response to Comment 03-09. Any increases in turbidity would be temporary and local and would be unlikely to affect marine organisms, which experience turbidity during storm events that is much higher than any expected during construction.

03-20

Greenhouse gas thresholds and impacts were evaluated in Impacts GHG-1 and GHG2 of the Draft EIR. As indicated in the Draft EIR, project-related GHG emissions would not exceed the SJVAPCD's Zero-Equivalency Threshold used to evaluate GHG impacts.

03-21

Impact TRA-5 discusses potential project-related impacts on river navigation from the use of boats/barges to deliver construction materials to the project site.

Text has been added to Section 3.11, *Recreation*, under Alternative 1, Impacts REC-2 and REC-3, to reference this discussion (Impact TRA-5) in regards recreational impacts from project activities.

03-22

Mitigation Measure REC-MM-2, Implement Measures to Aid Navigation, addresses the concerns contained in this comment. In response to this comment, "alternate routes" was added to the list of project-related educational materials and public outreach for boaters. There would be no permanent loss of access to the San Joaquin River, as the gates would remain open unless closure is needed to reduce flood risk or conduct testing and maintenance activities as described in Section 2.3.1.3, *Operations and Maintenance*. Temporary loss of access to allow for testing is anticipated to occur on an as-needed basis and would be schedule to avoid times when boat traffic is expected to be heavy. Maintenance activities would be conducted on an annual basis.

03-23

See response to Comment 03-11.

03-24

See response to Comment 03-11.

9.3 Letter 17—Len Marino, Central Valley Flood Protection Board

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY EDMUND G. BROWN JR., GOVERNOR
CENTRAL VALLEY FLOOD PROTECTION BOARD
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Received
AUG 13 2015
SJAFCA
San Joaquin Area Flood Control Agency

August 7, 2015

Mr. Roger Churchwell
San Joaquin County Community Development Department
22 E. Weber Avenue, Room 301
Stockton, California 95202

Subject: San Joaquin Country Area Flood Control Agency, Smith Canal Gate Project, Draft Environmental Impact Report, SCH No.: 2014062079

Location: San Joaquin County

Dear Mr. Churchwell:

Thank you for providing the Central Valley Flood Protection Board (Board) staff to review and provide comments on the San Joaquin County Area Flood Control Agency's (SJAFCA) proposed Smith Canal Gate project. We hereby submit the following comments:

Federal and State Project Reviews

The Board serves as the non-Federal sponsor for proposed projects to improve or alter State Plan of Flood Control (SPFC) facilities pursuant to the Code of Federal Regulations, Title 33, Section 408 (Section 408) which requires the project to be approved by the U.S. Army Corps of Engineers (USACE) in addition to the Board. 17-01

Board staff has been working with SJAFCA staff in the early design phases of the proposed project, and we are aware that the Department of Water Resources (DWR) has awarded an Urban Flood Risk Reduction program grant for project construction. Board staff will continue to work with you, DWR and the USACE as the project moves forward through the design phase.

Once the Board receives a completed permit application we will, on behalf of SJAFCA, submit your application to the USACE, Sacramento District office for their Section 408 review. Our staff will then work with you throughout the Board and USACE reviews to guide you through the review process, schedule your application for all needed Board actions, and if approved, through issuance of a permit, construction and project closeout.

Existing Board-permitted Encroachments

Page 2-19 of the Draft Environmental Impact Report states "Existing boat docks and piers would be removed by barge-mounted cranes." Please note that removal and or replacement of existing permitted encroachments shall conform with Title 23 and will require Board approval prior to removal or replacement. 17-02

Mr. Roger Churchwell
August 7, 2015
Page 2 of 2

If you have questions regarding these comments please contact James Herota of my staff at (916) 574-0651, or via email at james.herota@water.ca.gov.

Sincerely,

Len Marino, P.E.
Chief Engineer

cc: Governor's Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, California 95814

9.3.1 Response to Letter 17

17-01

As part of its due diligence on the development of alternatives, SJAFCA contacted the U.S. Army Corps of Engineers (USACE) to determine if USACE permission under 33 U.S.C. Section 408 was required for any of the alternatives. USACE confirmed that no permission was required under Section 408 as none of the levees in the project are Federally-authorized (they are not "project" levees) and there are no other Federally-authorized facilities being modified as a result of the project. SJAFCA will continue to coordinate with the Central Valley Flood Protection Board (CVFPB) to ensure that SJAFCA receives all necessary approvals from the CVFPB.

17-02

Under *Dock and Pier Removal* in Section 2.3.2.1, *Project Construction*, text has been added to clarify that all removal and replacement of encroachments would conform to Title 23 of the California Code of Regulations, Division 1.

9.4 Regional and Local Comments and Responses

9.4.1 Letter 04—Sharla Yang for Chay Thao, San Joaquin Valley Air Pollution Control District

San Joaquin Valley AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

August 11, 2015

Megan Smith
ICF International
630 K Street, Suite 400
Sacramento, CA 95814

Project: Draft Environmental Impact Report "SJAFCA Smith Canal Gate Project"

District CEQA Reference No: 20150587

Dear Ms. Smith:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the Draft Environmental Impact Report (Draft EIR) for the "*SJAFCA Smith Canal Gate Project*". The Draft EIR evaluates the impacts of a gated fixed wall structure to implement flood risk-reduction measures in the vicinity of Smith Canal and the San Joaquin River in and adjacent to the City of Stockton.

The District offers the following comments:

1. **Health Risk Assessment (HRA)** 04-01

The District recommends that a Health Risk Assessment (HRA) be performed for the Project.

The District recommends that a Health Risk Assessment (HRA) be performed for the Project construction period. The HRA should include the following:

- Third trimester in accordance with the new guidance from the Office of Environmental Health Hazard Assessment (OEHHA).
- Emissions from the construction area which would include the large staging area south of Monte Diablo Avenue.
- Truck travel, truck idling, and off-road equipment emissions.
- Truck travel along public highways need not be included. However, any truck travel on public highways such as Monte Diablo Avenue within the construction area should be included.

Seyed Sadredin
Executive Director/Air Pollution Control Officer

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- On Page 3.4-13, Table 3.3-4, the threshold listed for localized DPM is increased cancer risk of 10 in 1 million or increased non-cancer hazard greater than 1.0. The District would like to clarify that as of July 1, 2015, the District's new risk threshold is 20 in 1 million using the latest methodology according to the revised District risk management policies. Therefore, if the health risk assessment is redone, the District recommends using the latest methodology according to the revised District risk management policies and revising the table to reflect the updated risk threshold. 04-02

For specific guidance on the conduct of the HRA, please contact the District at (559) 230-6000.

2. Voluntary Emission Reduction Agreement (VERA) for Alternative 2 04-03

The District recommends that Mitigation Measure AQ-MM-1c be revised based on the following comments:

Mitigation Measure AQ-MM-1c requires the project proponent to enter into a Voluntary Emission Reduction Agreement (VERA) with the District to reduce construction related NOx emissions within the SJVAB to below the District's threshold of 10 tons per year.

- The District will rely on the EIR and how the mitigation measure is phrased.
- The mitigation measure should be clarified on when the reassessment will be done (i.e. annual basis), who will be responsible for doing the reassessment, and if any reassessment should be verified by the lead agency.
- As a responsible agency under CEQA, the District will assist the lead agency with the implementation of the VERA itself. After the project is mitigated, the District certifies to the lead agency that the mitigation is completed, providing the lead agency with an enforceable mitigation measure demonstrating that project specific emissions have been mitigated to less than significant. However, the District encourages and recommends that the lead agency ensure the implementation of this mitigation measure.

In addition, a VERA can be designed to have flexibility in determining the mitigation cost and typically includes requirements for the project proponent to cover shortages in emission reductions or for any excess to be rollover to the next phase after a reassessment. The following are optional language that could be added to the mitigation measure regarding the payment of mitigation fee:

1. The project proponent shall pay mitigation based on the projected emissions in the EIR; or
2. The project proponent shall pay mitigation based on the projected emissions in the EIR and then adjust the emissions with actual data after each construction phase.

2

Since the VERA mitigation is only applicable to Alternative 2, and the preferred Project would be determined at the time of project approval, the District is available to meet with you and/or the project proponent should you have any questions regarding the VERA.

04-03 cont'd

The District appreciates the opportunity to comment on the Draft EIR. If you have any questions or require further information, please call Sharla Yang at (559) 230- 5934.

Sincerely,

Arnaud Marjollet
Director of Permit Services

Sharla Yang

For Chay Thao
Program Manager

AM: sy

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9.4.1.1 Response to Letter 04

04-1

Potential health risks were characterized in Impact AQ-3 of the Draft EIR. As indicated in the Draft EIR, based on the identified mitigation (which includes construction equipment retrofits to minimize exhaust emissions) and amount of emissions associated with project activities, impacts would be less than significant.

04-2

See response to Comment 04-01.

04-3

Text has been added to Mitigation Measure AQ-MM-1c under Alternative 2, Impact AQ-1 to indicate the reassessment would be conducted annually at the end of each year of construction in consultation with SJVAPCD. Text has also been added to indicate mitigation fees would be based on the projected emissions in the Draft EIR and verified by the SJVAPCD based on actual data after each year of construction activities.

9.5 Non-Governmental Entity Comments and Responses

9.5.1 Letter 05—John Briscoe, Briscoe Ivester & Bazel LLP

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John Briscoe
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jbriscoe@briscoelaw.net

August 6, 2015

Certified Return Receipt
Ms. Megan Smith
Project Manager
ICF International
630 K Street, Suite 400
Sacramento, CA 95814

Re: Smith Canal Gate Project

Dear Ms. Smith:

I write on behalf of the Atherton Cove Association, an organization of property owners in the Atherton Cove area, in comment on your Draft Environmental Impact Report for the proposed Smith Canal Gate Project.

A. SJAFCA Does Not Own the Land On Which it Would Build its Dam

Your Draft EIR omits a salient fact: SJAFCA does not own the land on which it proposes to build its dam, and acquiring the necessary property interest is most likely beyond the pale of the possible. The DEIR devotes two brief sentences to the essential question whether SJAFCA has the necessary ownership interests to build the proposed dam, but those sentences address lands *other* than the very lands on which you propose to build the dam:

05-01

> **Property Acquisition**
> Implementation of the project *may* require acquisition of interests in real estate along Dad's Point, within Smith Canal, along Atherton Cove and Atherton Island, and at the north bank tie-in point near the Stockton Golf and Country Club

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(described in Chapter 2, Proposed Project and Alternatives). Additionally, SJAFCA may need to acquire access easements through the Stockton Golf and Country Club to access the gate structure from the north for construction purposes and for long-term operations and maintenance purposes.

05-01 cont'd

DEIR, pg. ES-7, repeated word for word on pages 1-14. "May" is coy*; of course* those interests would "require acquisition." But the two sentences ignore the central question of ownership of the "land" on which the dam is proposed to be erected.

05-02

Here is the information which, in your DEIR, you neglected to tell the public: The land is owned in fee simple by the State of California, and the United States of America owns a *perpetual* easement over the land for purposes wholly at odds with your proposed use of it. Your Draft EIR is silent on how you propose to wrest title to the land from the State of California and from the United States.

By Act of January 21, 1927, Congress authorized the San Joaquin River Project, what has come to be known as the Stockton Deep Water Channel Project. P.L. 560, 69th Cong., Ch. 47, Stat. 1927. The project as designed by the War Department's Corps of Engineers required the acquisition of much land in the historical bed of the San Joaquin River, which has been owned by the State of California since statehood as an incident of its sovereignty. *Pollard's Lessee v. Hagan* (1845) 44 U.S. (3 How.) 212; *Illinois Central R. Co. v. Illinois* (1892) 146 U.S. 387. The Act of January 21, 1927 stipulated that "no expense shall be incurred by the United States for the acquiring of any lands required for the purpose of this improvement." "[I]n accordance" with that Act of Congress, the Legislature of the State of California four months later, on May 23, 1927, "directed" the Governor to convey to the United States, vast tracts of the River's bed, for the purposes of the federal project for the "rectification" of the San Joaquin River. Ch. 435, Stats. 1929, pp. 754 *et seq*. The very property on which you propose to build your dam is among the lands listed in the lengthy statute, on pages 786-787.

The Governor did as he was directed. The following year he executed a deed on behalf of the State of California to the United States of America as grantee, of a "perpetual" easement over the lands in question. The deed is recorded June 11, 1930, in Book 316, Official Records of San Joaquin County, at page 41. The granted easement "is to remain in full force and effect forever," and it is to be used for "the purpose of depositing spoil thereon as may be required at any time, in any manner necessary in the construction and maintenance of the channel and necessary levees" for the federal San Joaquin River project. Nowhere in the deed is there any allowance for some third party to erect a dam on the granted premises.

The California Legislature cannot convey any interest in the same land inconsistent with the perpetual easement it has granted the United States, without incurring substantial liability, and ceaseless litigation. As property of the United States, the easement cannot be relinquished or otherwise disposed of (assuming it could) without the authority of Congress. U. S. Const. Art. IV, Sec. 3, Cl. 2.

05-02 cont'd

B. The Dam Project Would Violate the Public Trust Doctrine

05-03

The title California received upon its admission to the Union on September 9, 1850, was not an absolute title. It was a title impressed with a "public trust" for purposes often expressed as "commerce, navigation and fisheries." *Illinois Central, supra, Shively v. Bowlby* (1894) 152 U.S. 1, 57-58; *Marks v. Whitney* (1971) 6 Cal.3d 251, 257-261.

As a matter of separation of powers, it is the Legislature—not the executive branch, not the judicial—that has the power to administer the trust, and to select from among the many permissible trust uses the one it wants for a particular parcel of land. "[I]t is the Legislature that administers the trust, and it is within the province of the Legislature to prefer one trust use over another." *County of Orange v. Heim* (1973) 30 Cal.App.3d 694, 707. It is not for some agency, the courts, some group of citizens, nor you, to purport to make some use antithetical to the use selected by the Legislature. Here, the Legislature has spoken: The purpose it has chosen for the land on which you build your dam is the San Joaquin River project, *not* your dam.

You advert to the State Lands Commission as a responsible agency with jurisdiction over "State-owned 'sovereign lands.'" Draft EIR, p. ES-6. That is, in relevant part, incorrect. The State is the owner, to be sure, but the Lands Commission has certain jurisdiction over only *ungranted* sovereign lands. Pub. Res. Code §§6216, 6301. The lands on which you wish to build a dam *have* been granted. Even had they not been granted, the Legislature has already dictated by the 1929 statute what use is to be made of them. The Legislature created the Lands Commission eight years *after* it proclaimed the trust purpose for the lands, and its later-created agency cannot defy that directive.

Quite apart from the question of land ownership, then, the public-trust doctrine precludes your dam project.

C. SJAFCA's Failure to Address These Crucial Factors in the Feasibility of its "Alternative 1"—the Proposed Project, Contravenes CEQA

05-04

The proposed project is "Alternative 1" in the Draft EIR. An EIR, as is well known, must consider a range of alternatives, and must address the feasibility of each. "[W]hether the proponent can reasonably acquire, control or otherwise have access to the . . . site" of the proposed project is a critical factor in determining feasibility. CEQA Guidelines, Guideline 15126.6 (f) (1); *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553; *Save Our Residential Environment v. City of West Hollywood* (1992) 9 Cal.App.4th 1745, 1753[1]. We know of no manner by which SJAFCA can "reasonably acquire [or] control" the lands on which you would build a dam.

D. Any Attempted Expropriation of the Submerged Lands Would Expose SJAFCA to Potential Liability under State and Federal Law

05-05

Were SJAFCA to build its dam without proper title, it would expose itself to potential liability under the Federal and State False Claims Acts. 31 U.S.C. 3729-3734; Cal. Gov. Code §§12650 *et seq.* esp. §12651(a)(4)*; see, e.g.,* James W. Taylor and Brian Taugher, "The California False Claims Act," 25 *Public Contract Law Journal* (Winter 1996), pp. 315-333. Each has qui-tam provisions. *See United States ex rel. Hartpence v. Kinetic Concepts, Inc.,* (July 7, 2015). 2015 DJDAR 7881; Gov. Code §12652(c).

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[1] The Draft EIR neglects to discuss whether SJAFCA could acquire title to the dam site, but the facts are clear: (1) title reposes in the State of California and in the United States of America, and it is difficult to imagine how SJAFCA could acquire those interests. Certainly, it cannot condemn them. *See, e.g., City of Sacramento v. Secretary of HUD* (E. D. Cal. 1972) 363 Fed. Supp. 736.

For the reasons stated, your Draft EIR is deficient under CEQA, and your project is infeasible. As matters stand, were you to proceed with construction of your project you would trespass on State *and* Federal lands. 05-06

Sincerely yours,

BRISCOE IVESTER & BAZEL LLP

John Briscoe

JB/lgy
Enclosure
cc: Maxwell Freeman

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9.5.1.1 Response to Letter 05

05-01

The final alignment of a project, selected through completion of the CEQA process that is currently underway, will determine which properties must be acquired and where SJAFCA will be permitted to place facilities pursuant to licenses, leases, or other permissions. The Draft EIR does not omit the fact that SJAFCA does not own the land, as evidenced by the statement that SJAFCA may need to acquire interests. To clarify the real estate interests that may need to be acquired for implementation of the project, the text has been revised for the Final EIR to reference the sovereign interests of the State of California and possible license or lease that would be required by the California State Lands Commission (CSLC). (See Chapter 5, *Regulatory Framework and Compliance*.)

05-02

SJAFCA does not intend to acquire fee title from the State of California or the United States, and no such acquisition is necessary for the project. Any land or interest retained by the State, for which SJAFCA needs to acquire rights, is currently administered by the CSLC (Pub. Resources Code, Section 6301). As such, SJAFCA will be required to obtain permission, either in the form of a license or a lease, to construct and operate the project on state-owned lands. Please see Comment Letter 03 from CSLC, which echoes this understanding. As Comment 05-02 appears to acknowledge, the referenced easement granted to the United States is a non-exclusive easement, and there is no prohibition on leasing said lands for uses not inconsistent with that easement. In any event, the form of instrument to achieve the purposes of the project does not, without more, constitute a physical change in the environment not already addressed in other sections of the Draft EIR (e.g., Sections 3.1, *Flood Risk, Hydrology, and Geomorphology*; 3.7, *Vegetation and Wetlands*; 3.8, *Fish and Aquatic Resources*; 3.9, *Wildlife*; and 3.11, *Recreation*).

05-03

The comment suggests that the common law public trust doctrine precludes the proposed flood control facilities. The comment does not provide any legal authority or evidence that flood control is a non-trust use and that interpretation is in conflict with the liberal interpretation of trust-consistent uses granted by the courts in California. (See, for example, *Colberg, Inc. v. State of California ex rel. Department of Public. Works* (1967) 67 Cal.2d 408, 416-422, which determined that a highway bridge was a public trust use even though it obstructed navigation by large ships.) Flood management is a trust-consistent use, otherwise the entire state levee system would be deemed invalid under the public trust. The State of California, however, routinely grants leases or licenses for levee work or flood control structures in the state.

Even if flood control is not a public trust use, the State may authorize non-trust uses even if those uses interfere with the trust. As the California Supreme Court held, the State may allocate sovereign resources within its discretion and "despite foreseeable harm to public trust uses" so long as it "consider[s]" public trust resources and "preserve[s]" those resources to the extent "feasible" (*National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419, 446–447.) What is feasible in a particular instance is a matter for the trustee agency—in this case, CSLC—to determine in light of the "public interest." (*State Water Resources Control Bd. Cases* (2006) 136 Cal.App.4th 674, 678.) As the designated State entity with jurisdiction over certain lands, CSLC is the proper entity to

determine whether a license or lease may be issued to SJAFCA for the project. Please see comment letter from CSLC (comment letter 03).

05-04

See responses to comments 5-02 and 5-03. As outlined in previous responses, the proposed project must proceed through a myriad of approvals, including by CSLC and SJAFCA itself. Until those approvals are issued, the project as proposed may be denied for legal, factual, political, or other reasons. That fact does not render the proposed project legally infeasible.

05-05

See responses to comments 5-02 and 5-03.

05-06

See responses to comments 5-01 through 5-03.

9.5.2 Letter 06—Maxwell M. Freeman, Atherton Cove Property Owners Association, and Michael D. Hakeem, Hakeem, Ellis & Marengo

MAXWELL M. FREEMAN
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(209) 470-7100

August 4, 2015

Ms. Megan Smith
Project Manager
ICF International
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Sacramento, CA 95814

Re: Smith Canal Gate Project

Dear Ms. Smith:

We write on behalf of the Atherton Cove Property Owners Association who own homes in the Atherton Cove area, in comment on your Draft Environmental Impact Report for the proposed Smith Canal Gate Project.

I. **THE LESS EXPENSIVE AND EQUALLY EFFICIENT SINGLE SHEET PILE/RIP-RAP ALTERNATIVE FOR THE ATHERTON COVE LEVEE THAT THE DEIR REJECTED AND FAILED TO STUDY IS A VIOLATION OF CEQA GUIDELINE SECTION 15126.6. SINGLE SHEET PILE, UNLIKE THE DAM, WILL NOT CAUSE ANY SIGNIFICANT ENVIRONMENTAL DAMAGE TO ATHERTON COVE.** 06-01

A. To justify rejecting single sheet pile at Atherton Cove, the DEIR added an unreasonable and unsupportable additional building 06-02

1

specification to the sheet pile alternative – the patrol road – in order to reject the traditional sheet pile alternative for the Atherton Cove Levee. The DEIR claims that Atherton Cove Levee can only be sheet piled, at a cost of $116,000,000, by claiming, without precedent, that the Atherton Cove Levee sheet pile alternative can only be implemented if SJAFCA accedes to a totally unnecessary add on to the Atherton Cove Levee. The patrol road add on has never been imposed on other levees in our area and increases the sheet pile alternative cost by about $100,000,000 (See SJAFCA Comparative Cost Reports). Single Sheet pile for Atherton Cove is much less expensive than the DEIR proposed dam.

06-02 cont'd

The add-on that the DEIR uses to reject the traditionally suitable single sheet pile/rip-rap alternative is the patrol road. (DEIR 2.2.2)

To justify the patrol road specification, the DEIR without support claims that:

> "Levee encroachment has prevented necessary patrol and maintenance of the Atherton Cove Levee". (DEIR 1.4.1 --p.1-7)[1]

B. Based on that assumption, the DEIR then claims the sheet pile for Atherton Cove requires a patrol road on top of the Atherton Cove Levee with the following specifications:

06-03

1. A double sheet pile foundation extending out toward the middle of Atherton Cove;
2. Raising the height of the existing suitable Atherton Cove Levee by five feet+/-;
3. Building a 12 foot wide patrol road on top;
4. Paving the 12 foot wide patrol road; and

[1] DEIR 1.4.1 p. 1-7

2

5. Hiring patrolmen to patrol the patrol road.

06-03 cont'd

The requirement of a patrol road which is then used by the DEIR to reject the sheet pile for Atherton Cove has no precedent and is not based on sound engineering. The patrol road specifications, that the DEIR seeks to impose on Atherton Cove as a condition of using sheet pile, have never been imposed on any other levee in our area. The patrol road is a uniquely contrived bureaucratic invention by the DEIR to reject single sheet pile/rip-rap for Atherton Cove in favor of the dam proposal. Reason: the patrol road add-on runs up the cost of the sheet pile alternative by almost a $100,000,000. Single sheet pile without the patrol road add-on costs much less than the dam and eliminates significant environmental damage to Atherton Cove.

C. The DEIR fails to specify any unlawful encroachment that has prevented ordinary and necessary Atherton Cove Levee inspection.

06-04

SJAFCA can and should reject the patrol road and direct the study and use of single sheet pile/rip-rap if any project is required. Inexpensive single sheet pile/rip-rap will avoid the very significant negative environmental damage to Atherton Cove and the listed (116) significant negative environmental impacts as are listed in the DEIR discussed hereinafter.

06-05

Based on the patrol road invention, the DEIR fails to "carry forward" (bureaucratese for rejection and failure to analyze) the Atherton Cove single sheet pile/rip-rap alternative and thereby violates the CEQA Guideline Sec. 15126.6 requirement that all reasonable alternatives be analyzed (DEIR 2.1.1)

06-06

D. FLOOD INSURANCE:

The DEIR claims the proposed dam is required to avert the FEMA threat of imposing and hiking flood insurance premiums

06-07

3

on SJAFCA area residents (DEIR-ES.3.1). There is no credible proof that a Noah's Flood warranting raising levee tolerance several feet will occur for generations or in this century. But for FEMA insurance threats, SJAFCA would never have recommended damming Atherton Cove.

06-07 cont'd

The ballot notices (see Exhibit "A-1" attached) are replete with biased, exaggerated, unsupported and misleading scare tactics threatening SJAFCA area voters with unreasonable flood insurance rates by which tactics SJAFCA contractors obtained a narrow vote for a proposed project (June 6, 2013). Further, neither the notice nor the ballot revealed that, while pretending to look at alternatives, SJAFCA contractors had long before the vote written reports[2] that effectively ruled out any alternative other than the lucrative dam project across Atherton Cove. Without informing the voters in the ballot notice material or the ballot itself and before the vote, and without a CEQA required EIR , before, not after, a project is selected, SJAFCA contractors and staff had already selected the dam proposal and ruled out the sheet pile alternative for Atherton Cove. Before the June 6, 2013 vote SJAFCA contractors imposed unrealistic building specifications upon the sheet pile alternative for Atherton Cove.[3] Those unreasonable specifications ran up the cost of sheet pile to $116,000,000 and consequently made the dam unfactually appear to be more economical than the sheet pile alternative.[4] As a result of those SJAFCA contractors reports[2] SJAFCA effectively eliminated all alternatives but the dam and therefore selected the dam before the DEIR and without an EIR. Selection of the proposed dam prior to fulfilling the Board's CEQA obligation to obtain an environmental impact report ("EIR") and then balance project cost and the environmental damage against each reasonable

06-08

[2]Peterson-Brustad, Inc. Technical Memorandum, June 27, 2008; Smith Canal Closure Structure Early Implementation Program Project Report, February, 2011

[3]See Paragraph I, page 1 hereof.

[4]Smith Canal Closure Structure Early Implementation Program Project Report, February, 2011, Page 23 and Paragraph I hereof.

4

project alternative including "no project now," violates the bedrock CEQA purpose forbidding the Board's selection of a project until after the Board considers the EIR. 06-08 cont'd

For example, expectably, the DEIR, administered by the same SJAFCA contractors who had already determined to build a dam across Atherton Cove before the vote and before an approved EIR, procured and presented a DEIR pretextually rejecting the Atherton Cove sheet pile alternative and the "no project" alternative even though no evidence shows any historical generational flood risk that would overcome the Atherton Cove Levee.

Neither the DEIR, nor any other study provides the SJAFCA Board with any analysis of the amount of actual flood insurance premiums that might lawfully be imposed in the SJAFCA area on a house per house basis. 06-09 The SJAFCA contractors DEIR, having previously effectively selected the lucrative dam project, fails to study and inform the Board about current Congressional action, proposed by the President, to prevent unreasonable and new insurance premiums from being inflicted on homeowners, whether or not a project is pursued by a state or local agency. 06-10 Specifically, after the 2008 and 2011 SJAFCA contractors reports,[2] which already effectively covertly selected a dam project by rejecting all other alternatives (including no project), Congress amended the Biggert Water Act[5] in 2014 ("BWA Amendment") to prevent and/or delimit the hiking of insurance rates in areas such as the SJAFCA area (outside the frequently flooding Mississippi basin).

First, the 2014 Biggert Water Act Amendment forbids imposition of insurance premiums predicated on any premise that would hike insurance premiums that exceed "actual risk" rates. 06-11 The DEIR fails to study or provide the Board with information concerning the "actual risk" and therefore what actual flood insurance premiums, if any, might be to enable the Board to

[5]See Biggert Water Act Amendment, Section 205 et alia also known as The 2014 Homeowner Flood Insurance Affordability Act

5

compare insurance rate or premium hikes to the costs of (a) construction of a proposed dam and (b) the annual cost of mitigation of the 116 negative environmental impacts listed in the DEIR, and (c) the very significant negative environmental impacts inflicted by the dam on the Delta and the Atherton Cove neighborhood, including, but not limited to stagnation and eutrophication of Atherton Cove admittedly caused by a proposed dam in the DEIR.[6]

06-11 cont'd

Second, the DEIR fails study or provide information to the Board concerning alternative market place competing insurance programs which may very well affect the rate distribution and setting process in favor of homeowners.

06-12

Third, to protect the public from agency scare tactic maneuvers threatening flood insurance premiums hikes, as claimed in the ballot notice material (Exhibit "A-1"), the BWA Amendment grandfathers pre-existing insurance premiums to rates applicable when the homes were built, thereby forbidding agency maneuvers threatening premium hikes by the paper expedient of reclassifying an area as flood high risk. Homeowners are thereby protected against the ploy of claiming insurance premiums hikes allegedly occasioned by changes to the flood zone boundaries and risk classifications.[7] Nearly all of the homes in the SJAFCA area were built before FEMA/SJAFCA reclassified the SJAFCA area flood boundaries and ratings. However, thanks to the 2014 Biggert Water Act Amendment grandfather provisos, an agency cannot use the reclassification ploy to support a claim of hiked flood insurance premiums to induce the Board or the voters to approve a dam.

06-13

Fourth, most importantly, these 2014 Biggert Water Act Amendments demonstrate the political will of the President and the Congress to favorably respond to limit or eliminate the imposition of unreasonable flood insurance premiums which are not actuarially predicated on true engineering actual area risks.[7]

06-14

[6]See Paragraph VI hereof.
[7]I.e. the SJAFCA area

6

Moreover, if flood insurance limitations, in addition to the limitations enacted by the 2014 Biggert Water Act Amendment are needed, SJAFCA should obtain further insurance limits for the SJAFCA area by a trailer bill. Even intransigent FEMA got the political message of the BWA Amendment - Homeowner Flood Insurance Affordability Act and has issued bulletins stopping policy increases, requiring favorable utilization of private insurance, issuing refunds to some policy holders, and directing FEMA servicing agents to use pre-October 1, 2013 ... subsidized rates when more favorable for properties covered by the BWA Amendments.

06-14 cont'd

Accordingly, the Homeowner Flood Insurance Affordability Act (BWA Amendment) eviscerates the avoidance of scary flood insurance rate hikes as a reason to build the proposed dam. The flood insurance rate hike claims in the ballot notice were not only overstated in the ballot measure notice but also premium risk was essentially abated by BWA Amendment. The DEIR fails to inform the Board that the SJAFCA contractors claim that a dam is required to avoid overburdening flood insurance premiums no longer exists.[5] The Board is entitled to be informed in the DEIR of the drastic reduction of premium risks and the nature and extent thereof – a drastic change in circumstances. The DEIR fails to provide this insurance analysis even though the DEIR contractors continue to assert that the dam is primarily needed to avoid insurance premium hikes.

06-15

Since, per the ballot measure notice (Exhibit "A-1"), etc. the contractors proposed dam rests on SJAFCA's scary claims of unreasonable flood insurance rate and premium hikes, the DEIR was required by CEQA to study and present to the Board a true and complete evaluation of what flood premium rate hikes, if any, could be imposed on SJAFCA area homes in face of the BWA Amendment. The DEIR totally fails to study and present true and complete flood insurance rate information suitable to allow the Board, to evaluate what flood insurance premiums can be imposed on each SJAFCA area home in

7

comparison to the cost of a proposed dam, financially sustainable forever large annual mitigation costs and the very significant environmental damage inflicted by a proposed dam on the Delta and Atherton Cove.[6] The Board cannot fulfill this bedrock CEQA duty to compare the no project and/or single sheet pile project to the dam project because the DEIR fails to inform the Board of the very significant limitations of the BWA Amendment grandfathering most all of the SJAFCA area homes[8] flood insurance premiums, and further limiting rate hikes to actual area risks (not Mississippi risks). Indeed, the DEIR fails to study and is totally silent on the insurance issue.

06-15 cont'd

II. **THE BALLOT MEASURE AND ELECTION NOTICE SPECIFICALLY IDENTIFIED SMITH CANAL AS THE PROJECT AREA AND FAILED TO IDENTIFY ATHERTON COVE AS A LOCATION AFFECTED BY THE PROJECT AND THEREBY UNLAWFULLY MISLED THE VOTERS AS TO THE LOCATION OF THE PROPOSED PROJECT.**

06-16

Neither the ballot notices nor the ballot measure identified Atherton Cove as an area to be affected by the vote. (See Exhibits A1 and A2.) This SJAFCA stratagem misled the voters by representing that only Smith Canal (and not Atherton Cove) would be affected by the project and the notice procedure was unbiased toward a dam project. The project election was therefore flawed and does not legalize the expenditure of the Reclamation District and Department of Water Resources ("DWR") funds to build the proposed dam across Atherton Cove.

III. **THE PROPOSED DAM ALTERNATIVE SHOULD BE REJECTED SINCE THE DAM INFLICTS SIGNIFICANT NEGATIVE ENVIRONMENTAL DAMAGES UPON ATHERTON COVE AND THE DELTA.**

06-17

The notice of availability for public review provides a table enumerating 116 significant negative environmental impacts inflicted by the

[8]Built before the mid 2014 BWA Amendment and FEMA's new bulletins

8

proposed dam upon Atherton Cove, Smith Canal, and the Delta at large within these 11 categories:[9]

06-17 cont'd

1. Water quality and ground water resources;
2. Transportation and navigation;
3. Noise;
4. Vegetation and wetlands;
5. Fish and aquatic resources;
6. Wildlife;
7. Negative visual impact of the 10' above the water unsightly corrugated metal dam;
8. Recreation;
9. Utilities and public service;
10. Public health and environmental hazards; and
11. Cultural resources.

06-18

These 11 categories in turn enumerate a total of 116 separate significant negative environmental impacts inflicted by the proposed dam, all of which damages would be eliminated by selecting the unstudied single sheet pile/rip-rap alternative without a patrol road.

[9] DEIR, P. ES-15 - ES 44

9

06-19

IV. MITIGATION:
THE DEIR FAILS TO MEASURE AND INFORM SJAFCA AND THE PUBLIC OF THE MAGNITUDE OF EACH OF THE SIGNIFICANT ENVIRONMENTAL IMPACTS ADMITTEDLY INFLICTED (116) BY A PROPOSED DAM ACROSS ATHERTON COVE.[10]

The DEIR fails to provide sufficient information to the SJAFCA Board concerning the extent and magnitude of each significant negative environmental impact inflicted on Atherton Cove and the Delta and therefore prevents and precludes the SJAFCA Board from fulfilling it's CEQA duty to evaluate and prescribe appropriate mitigation measures, budgets and financing suitable to the magnitude of each of the 116 significant environmental impact damages listed in the DEIR. The DEIR failure to study the magnitude of these impacts makes it impossible for SJAFCA to enact appropriate remediation and mitigation measures. The primary mitigation measures suggested in the DEIR consist of monitoring and conducting awareness seminars which obviously will not repair, fix, remediate or mitigate the 116 serious significant environmental impacts identified in the DEIR. Looking at (i.e. monitoring) known foreseeable damage does not fix or repair the damage. "Monitoring" and "awareness" are just fancy bureaucratic words claimed to be mitigation in the DEIR to avoid SJAFCA's duty to finance and mitigate the admitted significant

[10]The DEIR fails to provide a comparison between the current baseline environmental conditions in Atherton Cove before a proposed dam would be changed occasioned by the significant impact of the dam in the full environmental context. The DEIR fails to adequately discuss inconsistencies between the proposed project and existing regional plans including but not limited to plans relative to habitat, conservation, and the prevention, elimination and control of invasive plant life. See Paragraph VI.; California Public Resources Code Sections 15229, 21000-210004 21083, 21083.05, 21060.5, 21061 and 21100 and 21000-21178; 15387; Title 14 CCR section 753. E.P.I.C. v. County of El Dorado 131 C.A. 3d 350; San Joaquin Rapture Wildlife Rescue Center v. County of Stanislaus, 27 C.A. 4th; 713; Bloom v. McGuirk 26 C.A. 4th 1307

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environmental damage inflicted by the proposed dam alternative. "Monitoring" and "Awareness" are totally inadequate and do not and will not fulfill the board's CEQA obligations to evaluate and effectuate necessary mitigation measures. Basic CEQA purposes require that the DEIR not only monitor the damage after the damage is done but also to forecast and provide reasonable and necessary mitigation measures for the foreseeable significant environmental damage (116) before acquiescing to and building the proposed dam.

06-19 cont'd

MONITORING IS NOT MITIGATION.

V. THE DEIR FAILS TO PROVIDE A REQUIRED ADAPTIVE MANAGEMENT PROGRAM.

06-20

The DEIR provides no "adaptive management program." Undefined and vague monitoring and pre-construction worker awareness[11] seminars do not fulfill the board's duty to establish a rigorous adaptive management plan. An adaptive management plan requires SJAFCA to establish objective criteria, decision making mechanisms, and financing mechanisms for suitable environmental mitigation before the dam project is built. Awareness seminars and monitoring significant environmental damage inflicted by the dam after it is built does not constitute a CEQA adaptive management program. A CEQA adaptive management program cannot be prescribed by SJAFCA until an EIR has studied the magnitude of each significant environmental impact so that mitigation and financing can be adopted suitable to the magnitude of each element of environmental

[11] Mitigation Measure VEG-MM-1d: Conduct Mandatory Contractor/Worker Awareness Training for Construction Personnel Mitigation Measure VEG-MM-le: Retain a Biological Monitor Mitigation Measure VEG-MM-7: Avoid and Minimize Spread of Introduction of INVASIVE PLANT SPECIES (See also language quoted in paragraph VI from USDA-ARS Western Regional Research Center Exotic and Invasive Weeds Research Unit report).

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damage. The mere listing of 116 significant impacts and monitoring thereof fails the CEQA adaptive management requirement. 06-20 cont'd

VI. INVASIVE PLANT SPECIES AND FLOTSAM DEBRIS.

The dam will trap large flotsam (think logs, beer boxes, boat trash, etc.) debris behind the dam in Atherton Cove. The dam will particularly and very significantly trap large mats of hyacinth, Egeria Densa and Arundo Donax, and the invasion of these and other noxious plant species will cause eutrophication[12] and stagnant conditions trapped behind the dam in Atherton Cove.[13] 06-21

Large mats of intertwined hyacinth in Atherton Cove and seen throughout the Delta and the Calaveras River exceed 50 feet in size clogged together and intertwined as a single mat. Atherton Cove is 600 feet wide at the mouth. These large hyacinth mats exit Atherton Cove through the 600 foot mouth. The proposed dam, despite neighbors request to the contrary, totally blocks Atherton Cove except for a narrow 50 foot gate. Large mats of hyacinth usually exceeding 50 feet in length and breadth cannot and will not exit through a 50 foot gate and will trap the

[12] The eutrophication process occurs over time resulting from an increase in the concentration of phosphorous nitrogen and other plant nutrients concurrent with water blooms which develop from the plants and lie on the surface of the water which thereby delimits light penetration through the water changing oxygen absorption behind the dam generated by the trapped invasive noxious weeds. The DEIR fails to study the effects and extent of eutrophication which will be caused by the trapping effect of the dam in Atherton Cove and likewise fails to provide for necessary and proper mitigation measures. Eutrophication from trapped invasive noxious vegetation include bad odor and the creation of mosquito havens.

[13] Beginning at page ES22, the DEIR lists 20 significant environmental impact to the vegetation and wetlands affected by the dam. One of the most serious examples is impact VEG-7, Spread of Invasive Plant Species specified on page ES28. (See pages ES22 through ES28.)

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large hyacinth mats behind the dam in Atherton Cove fostering stagnancy as stated hereinafter[14]. 06-21 cont'd

The DEIR does not account for, discuss, or represent any data on present occurrence or potential effects on occurrence, locations and extent of aquatic plants, whether "floating types", "submersed type", or "emergent" types. Nor does it account for or discuss potential effects of the "dam" and associated structures on cumulative (multi year) effects of sediment accretion as what one would anticipate to happen at the expected low velocity zones and associated eddy currents at points away from the "50 ft" opening extending to the shorelines where the structure connects. 06-22 06-23

The assumptions of equal retention times appear to be based on "mass" tidal flow in/out, but do not account for localized flow effects which in fact will drive sediments stability, which in turn drives suitability for vegetation establishment and spread, which will over time, alter (primarily reduce) flow velocities within and adjacent to stands of vegetation (especially submersed, rooted plants that are commonly found in the Delta). Localized changes in fact change "particle" retention times. This has been shown in models of Franks Tract and other Delta areas. Such "mass" flow comparisons are insufficient to afford reasonable predictability or even approximate "post" project conditions: They are far too "gross" in scale to represent likely outcomes relative to characteristics that drive both sediment accretion and biotic responses. In other words center channel, mid-depth velocities may be relatively unaffected, but lateral and vertical distribution of velocities will likely be changed significantly simply due to localized changes in drag forces with increasing distance from the mid-channel, mid-depth conditions. 06-24

The DEIR does not account for interactions between algal growth and potential (and likely) changes in submersed (and possibly floating) 06-25

[14]USDA-ARS Western Regional Research Center Exotic and Invasive Weeds Research Unit report

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vegetation. Algal blooms are not just within the phytoplankton (microscopic, unicellular) species; they occur with filamentous algae which are often associated in large abundance within and on canopies of submersed aquatic, rooted plants.

06-25 cont'd

Further, the USDA-ARS Western Regional Research Center Exotic and Invasive Weeds Research Unit reports in part on September 2014,[14] as follows:

06-26

> "Invasive aquatic weeds such as submerged Brazilian waterweed (Egeria densa), floating water hyacinth (Eichhoria crassipes), and emergent giant reed (Arundo donax) are a few of the most prolific and damaging invasive plant species in the Delta. Invasive weeds choke Delta waterways and impede flow causing degradation of water quality and quantity in channels and canals which impacts irrigation and at times completely stifles the ability to divert water at all.
>
> Large mats of water hyacinth are also extremely good breeding grounds and hiding places for mosquitos, which has challenged local mosquito and vector control forces to control the spread of the West Nile Virus, which is potentially deadly when contracted through mosquito bites. At times Water hyacinth mats impede night time navigation of waterways and create dangerous situations for large barges and ships trying to access the Port of Stockton. The spread of Arundo donax in local waterways has also challenged levee maintenance forces to keep channels from being clogged and choked during times of floods.
>
> To further complicate the workings of the Delta this area is highly infested with invasive aquatic weeds such as submerged Brazilian waterweed (Egeria densa),

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floating water hyacinth (Eichhoria crassipes), and emergent giant reed (Arundo donax). These pest plants cause many different negative effects including but not limited to: the blocking of waterways for commercial shipping and boating clogging of irrigation screens, pumps and canals; degradation of habitat through shading, alteration of water chemistry, and reduction of O2 levels (making some areas uninhabitable for fish and other wildlife, Pratt et al., 2013a). These weeds further create mosquito breeding areas and increase West Nile Virus water loss (WNV) prevalence in the Delta and surrounding communities. Emergent and floating weeds also increase water loss through extensive evapotranspiration that is exacerbated during hot dry summers. With water loss now becoming increasingly important under severe drought driven by climate change, these weeds are further impacting water availability for irrigation."

06-26 cont'd

The DEIR neither measures the magnitude of the invasive weed impact nor provides an adaptive management program to finance and provide for mitigation of invasive noxious vegetation listed in the DEIR as significant environmental impact damage requiring financed mitigation measures for as long as the dam stands.

A. What is SJAFCA's plan to thwart and mitigate the invasive weeds trapped behind the dam in Atherton Cove? 06-27

B. Which particular weeds will invade Atherton Cove generating eutrophication and stagnation? 06-28

C. What mitigation is required for each class of weeds? 06-29

D. Which weeds will take root in Atherton Cove? 06-30

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E. What is the cost of mitigation for each invasive noxious weed each year? 06-31

F. How much eutrophication caused by the trapping and retention of invasive weeds will be in Atherton Cove caused by the dam? What will be the environmental damage of eutrophication and stagnation of Atherton Cove? 06-32

G. What studies of eutrophication of Atherton Cove caused by the proposed dam have been completed and what is the recommendation of each such study? 06-33

H. What study exists defining the magnitude of the admitted noxious, invasive weed invasion of Atherton Cove? 06-34

I. What methods and techniques have been studied and suggested for the mitigation of the invasive noxious weeds and consequent eutrophication of Atherton Cove exists? 06-35

J. What budget has been created to employ the techniques and methods necessary for mitigation of the invasive weeds trapped by the dam? 06-36

K. What funds are to be set aside to assure mitigation for the financially sustainable lifetime of the dam? What is the financial plan and security for mitigation? 06-37

L. What agency will have the financial responsibility and duty to finance and perform mitigation for each and every year the dam exists? 06-38

M. Will SJAFCA create and finance a sub agency with a directorate composed of Atherton Cove residents to enable Atherton Cove residents to effectively require SJAFCA to annually finance and complete necessary mitigation of the invasive noxious weeds and eutrophication caused by the dam? 06-39

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N. How will mitigation be assured in the future if Atherton Cove residents are limited to writing a letter to SJAFCA and receiving a governmental reply to the effect – SJAFCA is sorry but we do not have sufficient funds to meet our mitigation obligations? 06-40

O. Will the trapping of noxious invasive weeds, which as the DEIR states is a significant, negative, environmental impact to Atherton Cove, generate along with eutrophication a mosquito haven enhancing the risks of disease (West Nile virus) in the Atherton Cove area? 06-41

VII. CONCLUSION: SJAFCA BOARD ACTION REQUESTED.

A. Study, describe and evaluate the magnitude and extent of each significant negative environmental impact (116) inflicted by a dam across Atherton Cove and Smith Canal (i.e. eutrophication) and, in addition: 06-42

1. Provide for a reasonably necessary mitigation measure;

2. Provide specific financing for a budget to cover the annual cost of mitigation measures for every year that the dam will exist; and 06-43

3. Provide for and complete an adaptive management program to finance and mitigate each significant negative environmental damage inflected by the dam alternative. 06-44

B. Given the magnitude of the significant environmental damage to Atherton Cove and Smith Canal, we believe that you must fairly consider the alternative for a single sheet pile/rip-rap and obtain such exemptions as may be needed from the unreasonable and unnecessary patrol road specification for the sheet pile alternative. 06-45

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C. To obtain appropriate studies from qualified aquatic and wildlife experts to study the significant environmental impact (i.e. eutrophication) that will be inflicted on Atherton Cove by trapping invasive noxious weeds behind the dam. Those studies should include an evaluation of the nature, extent, and magnitude of damage and should provide specific financing of budgets for all future annual mitigation measures. 06-46

D. Appropriately and effectively study the inexpensive rip-rap/single sheet pile alternative historically used throughout the Delta. SJAFCA should not succumb to the DEIR claim that Atherton Cove cannot utilize sheet piled/rip-rap unless SJAFCA accepts the unnecessary proposition that the Atherton Cove levee alone among all the levees in the entire Delta cannot be sheet piled without a double sheet pile, 12' wide, and a 14'6" high paved patrol road. 06-47

Very truly yours,

Atherton Cove Property Owners Association

BY _____
Maxwell M. Freeman

Hakeem, Ellis & Marengo

By _____
Michael D. Hakeem
Attorneys for Atherton Cove Property Owners Association

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SJAFCA
San Joaquin Area FLOOD CONTROL Agency

OFFICIAL BALLOT

San Joaquin Area Flood Control Agency | Smith Canal Gate

Gurev Michael L
2300 Virginia Ln
Stockton, Ca 95204
121-030-32
$602.26

17702

BALLOT INSTRUCTIONS

If you mark, tear or deface this ballot by mistake, or if, having submitted a ballot, you wish to withdraw it and submit a new ballot, you may do so by requesting a new ballot from:

SJAFCA
c/o Kjeldsen, Sinnock & Neudeck, Inc.
711 N. Pershing Avenue, Stockton

or by calling the Assessment District Hotline at (209) 487-1387. If you make changes on the face of this ballot, please initial each change. Ballots may be withdrawn, changed or submitted until the close of the public hearing on June 6, 2013.

0 T8 P1 1303 *********AUTO**3-DIGIT 952
Michael L Gurev
1818 Grand Canal Blvd Ste 4
Stockton CA 95207-8109

INSTRUCTIONS FOR COMPLETING BALLOT

(you may also refer to your ballot information guide for more information):

1. **Mark an X** in the box next to the "Yes," or "No."
2. **Sign and print your name**. Date your ballot.
3. **Mail your ballot** by folding it and placing it in the postage-paid official ballot return envelope.
4. **OR, hand deliver** your ballot to:
   - Kjeldsen, Sinnock & Neudeck, Inc.
     711 N. Pershing Avenue, Stockton, before 5 p.m., Thursday, June 6, 2013
   - Public hearing set for 7 p.m., Thursday, June 6, 2013, at the Ambler's Club, 2000 Amblers Lane, Stockton

This assessment will not be imposed unless a majority of the weighted votes received are in favor of the assessment. In order for the ballots to be included within the tabulation process, all ballots must be received by the close of the public hearing on June 6 (by mail or hand delivery).

BALLOT QUESTION

Shall the Board of the San Joaquin Area Flood Control Agency set a maximum annual assessment commencing with the fiscal year 2014/2015 and each year thereafter based on the assessment valuations for each parcel as set forth in the preliminary Engineer's Report dated February 26, 2013? Annual assessment revenues will be used to pay the local cost share for the design, construction and long-term operations and maintenance of the Smith Canal gate.

☐ **YES** I support the proposed maximum annual assessment

☐ **NO** I oppose the proposed maximum annual assessment

I, the undersigned, declare under penalty of perjury that I am the landowner, authorized representative of the landowner, or proxy, and as such am entitled to complete this ballot.

PRINTED Name of Owner/Representative/Proxy

Exhibit A-1 P.1

Signature Name of Owner/Representative/Proxy Date

PLEASE TURN OVER FOR MORE INFORMATION

OFFICIAL BALLOT

SMITH CANAL ASSESSMENT DISTRICT

Smith Canal levees do not meet the Federal Emergency Management Agency's (FEMA) minimum level of flood protection. As a result, FEMA has placed, or has plans to place, most of the surrounding properties in a Special Flood Hazard Area (also known as "Zone A," a high-risk flood zone). In cases where FEMA's minimum standards for flood protection are not met, flood insurance is mandatory for properties with mortgages, and restrictions on development are enacted.

In order to remove properties from a FEMA high-risk flood zone, or prevent them from being placed in one, the San Joaquin Area Flood Control Agency (SJAFCA) – in partnership with Reclamation Districts 1614 and 828 – is planning to build, operate and maintain a canal gate (see "About the Project" within your Ballot Information Guide). SJAFCA received a grant from the state to pay 50 percent of project design and environmental work ($4.8 million total cost). However, the remaining half must be funded locally (the local cost share). In addition, the state has several programs under which SJAFCA can also seek funding for up to 55% of project construction costs (approximately $36 million) once a design and the environmental work is complete. Existing flood insurance requirements and building restrictions will be removed only after the Smith Canal gate is constructed.

SJAFCA is proposing to fund the local cost share by assessing properties that benefit from avoided flood damages as a result of constructing the Project. The assessment proposed for each parcel is proportional to the relative benefit received by the parcel. The benefit received is based upon several attributes of the parcel, including its type (residential, commercial, etc.), its location as it determines flood depth, and the sizes of the parcel and any improvements on it.

FOR MORE INFORMATION:

www.sjafca.com
(209) 487-1387

FOR OFFICIAL USE ONLY

Assessor's Parcel Number:

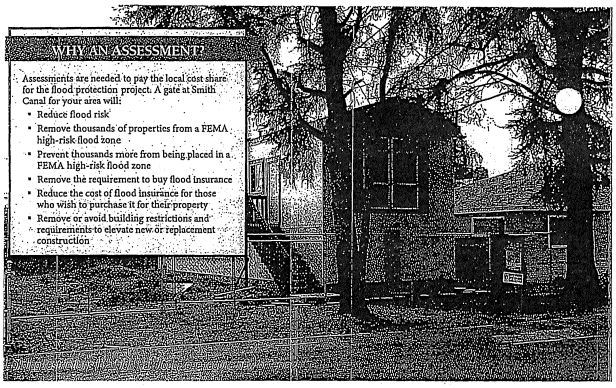
Maximum Annual Assessment:

Parcel Address:

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Exhibit A-1
P. 2

Exhibit A-2 P. 1



WHY AN ASSESSMENT?

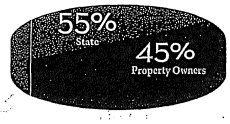
Assessments are needed to pay the local cost share for the flood protection project. A gate at Smith Canal for your area will:

- Reduce flood risk
- Remove thousands of properties from a FEMA high-risk flood zone
- Prevent thousands more from being placed in a FEMA high-risk flood zone
- Remove the requirement to buy flood insurance
- Reduce the cost of flood insurance for those who wish to purchase it for their property
- Remove or avoid building restrictions and requirements to elevate new or replacement construction

Smith Canal Gate Costs

SJAFCA, in partnership with Reclamation Districts 1614 and 828, is planning to construct a "gate structure" at Smith Canal to reduce flood risk. Normally, the gate would be open and laying at the bottom of the canal, allowing boats to pass. During floods or high tides, the gate would be raised to prevent water backing up into the canal from the San Joaquin River and the Delta.

Construction Cost Share



SJAFCA received a state grant to pay 50 percent of project design and environmental work ($4.8 million total cost). However, the remaining half must be funded locally (the local cost share). The state has several programs under which SJAFCA can also seek funding for up to 55% of project construction costs once the design and environmental work are complete. Construction estimates prepared in 2011 were about $36 million. It is expected that the local cost share of the project will be approximately $18.5 million when the project is completed in 2018. The proposed assessment will result in annual revenues of $1.6 million to pay toward the local cost share. The length of the capital portion of the assessment will be for approximately 30 years. The portion for operations and maintenance will be ongoing.

Paying the Local Cost Share

To pay the required local cost share, SJAFCA is proposing to assess properties that benefit from the project. The proposed assessment will pay the local cost share for the Smith Canal gate design and construction, and ongoing operations and maintenance of the facility. Properties assessed will benefit from avoided flood damages. This means:

- Better, stronger flood protection and reduction in potential flood damages
- High-cost flood insurance will not be required. You should, however, consider purchasing flood insurance and will be able to do so at much lower rates.
- Structures will not have to be elevated for new construction, or repairs and upgrades.

How Much Will I Pay?

The amount of your individual assessment is listed on your ballot. You have received a ballot for each property you own that benefits from the Smith Canal gate. For the Smith Canal gate assessment, the benefit to each property is calculated using a formula that includes:

- Structure and Content Damage (based on structure type and size and reduction in flood depth), *and*
- Land Damage (based on land use and acreage)

Per state law, the assessments are based on the benefit each property receives from better, stronger flood protection. For the Smith Canal gate, each property benefits from a reduction in potential flood damages to structures, their contents and land. All other factors being equal, properties that avoid the deepest flooding receive more benefit than those in areas with shallow flooding. Similarly, properties with larger structures receive more benefit than those with smaller structures. Thus, properties that receive more benefit will be assessed more than those that receive lesser benefit.

Smith Canal Gate - Proposed Assessment Calculation

Specifically, every property's proposed assessment is different, based upon the following factors:

- Type of property (single-family or multifamily residential, vacant, commercial, governmental, etc.)
- Size of the parcel (.20 acre, half-acre, etc.)
- Size of structures on the property (in square feet)
- Amount of flood depth reduction as a result of the project (measured in 2-foot increments)

SMITH CANAL GATE BENEFIT

The special benefit conferred to the property in the proposed assessment district is the combined benefit of flood damage avoidance and/or reduction to (1) structures and their contents, and (2) land. The damage avoided to structures and their contents is derived by determining the amount of flood depth reduction experienced by each particular parcel in the benefit area as a result of the Smith Canal Gate improvements and associated operations and maintenance activities.

WWW.SJAFCA.COM
HOTLINE: (209) 487-1367

PUBLIC MEETING

Thursday, May 2
6:30 p.m.
Amblers Club
2000 Amblers Lane
Stockton, CA

WHAT ARE SJAFCA AND RECLAMATION DISTRICTS 1614 AND 828?

The San Joaquin Area Flood Control Agency (SJAFCA) is a Joint Powers Authority that was created in May 1995 by the City of Stockton, San Joaquin County and the San Joaquin County Flood Control and Water Conservation District to reduce flood risk for the City of Stockton and some adjacent unincorporated County areas. SJAFCA has a four member Board of Directors with two members from the Stockton City Council, and two members from the San Joaquin County Board of Supervisors.

Reclamation Districts 1614 and 828 are responsible for operations and maintenance of levees, pump stations and other flood control facilities in the Smith Canal area. RD 1614 maintains the north levee of Smith Canal, while RD 828 maintains the south levee. They each have a board of directors comprised of elected property owners who live within their respective districts.

SJAFCA Board
Larry Ruhstaller, Chair
Katherine Miller, Vice Chair
Steve Bestolarides, Director
Mayor Anthony Silva, Director

Reclamation District 1614 Board
William Dunning, President
Ben Koch, Director
Robert Wise, Director

Reclamation District 828 Board
Bill Mendelson, President
William Gowdy, Director
Kurt Sharp, Director

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Exhibit A-2 P. 2

SJAFCA

SMITH CANAL & WISCONSIN PUMP STATION ASSESSMENT DISTRICTS

OFFICIAL NOTICE AND BALLOT INFORMATION GUIDE

PUBLIC HEARING
Thursday, June 6
7 p.m.
Ambler's Club
2000 Amblers Lane
Stockton, CA

Proposed Assessment for Wisconsin Pump Station

Reclamation District 1614 (RD 1614) operates Pump Station #7 also called the Wisconsin Pump Station (Pump Station) to k[illegible]ormwater from flooding your property during severe w[illegible]er events. Your property is being serviced by the Pump Station. The proposed assessment is required to replace the Pump Station because it is at the end of its useful life and is in an advanced state of deterioration and at risk of failing. The project is needed to replace the Pump Station to insure that stormwater is pumped out of the area, or it could back up onto streets and properties.

FEMA has placed your property in a Special Flood Hazard Area (also called Zone "A," a high-risk flood zone). Even with approval of the Smith Canal Gate Structure, without replacement of the Pump Station, your property will remain in a Special Flood Hazard Area. In addition to the risk of flooding from stormwater backing up onto streets and properties:

- You are required to purchase flood insurance, if you have a mortgage. Congress recently passed legislation that will result in big increases to the cost of flood insurance, even preferred policies. Property owners now paying hundreds of dollars per year may end up paying thousands as rates are increased starting this year.
- Building restrictions will prevent new construction, and repairs and upgrades that equal more than 50 percent of your home's value, unless the structures are elevated.
- Property values may be impacted, and it may become more difficult to sell your home, especially if your buyer needs a mortgage. Mortgaged properties will be required to have flood insurance.

Wisconsin Pump Station Costs

RD1614 is planning to replace the Pump Station to reduce the flood risk from stormwater. As stated above, the project is needed since the pump station could fail resulting in stormwater backing up onto the streets and properties in an area covering 700 acres.

RD 1614, in partnership with the Stockton East Water District, is seeking a state grant to pay for 50 percent of the project cost ($2.6 million total). RD 1614 must fund the remaining share ($1.3 million). The proposed assessment will result in required annual revenues of $97,000 to pay the local cost share. The length of the proposed assessment is approximately 20 years.

WWW.SJAFCA.COM
HOTLINE: (209) 487-1387

Paying the Local Cost Shares

RD 1614's proposed assessment will assist in paying for the replacement of the pump station, including design and construction. Properties assessed will benefit from avoided flood damages, provided both the Pump Station and Smith Canal Gate assessments are approved by property owners. This means:

- High-cost flood insurance will not be required. You should, however, consider purchasing flood insurance and will be able to do so at much lower rates.
- Structures will not have to be elevated for new construction, or repairs and upgrades.

How Much Will I Pay?

The amounts of your individual assessments are listed on your ballots. You have received ballots for each property you own that benefits from the pump station project. As per state law, the assessments are based on the benefit each property receives from better, stronger flood protection. The total assessment is spread among all of the properties within the Assessment District using criteria described in the Engineer's Report. The assessments reflect the proportion in which the types and uses of property found within the Assessment District enjoy the benefits. Thus, properties that receive more benefit will be assessed more than those that receive a lesser benefit.

For the Pump Station assessment; the benefit to each property is calculated using a formula that includes:

- A runoff factor based on the type of parcel (residential, commercial, etc.)
- The size of the parcel

Wisconsin Pump Station – Proposed Assessment Calculation

Every property's proposed assessment is different, based upon the following factors:

- A runoff factor based on the type of property (single-family or multifamily residential, vacant, commercial, governmental, etc.)
- Size of the parcel (.20 acre, half-acre, etc.)

WISCONSIN PUMP STATION BENEFIT

The special benefit for each parcel is equal to the amount of runoff that each parcel contributes to total drainage in the Wisconsin Watershed, which in aggregate determines the required pumping capacity of PS #7. The runoff for each parcel is a function of the runoff coefficient, which is determined by land use, and the acreage of each parcel. The runoff coefficient represents the relative demand per acre, by land use type, placed on the pumping capacity of the improved pumping station.

There are two proposed assessments: 1) Smith Canal Gate, and 2) Wisconsin Pump Station. Each proposed assessment is separate and independent of the other. For example, one proposed assessment may pass and the other may fail. Additionally, not everyone will be voting on the Pump Station proposed assessment. Only those properties within the area served by the pump station that benefit by having the pump station keep stormwater from flooding those properties will have the opportunity to vote. The notices for both proposed assessments have been combined for the purpose of minimizing costs. If you received this notice, then you will be voting on both proposed assessments and should have received a ballot for each accompanying this Guide.

All ballots must be received on or before June 6, 2013. Ballots received after the close of the public hearing on June 6 will not be counted.

TO COMPLETE EACH BALLOT

1. Mark the box next to "Yes" or "No"
2. Print your name
3. Sign your name
4. Date your ballot
5. Place all ballots in the postage-paid envelope
6. Return your ballots on or before June 6:
   a. By mail
   b. By hand to Kjeldsen, Sinnock & Neudeck, Inc. 711 N. Pershing Avenue, Stockton
   c. By hand to the public hearing at 7 p.m., June 6, at the Ambler's Club 2000 Amblers Lane, Stockton

If you lose one or more ballots, need replacement ballots, or wish to change your votes, call the Assessment Hotline at (209) 487-1387. Joint owners of property may split their ballots. This means they may cast their votes in proportion to their ownership shares, based on the total weighted vote for their property. If you would like to split your ballot, please request replacement ballots by calling the Assessme Hotline at (209) 487-1387. Written documentation of property ownership shares will be required.

The assessment ballots will be counted after the close of the public hearing on June 6. The results will be announced by the San Joaquin Area Flood Control Agency (SJAFCA) and Reclamation District 1614 (RD 1614) Boards following verification of the results. Assessment ballots will be weighted by the amount of the proposed assessment for the parcel. The assessment will not be imposed if the weighted votes against t assessments outweigh the weighted votes in favor.

Proposed Assessment for Smith Canal Gate

This proposed assessment is to improve flood protection and as a result avoid or remove mandatory flood insurance requirements and building restrictions.

Smith Canal levees do not meet the Federal Emergency Management Agency's (FEMA) minimum level of flood protection. Because of this, FEMA has placed your propert in a Special Flood Hazard Area (also called Zone "A," a hig risk flood zone). When that happens:

- You are required to purchase flood insurance, if you have a mortgage. Congress recently passed legislation that will result in big increases to the cost of flood insurance, even preferred policies. Property owners no paying hundreds of dollars per year may end up paying thousands as rates are increased starting this year.
- Building restrictions will prevent new construction, and repairs and upgrades that equal more than 50 percent of your home's value, unless the structures a elevated by as much as 10 feet.
- Property values may be impacted, and it may becom more difficult to sell your home, especially if your buyer needs a mortgage. Mortgaged properties will l required to have flood insurance.

In order to remove your property from a FEMA high-risk flood zone, or prevent it from being placed in one, two projects must be constructed:

1. A gate at Smith Canal
2. A new pump station to replace the failing Wisconsir Pump Station (PS #7)

1

9.5.2.1 Response to Letter 06

06-01

Section 2.2.2, *Sheet Pile Wall Alternative*, has been revised to clarify why the sheet pile wall was rejected. Plate 2-0a was also added, which presents the FEMA and ULDC criteria for a single sheet pile wall.

Text has been added to Section 2.1.2, *Alternatives Screening Approach*, *Tier 1—Primary Project Objectives*, to more clearly describe the FEMA and ULDC height and access criteria that must be met by potential alternatives.

An additional single sheet pile/riprap alternative was presented in Section 2.2.3, *Green Mountain Engineering Alternatives*. This alternative was dismissed for not meeting any of the project's Tier 1 objectives. Section 2.2.3 has also been revised to clarify why the alternatives were rejected. Plate 2-0b was also added, which presents the deficiencies of the Green Mountain Engineering single sheet pile wall alternative. The alternative does not result in an accredited levee for 100-year flood protection, does not provide inspection and patrol access to the levee during a flood event, and does not provide maintenance access to the crown and landside of the levee.

06-02

The all-weather patrol road is necessary to meet the ULDC levee geometry requirements (Section 7.8 of ULDC) along the crown of the levee for inspection, maintenance, and flood fighting. FEMA also requires an access road in their Operation and Maintenance requirements to allow for maintenance and inspection of the levee.

The single sheet pile wall would not allow for FEMA accreditation as discussed in response to comment 06-01, and as the revised text in Section 2.2.2, *Sheet Pile Wall Alternative*, states. Text has been added to Section 2.2, *Alternatives Not Carried Forward*, to more clearly describe the FEMA and ULDC height and access criteria that must be met by potential alternatives, including the need for a patrol road.

The cost of a single sheet pile wall that would meet the requirements of FEMA and the ULDC is presented in Section 2.2.2, *Sheet Pile Wall Alternative*, ($116 million), which is well beyond the funding capability of SJAFCA.

RD 1614 and RD 828 both determined that levees along Smith Canal would not meet FEMA criteria. Section 1.3, *Project Background*, explains the need for the project to remedy the impacts of levee encroachment: "Primarily due to extensive encroachments onto the levees that prevented access for maintenance and inspection, Smith Canal levees were not able to meet the levee certification requirements of the Code of Federal Regulations (CFR), Title 44, Section 65.10, which include criteria for design, operation plans, maintenance plans, and certification by a registered civil engineer."

06-03

Inclusion of a patrol road is a requirement of FEMA and the ULDC. See response to Comment 06-02, as well as Section 2.1.2, *Alternatives Screening Approach*, *Tier 1—Primary Project Objectives*.

- The double sheet pile wall is required to provide access for patrolling the levee and also to allow for access to maintain the double sheet pile wall.
- Plate 2-5 shows no levee height increase along Atherton Cove. Alternative 1 does raise a portion of Dad's Point by 5 feet.
- Plate 2-5 shows a 20-foot-wide all-weather road for patrolling the levee, not 12-foot-wide.
- Plate 2-5 shows the 20-foot-wide all-weather road being constructed of Turf Block rather than pavement.
- Operating costs for patrolling are included in the Project's Annual Operation and Maintenance Cost estimate.

06-04

Any structure on the levee crown, the landside slope and within 20 feet of the landside levee toe must be considered an encroachment (ULDC Section 7.11 and 7.12).

See response to comment 06-02. RD 1614 and RD 828 both determined that levees along Smith Canal would not meet FEMA criteria. Section 1.3, *Project Background*, explains the need for the project to remedy the impacts of levee encroachment: "Primarily due to extensive encroachments onto the levees that prevented access for maintenance and inspection, Smith Canal levees were not able to meet the levee certification requirements of the Code of Federal Regulations (CFR), Title 44, Section 65.10, which include criteria for design, operation plans, maintenance plans, and certification by a registered civil engineer."

06-05

The proposed single sheet pile/riprap project is not FEMA or ULDC compliant. See response to Comment 06-01, as well as revisions to Sections 2.1.2, *Alternatives Screening Approach*, *Tier 1—Primary Project Objectives*, and 2.2.3, *Green Mountain Engineering Alternatives*. The revised text describes the specific FEMA and ULDC criteria that must be met, and why the Sheet Pile Wall Alternative does not meet the project objectives.

06-06

The patrol road is required for FEMA and ULDC compliance. See response to Comment 06-02, as well as Section 2.1.2, *Alternatives Screening Approach*, *Tier 1—Primary Project Objectives*.

06-07

The Draft EIR does not allege that a Noah's Flood that would warrant raising levee tolerance several feet will occur for generations or in this century. SJAFCA has proposed the project to address flood risk and to allow the community to be eligible for lower cost optional flood insurance. Because the current levees are not certified and cannot be accredited by FEMA, FEMA has remapped significant portions of the adjacent neighborhood, has imposed mandatory flood insurance on many properties in that neighborhood, and has stated an intention to expand the area subject to mandatory flood insurance. The conditional letter of map revision (CLOMR) provided by FEMA to SJAFCA in response to the proposed project states that if constructed as proposed, FEMA would remove the area from the 100-year floodplain. This would remove the obligation of mandatory insurance.

Please see response to Comment 03-05 for a discussion of project design elements that address the potential for sea level rise.

06-08

Under CEQA, the lead agency is to identify a project that meets the agency's goals and objectives and then develop an adequate range of alternatives to disclose to the public and the Board of Directors information to understand the environmental impacts associated with the project and the full range of the alternatives. In this case, in order to have the funds necessary to even prepare an EIR, the agency held an election to raise money based upon a conceptual project to achieve the goals stated in the Draft EIR. The Board of Directors did not select an alternative for implementation prior to CEQA review. Indeed, as a result of the Draft EIR preparation SJAFCA staff worked to develop the conceptual project into a full alternative, and in the process made a number of changes to that alternative, all of which are available to the public to review.

Using a proper screening process, SJAFCA developed a range of alternatives that were reasonable, feasible, and implementable, and in that process screened out the single sheet pile wall alternative.

The *Smith Canal Closure Structure Early Implementation Program Project Report* (February 2011) considered a single sheet pile wall alternative that was estimated to cost $116 million (Section 5.2 and Figure 10 of the above-mentioned report). The building specifications for this single sheet pile wall alternative were to meet the FEMA and ULDC requirements for access and inspection. See responses to Comments 06-01 and 06-02.

06-09

As a result of two amendments of the National Flood Insurance Act and several published policy changes since this project was first conceived, a determination of the actual flood insurance premiums that might lawfully be imposed in the SJAFCA area on a house per house basis has been and continues to be a moving target. But even if it were not, disclosure of the exact amount is not relevant to the Board of Director's determination. The Draft EIR discloses that flood insurance is mandatorily imposed on homes with Federally-backed mortgages if the community is located within a 100-year floodplain but that flood insurance is optional, and at a lower rate, if the community is not located within a 100-year floodplain. These facts allow the Board to use a qualitative analysis in selecting an alternative.

06-10

Section 205 et al. of the 2014 Homeowner Flood Insurance Act Amendment makes only small improvements on the issue of flood insurance affordability notwithstanding the elimination of the immediate full-risk rate trigger upon purchase of a pre-Flood Insurance Rate Map (FIRM) property or new policy. In fact, in some cases, the new act will cost property owners more for their policies than was the case under the previous law. The intent of the 2014 amendments was to mitigate the dramatic insurance premium increases mandated in the 2012 Biggert-Waters Act while maintaining the Act's original objective of making the National Flood Insurance Program more solvent by gradually increasing insurance premiums. But regardless of the insurance premium and the rate at which it increases in the future, the 2014 act does not change the fact that under existing law for homes with federally-backed mortgages in a 100-year floodplain the homes are mandated to carry flood insurance, and that no such insurance is mandatory for homes that are not in a 100-year floodplain. The Act also does nothing to mitigate the flood risk for the homes in the Smith Canal area.

06-11

The "actual risk rates" referred to by the commenter do not refer to the actual risk to a particular home. Rather, FEMA categorizes homes as pre-FIRM or post-FIRM, as within or not within a 100-year floodplain, and as having a finished floor elevation that is X feet below the base flood elevation. With minor exceptions related to grandfathering and other factors, all homes in the country in those categories are rated the same regardless of the factors identified by the commenter. Please see also the response to Comment 06-10.

06-12

As noted above, SJAFCA's goals for the project included reducing the risk of flooding and also eliminating the need for mandatory flood insurance. While alternative market place insurance programs may become popular in the future, at this time there appears to be no current effective operating models that could be shared with the Board of Directors. In addition, even if there were, an alternative market place insurance program would not address the two goals listed above because it would not reduce risk or eliminate the need for mandatory insurance.

06-13

This comment suggests that the SJAFCA ballot statement and agency public statements can drive an increase in flood insurance rates for homeowners through the National Flood Insurance Program. This is not correct. Insurance rates are set by FEMA, in accordance the FIRMs issued by FEMA. The current FIRMs were issued by FEMA as part of FEMA's Map Modernization Program, and show large portions of the community within the 100-year floodplain based significantly upon the inability of the local Reclamation Districts to certify the levees adjacent to the Smith Canal. If SJAFCA is able to successfully implement a project that meets the agency's objective as specified in the Draft EIR, and consistent with the Conditional Letter of Map Revision (CLOMR) issued by FEMA, then FEMA will actually lower the rates charged to home owners in the Smith Canal area. In other words, SJAFCA's actions do not result in the reclassification of homes as having a higher level of flood risk or result in higher flood insurance rates.

06-14

See response to Comment 06-11. In addition, as noted previously, none of the actions taken by the President or Congress has eliminated the obligation of mandatory flood insurance or reduced the risk of flooding for the Smith Canal community. Those are amongst the goals for the project.

06-15

See response to Comments 06-07 through 06-14.

06-16

SJAFCA sent newsletters and flyers providing general information about the project and this information was discussed during various public and neighborhood meetings with affected property owners. Atherton Cove and Atherton Island were shown on exhibits related to the Proposition 218 election.

06-17

Table ES-2, *Summary of Impacts and Mitigation Measures for the Smith Canal Gate Project*, details all beneficial, less-than-significant, less-than-significant with mitigation, and significant and unavoidable impacts of the three project alternatives.

06-18

Following the implementation of mitigation, each alternative would result in between one and three significant and unavoidable impacts in the resource areas of Noise, Aesthetic Impacts, and Recreation.

In addition, the proposed single sheet pile/riprap alternative is not compliant with FEMA and ULDC requirements. See response to Comment 06-01.

06-19

Each potential impact is identified as less than significant or significant prior to the implementation of feasible mitigation measures. As described in the introduction to Chapter 3, *Environmental Setting and Impacts*, the impact magnitude is judged based upon a comparison of the baseline condition to the resulting condition, with consideration of a relevant threshold of significance. Mitigation measures included in the Draft EIR are largely adaptively managed measures that include elements of education, avoidance, monitoring, action, and remediation.

06-20

See response to Comment 6-19.

06-21

Large mats of water hyacinth were observed during field observations and described in Section 3.7.1.2, *Environmental Setting*, under the "Tidal Perennial Drainage" land cover type and "Invasive Plant Species." However, the proposed project would not result in an increase in invasive plants or flotsam debris in the project area, as the proposed project includes water quality maintenance to remove floating debris and water hyacinth, as described in Section 2.3.1.3, *Operations and Maintenance*. Additionally, project-related increased in water velocities near the gate could help reduce water hyacinth in the center of the channel, as described in Section 3.7.2.3, *Impacts and Mitigation Measures*, Impact VEG-7.

Most floating organic material and plant nutrients would not build up within Smith Canal as a result of the project because none of the alternatives would significantly affect the volume of water exchanged tidally with the San Joaquin River, and there would not be an increase in invasive plants, such as water hyacinth. Impact WQ-3 has been revised for all alternatives to include potential effects of organic material and nutrient accumulation resulting from a reduction in water circulation in Atherton Cove and Smith Canal, as well as the potential for eutrophication.

06-22

The occurrence, location, and extent of aquatic plants are discussed in Section 3.7.1.2, *Environmental Setting*, under the "Tidal Perennial Drainage" land cover type and "Invasive Plant Species." The

descriptions are based on data from field observations and notes obtained during the project biological surveys. Water hyacinth (floating type), water-milfoil (submersed type), and Brazilian waterweed (submersed/emergent) are described. The potential project effects on the extent of these species are discussed in Impact VEG-7 under all project alternatives.

06-23

The *Smith Canal Gate Hydrodynamic Modeling Alignment and Gate Evaluation Final Report* (Draft EIR Appendix B) analyzed long term sedimentation trends and concluded that long term conditions would likely not change, apart from very locally in the vicinity of the gate structure. It is anticipated that any localized scour in the vicinity of the gate would be minimized through use of erosion protection in the engineering designs. There could also be localized sediment deposition in eddies that will likely form just inside the gates, resulting in a less than significant environmental impact. See Section 3.1, *Flood Risk, Hydrology, and Geomorphology*, Impact FC-1 for analysis.

06-24

The model used in the *Smith Canal Gate Hydrodynamic Modeling Alignment and Gate Evaluation Final Report* (Draft EIR Appendix B) was a depth-averaged, 2-dimensional model. It predicted that "near-field" localized scour and deposition could occur in the vicinity of the gates. However, the model predicted that "far-field" velocity and flow regimes would not be changed and, hence, long term sedimentation patterns will likely not be modified. It is true that water flow is 3-dimensional; however, 3-dimensional modeling is not necessary to approximate changes in water flowing into and out of the area since the depth is relatively small in relation to the surface area.

06-25

For reasons described in response to comment 06-21, the project is not likely to cause an increase in floating organic material, nutrients, or eutrophication. It is also not expected to cause significant changes in sedimentation and channel depth (see Impact FC-1, Increased Sedimentation from Reduction in Velocity Due to Channel Restriction). As a result, algae, including filamentous algae, are not expected to become more abundant.

06-26

The exact magnitude of change in the extent of water hyacinth cannot be predicted. The project maintenance program described in Section 2.3.1.3, *Operations and Maintenance*, would include a water hyacinth control program for monitoring Atherton Cove. If the water hyacinth increases beyond existing conditions, the plants would be removed as part of the program. In addition, water hyacinth would be mechanically harvested behind the sheet pile wall whenever cover exceeds 20% using an aquatic weed harvester.

The extent of Brazilian waterweed and giant reed is not expected to increase as a result of the project.

Further, the amount of invasive weeds and eutrophication in the project area is not expected to increase if the proposed project is implemented. Tidal exchange (volume of water moving in and out of Smith Canal) would not be significantly affected, and without an increase in invasive weeds or eutrophication, an increase in mosquito habitat is not expected to occur.

06-27

See response to Comments 06-21 and 06-26.

06-28

Regarding eutrophication, see response to Comment 06-21. In general, the project is not expected to cause an increase in concentrations of chemicals, algae, eutrophication, or aquatic plants because the tidal exchange (volume of water moving in and out of Smith Canal) would not be significantly affected. As described in Impact VEG-7, the sheet-pile wall proposed under Alternative 1 could trap water hyacinth on the Atherton Cove side of the wall. However, water hyacinth would be removed as part of the water hyacinth control program, which is described in Section 2.3.1.3, *Operations and Maintenance*. Water-milfoil, Brazilian waterweed, and algae are less likely to be a problem near the gated fixed wall structure because of the water depth in this area and the presence of culverts below the water surface. At the gated wall structure, the water is too deep for the rooted aquatic plants that occur in the area (water-milfoil and Brazilian waterweed). The culverts below the water surface would allow for continued tidal exchange, such that floating algae beneath the surface would continue to move in and out of the cove.

06-29

See response to Comment 06-26.

06-30

The proposed project would not change the existing water depths or channel bottom in Atherton Cove and, therefore, would not cause a substantial change in the extent of rooted weedy aquatic plants, including Brazilian waterweed and water-milfoil.

06-31

SJAFCA has estimated a total budget of $325,000 per year to operate and maintain the project facilities. The budget includes $43,000 per year for in-water debris removal, including water hyacinth removal. An O&M assessment district has been formed and will run indefinitely to fund any of the O&M and mitigation items of the project.

06-32

See responses to Comments 06-21 and 06-26.

06-33

Analysis of the potential for eutrophication of Atherton Cove as a result of the project is included in the Draft EIR. As described in Section 3.2.1, *Existing Conditions*, Smith Canal is known to experience organic enrichment and low dissolved oxygen under existing conditions. The hydrologic modeling indicates that tidal exchange (and flushing of floating organic material and nutrients) would not change significantly as a result of the project. See responses to comments 6-21 and 06-28 for additional information on why the project would not increase eutrophication of Atherton Cove. Impact WQ-3 for all alternatives has been modified in response to this comment.

06-34

The botanical field surveys conducted in October 2014 for the Draft EIR analysis included a measure of the extent of water hyacinth observed in Atherton Cove and the Louis Park boat launch. The mats were over 2 acres in extent. Although Brazilian waterweed and water-milfoil were also observed, those infestations were not nearly as extensive as the water hyacinth infestation. References cited in Section 3.7.1.2, *Invasive Species*, also discuss the rate of water hyacinth growth observed in the Sacramento–San Joaquin Delta.

06-35

The project Operations and Maintenance program (described in Section 2.3.1.3 of the Draft EIR) will include monitoring of Atherton Cove and mechanical harvesting to remove water hyacinth if it increases beyond existing conditions. Mechanical harvesters are commonly used in the Stockton area, including at the Port of Stockton, to control water hyacinth. Removal of the vegetation would control any potential eutrophication of Atherton Cove. Also see responses to Comments 06-21, 06-28, and 06-33.

06-36

See response to Comment 06-31.

06-37

See responses to Comments 03-03 and 06-31. In accordance with CEQA Guidelines Section 15091, SJAFCA would make findings for each significant effect and adopt an MMRP requiring implementation of all necessary and appropriate mitigation measures.

06-38

SJAFCA would be responsible for funding and performing project mitigation measures as identified in the CEQA findings and MMRP adopted at the time of project approval.

06-39

SJAFCA Board of Directors, which is composed of two City Council members and two County Board of Supervisors, are representing property owners in the Smith Canal area. Any issues related to the gate project can be presented to the SJAFCA Board.

06-40

See response to Comment 06-37.

06-41

As described in the responses to Comments 06-21, 06-26, and 06-28, the amount of invasive weeds and eutrophication in the project area is not expected to increase if the proposed project is implemented. Tidal exchange (volume of water moving in and out of Smith Canal) would not be significantly affected, and without an increase in invasive weeds or eutrophication, an increase in mosquito habitat is not expected.

06-42

See response to Comment 06-19.

06-43

SJAFCA has estimated a total budget of $325,000 per year to operate and maintain the project facilities. The budget includes $43,000 per year for in-water debris removal including water hyacinth removal. The budget includes another $15,000 per year for graffiti removal. An O&M assessment district has been formed and will run indefinitely to fund any of the O&M and mitigation items of the project.

06-44

See response to Comment 06-43.

06-45

The proposed single sheet pile/riprap project is not FEMA or ULDC compliant. See response to Comment 06-01.

06-46

See responses to Comments 06-26, 06-34, and 06-35.

06-47

The proposed single sheet pile/riprap project is not FEMA or ULDC compliant. See response to Comment 06-01, as well as revisions to Section 2.1.2, *Alternatives Screening Approach*, *Tier 1—Primary Project Objectives*.

9.5.1 Letter 07—Dominick Gulli, Green Mountain Engineering

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8/10/15

Attn: Megan Smith

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Re: Smith Canal Gate Project
Comments on Environmental Impact Report Draft (EIR)

The EIR does not look at the impact to flood stage in the San Joaquin River. Placing substantial fill (the wall) in the river will increase the flood stage in the River. Reducing the opening or closing off Atherton Cove/Smith Canal will also increase the flood stage in the San Joaquin River. This is an important factor and should be analyzed and/or mitigated for in the EIR.

Chapter 1.3 Project background

07-01

It is stated that:

"*The Smith Canal levees were not able to meet the levee certification requirements of the Code of Federal Regulations (CFR 65.10)*"

This statement has not been definitively proven. The levees have never been accredited and FEMA does not accredit levees, licensed Civil Engineers do. Just because the SJAFCA engineers do not think they can be certified does not mean they cannot. As a Licensed Engineer in the State of California I believe they may be able to be certified **as is where is**.

07-02

It goes on to state that SFHA are areas that "*will be inundated by a 100 yr. flood*" The Country Club area will not necessarily be flooded in the event of a 100 yr. storm as they are protected by a levee which has been in place for over 100 years.

07-03

"*In place rehabilitation of the levee was determined to be infeasible*" This statement is not true as my firm submitted a proposal to reinforce the levees on

1

the waterside, without impacting the homes on the levee, at less cost with significantly more benefits. 07-03 cont'd

1.4.2 Project Purpose 07-04

It is stated that: "*In addition, based on topographical data recently developed by DWR, FEMA is currently proposing to remap the region to include an additional 3,000 parcels and 9,000 residents in the 100-year floodplain*"

This is a false statement as FEMA is not currently looking at this area since they just revised it in 2009 and the topographical data is hardly any different than the USGS quad map. The maps created by SJAFCA indicate that the area will flood to the 100 yr. Flood Stage of the San Joaquin River. There is no supporting evidence of this.

Also stated: "*Isolation from the Smith Canal would contribute toward ultimate 200-year level of performance in combination with other area projects, in compliance with State law*" 07-05

SJAFCA goal to provide 200 yr. is not achieved by the installation of the Smith Canal Gate alone. Significant improvements will still be required to achieve this very stringent State Mandated requirement.

2-1 Proposed Project and Alternatives. 07-06

It is stated in ES.5.2 Property Acquisition: the project "may require acquisition in interests in real estate" described in Chapter 2.

Chapter 2 should include more detail as to which portions of specific properties are required for each of the alternatives and include the procedures that will be used, cost and time frame required to obtain such properties and easements.

2.2.3 GME Alternatives 07-07

The GME alternatives have only been evaluated with a biased opinion made by the proponents of the Smith Canal Gate which determined that "*none of the GME alternatives provides the criteria necessary to meet any of the Tier 1 project Objectives and that these alternatives, therefore would be infeasible*"

There is substantial justification for the GME alternatives that can be provided to address the required criteria and objectives.

It is stated that the GME alternatives to rehabilitate the levees along the Smith Canal do not meet the criteria of FEMA and the ULDC and lists them in tables 1-3 of the Attachment h of Appendix A

2

Tables 1 and 2 in appendix A, Attachment H states that the GME proposed Levee improvements *"relies on the elevation of existing FEMA de-accredited levee to provide necessary flood protection*" This is true because the existing levee provides the required elevation. It would be redundant to construct the flood wall to the 100-yr required elevation.

Table 3 Sates that the GME alternates do not meet the requirements for The ULDC: 20 ft. Access Road, 20 ft. Landside Access and does provide the 20 ft. waterside access. **The gate does not provide any access roads to the existing levees at all**. Nor does it meet the requirements of many other ULDC components that will require substantial future improvements.

07-07 cont'd

2.4 No Project Alternative

07-08

This section states that the "*risk of flood would remain high*" and "*increase as climate change and sea level rise increase*". The risk of flood **is not** high at this time and the effect of climate change and sea level rise is not proven nor would it have a significant effect on the levees along the Smith Canal.

It is stated that "*because of uncertainties in local, state and federal funding…it is not reasonable to predict construction of levee repairs in the foreseeable future*"

07-09

Both Reclamation Districts (828 and 1614) collect assessments for the flood control works and have access to State Subventions programs. Maintenance has and will continue to be performed. The District's both maintain adequate cash reserves for capital improvements and/or emergency actions.

2.4.2 Consequences of a levee failure

07-10

This section seems to overstate the threat of a flood for a levee system that has never even been threatened with a flood. The levee is not likely to "breach" as did the Lower Jones Tract levee. The landside is only between 2 and 5 feet below the flood stage (Lower Jones Tract is 25 ft. below the flood stage). The Smith Canal cannot convey that much water to feed a major breach (Lower Jones Tract is fed by the Middle and Old Rivers). A blowout in the levee would likely only induce a manageable amount of flood waters that would flow through existing urban drainage systems to pumps that could be supplemented with additional diesel pumps if required. A blowout on the Smith Canal levees would likely be repaired before next high tide cycle.

A levee breach scenario should be developed to evaluate a worst case of a levee blowout to determine to what extent the levee can be damaged, how much water can actually flow in a tide cycle, how fast repairs can be made and how much pumping capacity exists or would be required.

07-11

3

Enclosed are two pictures of 1) a levee blowout (repaired before the next tide cycle (my opinion of a very worst case) and 2) a levee breach on an Island that was 25 ft. below flood stage, with a crown below the 100 yr. flood stage and substantial wave fetch to cause it to overtop.

3.2 Water Quality

07-12

The EIR states that:

Impact WQ-3 Accumulation of Contaminants from a reduction in Water Circulation in Atherton Cove and Smith Canal (less than significant)

Modeling results show that "if the openings in Atherton Cove and Smith canal were too narrow, tidal circulation could potentially indirectly result in the accumulation of contaminants from street runoff and the buildup of organic material that could lead to low dissolved oxygen on the inland side of the wall.

However modeling results show that water residence time in the canal would change very little if the gate is constructed.

Hydrodynamic model.

Models can be very deceiving if not prepared properly. They can produce convincing conclusions however they do not show all of the input characterizes used to generate the results. A recent example of failed hydrodynamic model is the DWR Salt Water Barrier project which constructed a rock dike in the False River between Jersey and Bradford Island. The model indicated that the velocities around Bradford Island (specifically in the Fisherman's Cut between Bradford and Webb Tract) would not change significantly. Once the barrier was in place the velocities did indeed vary significantly and major impacts to boating, navigation and fish habitats was realized.

A review of the Hydrodynamic model report presents many questions as to its accuracy. Being such an important environmental factor, more details or clarification of the model should be provided.

Boundary conditions

07-13

The Boundary used was the Main Channel, San Joaquin River and The Calaveras River (with reservoir). The boundary does not include Smith Canal or Yosemite Lake which is an obvious deficiency in the model which is trying to predict the effect in these areas. The effect of storm water discharges should be input to the model as "reservoirs" as they will affect the stage and flow especially if pumping takes place during an incoming high flow event or when the gate is

4

closed. There are 3,365 acres that get pumped into the Smith Canal. How high will a substantial storm increase the level in the Smith Canal (existing, with gate and with gate closed?)

07-13 cont'd

Model calibration

07-14

The model was calibrated from a period in November 2008 and validated in January 2009. The report itself states that "*the model should have been calibrated to stage and flow data in Atherton cove or Smith Canal but no data available*". All of the model calibration is performed against Data for the RRI and SJG which is not accurate for a dead water slough off of the river.

The report states that it uses a Manning's n value of 0.0167. This is equivalent to a concrete channel with rough joints (see table from Civil engineering manual). The actual Manning n value should correlate to a natural channel (poor condition) 0.025 (nearly double). Manning's n value has a large effect on hydraulics and this minor correction would likely impact the results of the model.

The model was calibrated with a dye penetration test to determine horizontal dispersion coefficient. The Dye was injected into the Legion Park Pump Station on 2/2/04 at 2:00 pm. whereas the concentration of dye was 25 mg/l and on 2/15/04 the concentration had reduced to 5 mg/l. This indicates a residence time of 12 days which is contrary to the stated values of the model.

Velocities. The Basic flow equation is Q=AV where Q (flow) in cubic feet per second (cfs) A is the (area) of the channel square feet (sf) V velocity in feet per second (ft. /s). If one variable changes then the others must change. The gate is reducing the area of the channel and either the Q must decrease or the velocity must increase. It is likely that it would be a combination of both. The model assumes that only the velocity will increase. This does not seem correct in that the flow is controlled by tides and the hydraulic grade line is very flat within the Smith Canal tidal prism (see enclosed GME field data for tide fluctuation and slopes). It is likely that less water will flow into Smith Canal in addition to increased velocities.

07-15

It states in the report (section 5.3) that the mobilization velocity for sand is 0.6 ft. /s. Table 5-5 indicates that the gate will increase the velocities from below the sand mobilization velocity to well above, indicating that additional silt will be brought into the Smith Canal due to the Gate.

Residence Time. The report indicates that the amount of time for a contaminant to be flushed out of the Smith Canal is not affected by the Gate. The model assumes that the amount of water flowing through the gate will not be impacted and that the velocity will merely increase (unsure). Table 6-1 of the report predicts a residence time of 41 days in Yosemite Lake. The Dye penetration test

07-16

5

referenced in the report (figure 4-22) shows that the time for the Dye to get out of Yosemite Lake is 12 days (existing conditions). 07-16 cont'd

The model is not set up to accurately reflect the field conditions. In order to use a sophisticated model to accurately predict the effects of a major change to a large body of water, accurate input information must be provided. The report only uses readily available data and states (no data available). Existing Data for stage, velocity and residence times should be obtained for Yosemite Lake and the Smith Canal. It is fairly straightforward to measure tide stage, velocities and perform additional dye dispersion tests. Data should be obtained to create a legitimate boundary and calibrate the model to field data for the affected area of Smith Canal and Yosemite Lake. Once accurate initial data is obtained the introduction of the gate can be analyzed.

3.3 Transportation and Navigation 07-17

This section should be expanded to discuss the impacts to recreational boating. The significant increased velocities at the gate (Table 5-5 of Hydro report) show a tenfold increase in the velocity through the gate which will likely affect boating. The effect of waves, ship and boat wakes should also be analyzed as the angle, magnitude and frequency will greatly affect the way a boater, kayak or Jet Ski will maneuver through a 50 ft. steel opening.

Will a no wake zone be required in the River? Will two boats be able to pass in the gate safely under all? Conditions? Specifically how will a boater control his vessel entering Atherton Cove on an incoming tide flowing at 2.38 ft. /s? Will the gate only be navigable at slack tides? How would this be monitored and enforced? 07-18

3.7 Vegetation 07-19

It is stated that the "all riparian vegetation on Dad's point will be removed"

Mitigation Measure VEG-MM-2 Compensate for loss of Non Native Riparian Habitat. There is also "native habitat" including Shaded Riparian Aquatic and Scrub Shrub. The mitigation measure is to purchase mitigation bank credits which should also include these habitats. The ratios specified do not seem consistent with Fish and Wildlife codes.

3.10 Visual Resources 07-20

The Delta is a beautiful place and recreational boating a major asset to the City of Stockton. This gate will be a major eyesore and should be accurately represented in the EIR.

6

Additional Photo Simulations should be provided as the ones in appendix H are blatantly **misleading.** Nearly all of the photos show the pier of the Port of Stockton in direct line of the Gate. When the gate is overlaid it actually looks better because it blocks this industrial view of the Port Wharf. Pictures should be prepared at the most offensive viewing angles for example:

- Looking Southeast from the Stockton GCC at a gap in the vegetation looking at the wall and Dad's point (without vegetation and showing all the Levee required improvements)
- Looking Northwest from The Louis Park Boat ramp looking at the wall and Dad's point (without vegetation and showing all the Levee required improvements)
- From a Boat with the million dollar view of the homes in Atherton cove obscured by the gate.

07-20 cont'd

5.2.9 Urban Levee Design Criteria

07-21

This section should provide more background as to the compliance with the ULDC. Does the gate meet all of the requirements? If not what else will be required, how long to implement and at what cost?

Thank you for providing the opportunity to provide comments on the EIR. We look forward to your response.

Respectfully

Dominick Gulli
GME.

7

Smith Canal Gate – Hydrodynamic Modeling
Alignment and Gate Width Evaluation

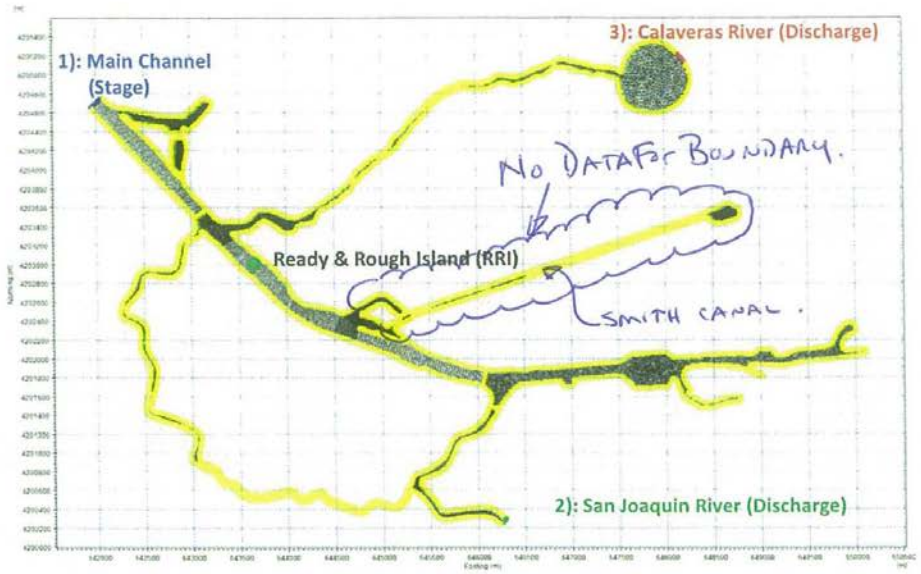


Figure 4-3: MIKE21-FM Mesh and Boundaries

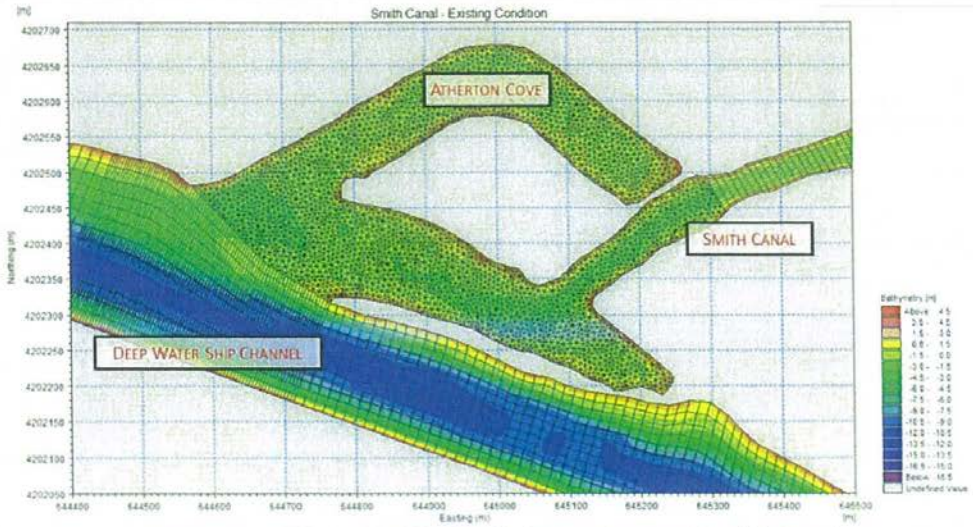


Figure 4-4: MIKE21-FM Mesh of Atherton Cove and Smith Canal

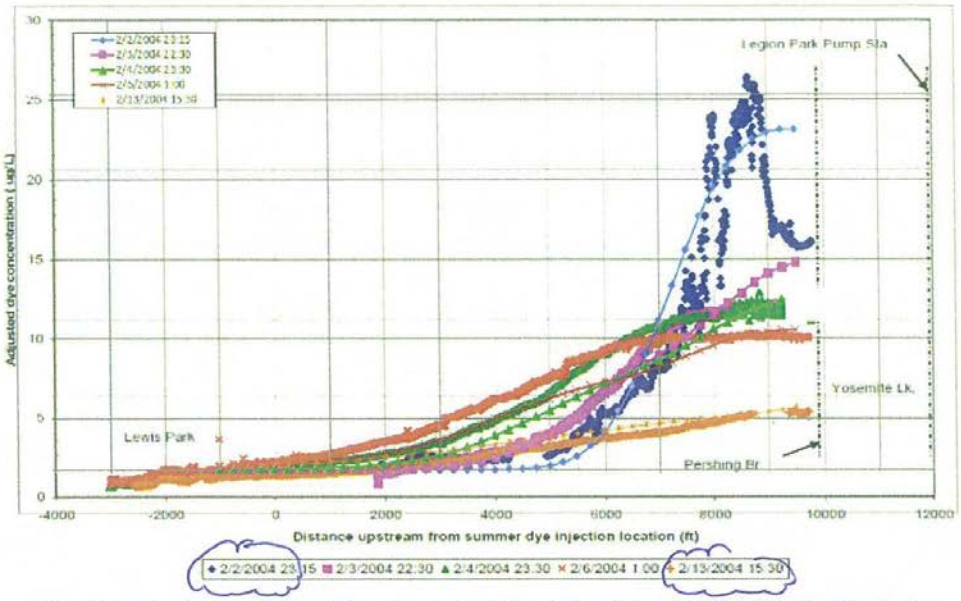


Figure 4-22: Comparison of Dye Concentrations Predicted by MIKE21-FM-TR Model versus Those Measured in the Dye-Tracer Study (Litton 2004)

4.4 CONCLUSIONS

The stage and discharge, including their phases and magnitudes predicted by the hydrodynamic model, match closely with those measured. The dye tracer peak concentrations and concentration profiles predicted by the transport model also match well with those measured. These results indicate both the hydrodynamic and transport models are well calibrated for use in alternative comparison and evaluating potential impacts of the proposed projects.

- For the existing conditions, the velocity in Smith Canal at the gate location of Alignment 3 is higher than that of Alignment 2 as the channel is narrower and tidal prism is larger at the Alignment 3 gate location.

Table 5-5: Comparison of Maximum Tidal Velocity at Gate

Alternative	Gate Location and Dimension	At Gate Location under Existing Condition (ft/s)	At Gate Location under Proposed Condition (ft/s)
Alignment 1	Smith Canal – 50 ft	0.20	2.38
Alignment 1	Smith Canal – 100 ft	0.20	1.26
Alignment 1	Smith Canal – 200 ft	0.20	0.54
Alignment 2	Smith Canal – 50 ft	0.53	1.11
Alignment 3	Smith Canal – 50 ft	0.89	1.20
Alignment 3	Atherton Cove – 50 ft	0.18	0.60

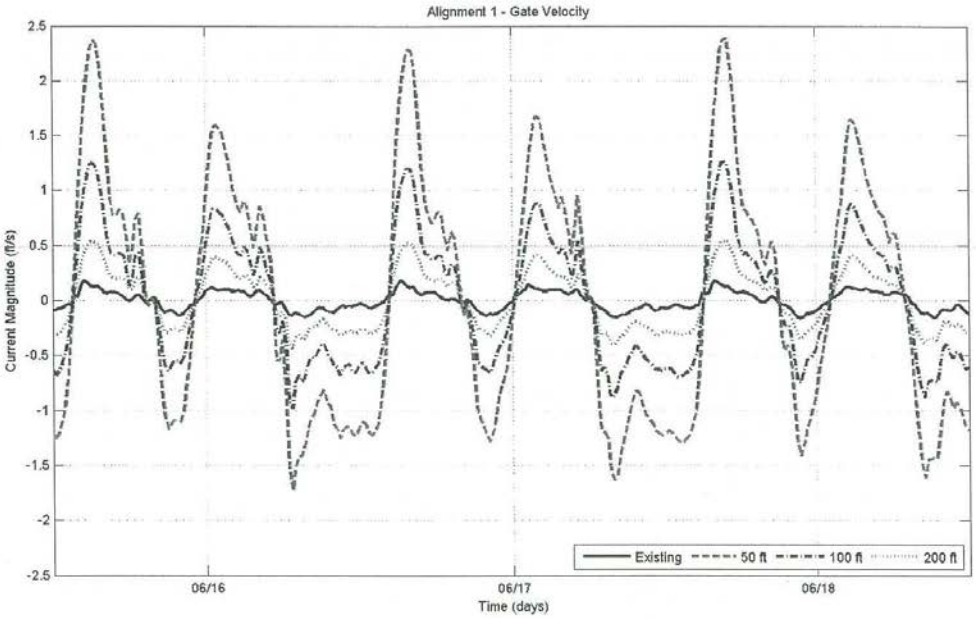


Figure 5-10: Velocity at Gate of Alignment 1

Similar to the results of the hydrodynamic modeling and velocity comparisons, comparison of residence times between proposed alignments and the existing conditions did not show any significant changes to the global flushing characteristics in both Atherton Cove and Smith Canal. In fact, the circulation may be slightly improved at Atherton Cove with proposed Alignment 1.

Table 6-1: Residence Time Comparison Between Different Alignments (in days)

Station	Existing	Alignment 1	Alignment 2	Alignment 3
Smith Canal 1	1.0	1.0	1.0	1.0
Smith Canal 2	6.1	6.1	6.1	6.1
Smith Canal 3	7.2	7.2	7.2	7.2
Smith Canal 4	11.9	11.9	8.2	8.2
Smith Canal 5	23.8	23.8	23.8	23.8
Smith Canal 6	36.1	36.1	36.1	36.1
Smith Canal 7	41.0	42.0	41.0	41.0
Smith Canal 8	41.5	42.2	41.5	41.5
Atherton Cove 1	1.0	1.0	1.0	1.0
Atherton Cove 2	1.0	1.0	1.0	1.0
Atherton Cove 3	1.1	1.1	1.1	1.1
Atherton Cove 4	1.1	1.1	1.1	1.1
Atherton Cove 5	1.4	1.2	1.3	1.5
Atherton Cove 6	1.5	1.4	1.5	1.6
Atherton Cove 7	1.6	1.5	1.6	1.6

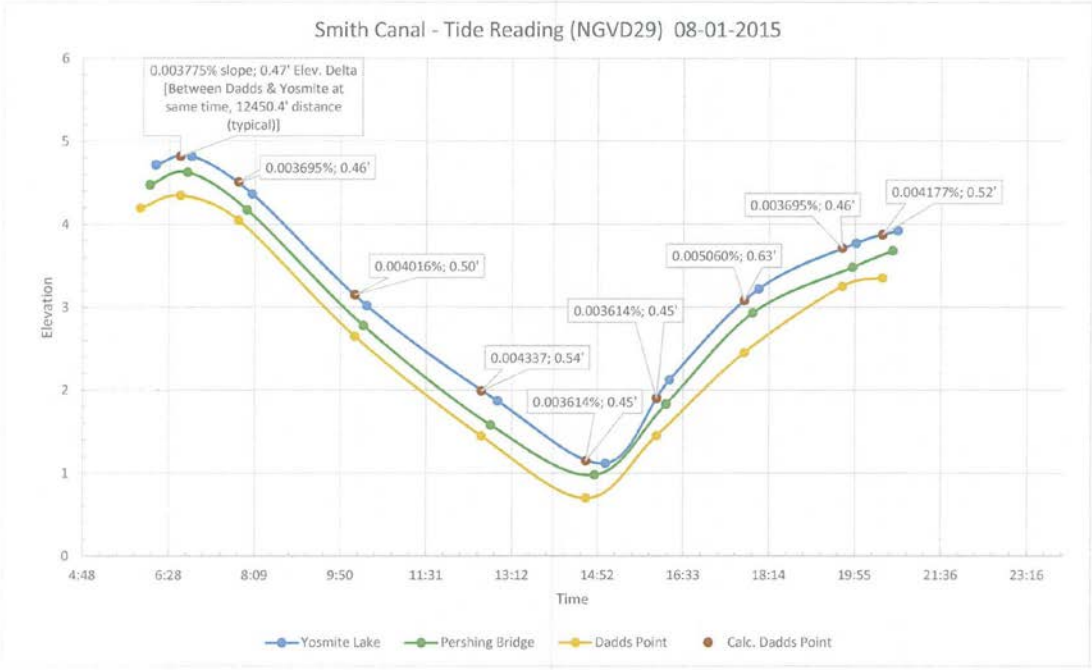
6.2.2 Alignment 1 Gate Width Sensitivity

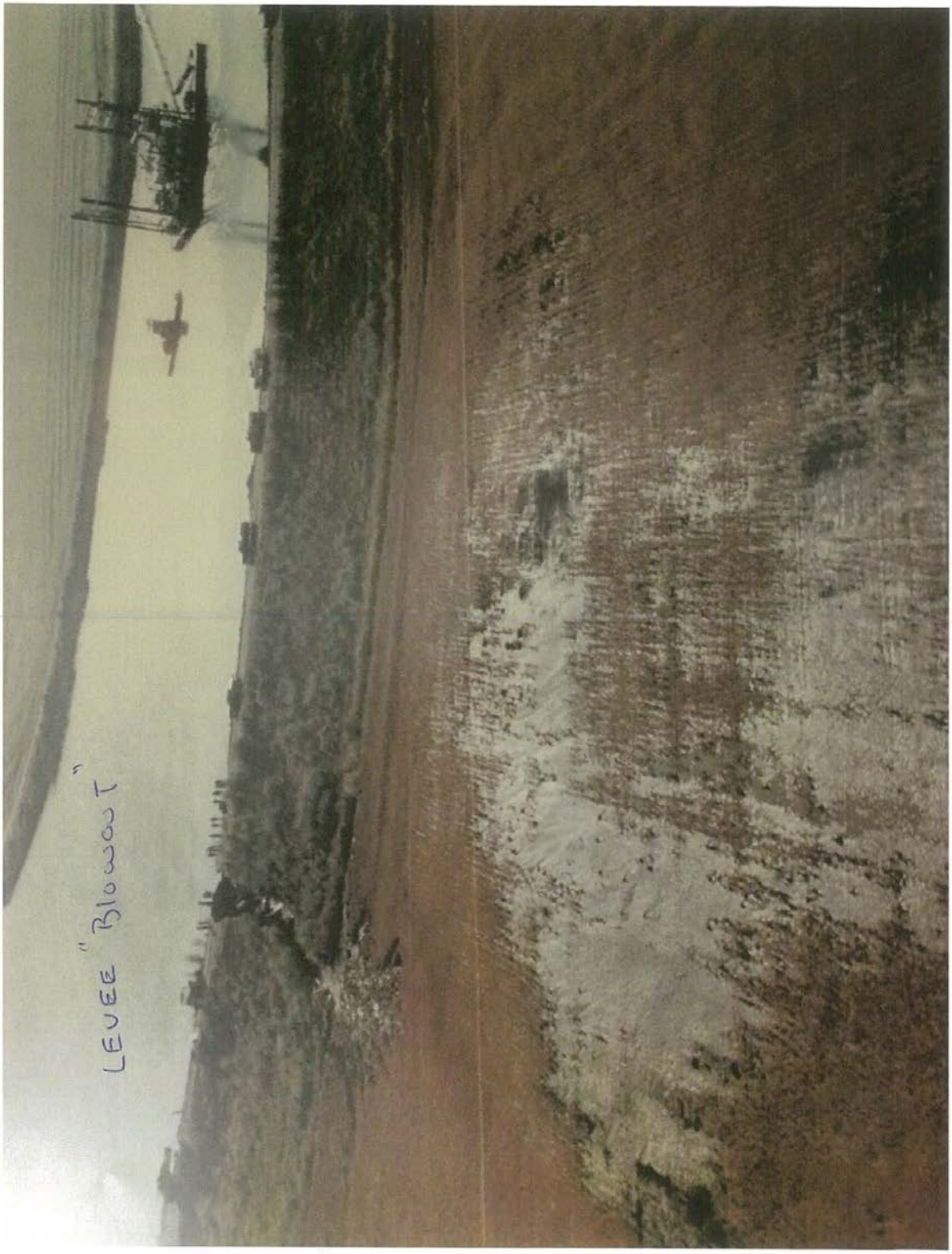
Similar to Alternative Alignment comparison, a comparison between different gate widths for Alternative Alignment 1 was performed and results are presented in

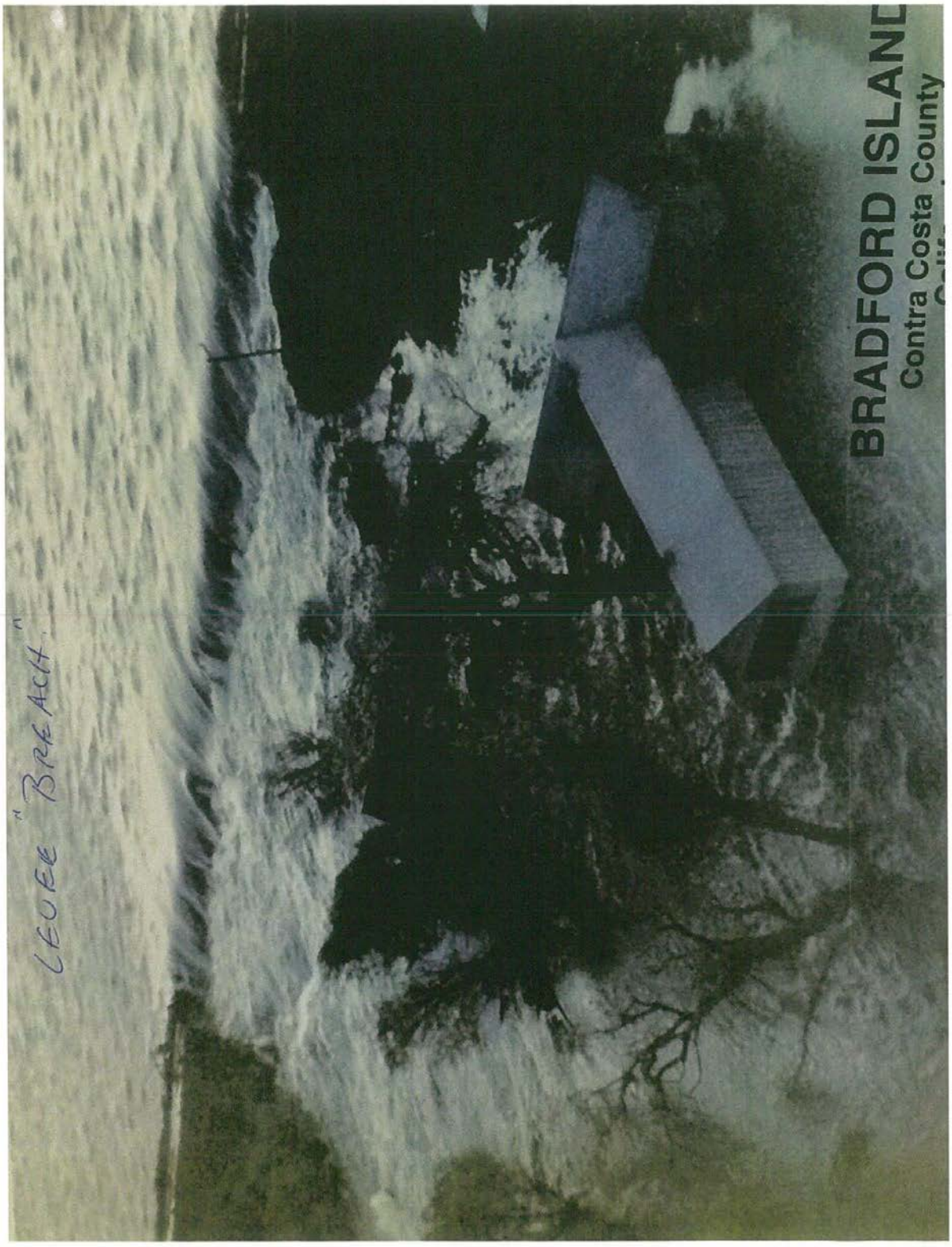
Table 6-2.

- As discussed in the prior section, for the 50-ft gate width, there is a slight reduction in residence time in Atherton Cove and increases at Smith Canal 7 and 8 are very small, less than 2%.
- The 100-ft and 200-ft gate widths show very similar results compared with those of the 50-ft gate width. The slight reduction of residence time at Atherton Cove decreases with the increase in gate width. The residence time in Smith Canal generally remained the same with different gate widths.

Overall, comparison of residence times between different gate widths did not show any significant changes to the global flushing characteristics in both Atherton Cove and Smith Canal. In other words, residence times in both Atherton Cove and Smith Canal are not sensitive to the gate width.


Smith Canal - Tide Reading (NGVD29) 08-01-2015
0.003775% slope; 0.47' Elev. Delta [Between Dadds & Yosmite at same time, 12450.4' distance (typical)]
0.003695%; 0.46'
0.004016%; 0.50'
0.004337; 0.54'
0.003614%; 0.45'
0.003614%; 0.45'
0.005060%; 0.63'
0.003695%; 0.46'
0.004177%; 0.52'
Elevation
Time
4:48
6:28
8:09
9:50
11:31
13:12
14:52
16:33
18:14
19:55
21:36
23:16
Yosmite Lake
Pershing Bridge
Dadds Point
Calc. Dadds Point


LEVEE "BLOWOUT"



1

9.5.1.1 Response to Letter 07

07-01

See response to comment 06-02. As described in Section 1.3, *Project Background*, RD 1614 and RD 828 both determined that levees along Smith Canal would not meet FEMA criteria, primarily due to extensive encroachments onto the levees that prevented access for maintenance and inspection.

07-02

Since the Smith Canal levees are not accredited by FEMA, the SFHA areas are developed assuming the Smith Canal levees fail during a 100-year flood stage in the San Joaquin River.

07-03

The Draft EIR states that the in-place rehabilitation of the levees was infeasible, as it would require removal of extensive encroachments and cost in excess of $106 million, far exceeding SJAFCA's funding capabilities. See Section 2.2.1, *Levee Encroachment Removal Alternative*, for a full discussion of the infeasibility of in-place rehabilitation.

The Green Mountain Engineering proposed alternatives are described in Section 2.2.3, *Green Mountain Engineering Alternatives*. A detailed evaluation of the four alternatives is presented in Appendix A, Attachment H. This evaluation concludes that none of the alternatives meets the Tier 1 project objectives presented in Section 2.1.2. Therefore, these alternatives were not carried forward as part of the Smith Canal Draft EIR.

07-04

SJAFCA has proposed the project to address flood risk and to allow the community to be eligible for lower cost optional flood insurance. Because the current levees are not certified and cannot be accredited by FEMA, FEMA has remapped significant portions of the adjacent neighborhood, has imposed mandatory flood insurance on many properties in that neighborhood, and has stated an intention to expand the area subject to mandatory flood insurance as stated in their February 27, 2012 letter to San Joaquin County and February 17, 2012 letter to the City of Stockton. The conditional letter of map revision (CLOMR) provided by FEMA to SJAFCA in response to the proposed project states that if constructed as proposed, FEMA would remove the area from the 100-year floodplain. This will remove the obligation of mandatory insurance.

07-05

The SJAFCA goal to provide 200-year level of performance is not achieved by the installation of the Smith Canal Gate alone. As stated in the Draft EIR, isolation from the Smith Canal would contribute toward ultimate 200-year level of performance in combination with other area projects, in compliance with State law.

07-06

See responses to Comments 05-01 and 05-03.

07-07

Regarding comments on Tables 1 and 2: Since the alternatives do not address the existing levee, the alternative cannot be accredited under FEMA's regulations. One of the primary goals of this project is to improve the level of flood risk–reduction performance to secure FEMA accreditation.

Regarding comments on Table 3: The floodwall and gate proposed for each of the three project alternatives will provide a 20-foot-wide access road on top of the floodwall accessible from both connecting levees. The project will be designed pursuant to ULDC requirements. Per the design funding agreement, SJAFCA must utilize an independent panel of experts to assure ULDC compliance.

Text in Section 2.2.3, *Green Mountain Engineering Alternatives*, has been revised to further clarify why the various Green Mountain Engineering designs were not carried forward for analysis.

07-08

Section 1.3, *Project Background*, describes the process for determining present levels of flood risk. As resilience to sea level rise is a project objective of the Smith Canal project, SJAFCA considers the No Project Alternative's failure to address the potential for increased water elevations to be a relevant selection criterion.

See response to Comment 03-05 regarding sea level rise.

07-09

In Section 2.4.1, *No Flood Risk–Reduction Measures Implemented under the No Project Alternative*, the sentence has been reworded to state:

"Because of uncertainties in local, state, and federal funding ... it is not reasonable to predict construction of levee **accreditation** repairs in the foreseeable future."

07-10

Section 1.3, *Project Background*, describes the process for determining present levels of flood risk that exist along Smith Canal levees. Should the Smith Canal levees fail, the likely consequences are described in Section 2.4.2, *Consequences of Levee Failure*. See also Section 3.1.1.2, *Environmental Setting*, for a discussion of the surrounding areas identified as within the 100-year inundation zone.

07-11

This scenario would be irrelevant to accreditation of the Smith Canal levees. See response to Comment 07-10.

07-12

Regarding the Hydrodynamic Model comments:

There are distinct differences between False River vicinity and Smith Canal. The False River region of the Delta is more complex with interconnected sloughs and channels, whereas Smith Canal has a single connection to the San Joaquin River and terminates at Yosemite Lake.

The hydrodynamic model prepared was a depth-averaged, 2-dimensional hydrodynamic model for which the hydrodynamics was calibrated (November 2008) and validated (January 2009) for largely tidal conditions. The transport model was calibrated against a known dye-tracer study during urban storm runoff (February 2004). The project alternatives were analyzed during largely tidal conditions (June–July 2007).

The hydrodynamic model was also subjected to an independent review to improve its resolution and accuracy.

07-13

Smith Canal at Yosemite Lake is included in the model insomuch as the end of the canal is a "land boundary" and not an "open boundary" in the model. This boundary setup is correct for this application. Regarding the input of urban storm runoff, this was included during the dye-tracer calibration as "point sources" from the multiple drainage subareas bounding Smith Canal.

The issue of confining the stormwater runoff behind a closed Smith Canal gate is presented in Section 3.1.2.3, *Impacts and Mitigation Measures*, Impact FC-2, for Alternative 1. The evaluation concluded the presence of the fixed wall structure and gate would not cause the water level in Atherton Cove and Smith Canal to be any higher than it would be in the absence of the fixed wall structure and gate, so Alternative 1 would have no impact.

07-14

Use of the Best Available Data (stage and flow) is a justified modeling practice in the absence of readily available data from within Smith Canal.

While the reported n-value seems low, it is quite common to have lower n-values in a 2D model versus a 1D model as the topography captured by the detailed model grid captures channel irregularities. The model tested multiple n-values and found an n-value of 0.0167 to produce the best calibration. Doubling the n-value to 0.025 would degrade the calibration results.

The dye-tracer study used for calibration was from a period that included urban storm runoff (February 2004), whereas the alternatives analysis used a tidal condition (June–July 2007) with no urban storm runoff to assess the greatest impacts on water quality. As such, the inclusion of urban storm runoff during the winter should show shorter residence times as the urban storm runoff charges the canal and creates a net positive flow toward the San Joaquin River.

07-15

As shown by the model results, there are minimal changes in stage and residence time due to the presence of the gate, which suggests that the volume of water moving in and out of Smith Canal over the course of a tide cycle is the same between existing and gated conditions. This is reflected in Figures 5-3 and 5-5 of the *Smith Canal Gate Hydrodynamic Modeling Alignment and Gate Evaluation Final Report* (Draft EIR Appendix B). The existing versus alternative stage scatter data fits tightly on a 1:1 line because it does not take much over a 6 hour tide change to fill and drain the limited tidal prism of Smith Canal.

The gate will increase the instantaneous maximum velocity at the gate and reduce it to zero at all other locations along the floodwall. Local scour in the immediate vicinity of the gate will be controlled through erosion control measures. Velocities just beyond the gate are smaller than this

instantaneous maximum at the gate due to flow contraction and expansion. Under tidal conditions, suspended silts will have a concentration similar to existing conditions just outside the gate, so as the flood tide fills Smith Canal, the increased velocities through the gate will convey the same volume of water and, hence, very similar quantities of suspended silt.

During flood conditions, the gate will be closed, so the ability of the gate to transport more sand into Smith Canal will be non-existent.

07-16

The dye-tracer study used for calibration was from a period that included urban storm runoff (February 2004) whereas the alternatives analysis used a tidal condition (June–July 2007) to assess the greatest impacts on water quality. As such, the inclusion of urban storm runoff during the winter should show shorter residences times as the urban storm runoff charges the canal and creates a net positive flow toward the San Joaquin River.

Use of the Best Available Data (stage and flow) is a justified modeling practice in the absence of readily available data from within Smith Canal.

07-17

Impacts on recreational boating access are analyzed in Section 3.11, *Recreation*.

Under Mitigation Measure REC-MM-2, the project design will incorporate all U.S. Coast Guard (USCG) and California Division of Boating and Waterways (DBW) requirements, which may include: post signage describing boating conditions and right-of-way restrictions, post a boating speed limit, install strategically placed and appropriately colored buoys for boat traffic management, install strategically placed and appropriately colored lighting for visibility if required by USCG or DBW standards, implement other measures in accordance with the DBW California Waterway Marker System, maintain an educational website and conduct other public outreach such as flyers, posters, and postcards specifically for boaters to alert them of relevant construction and maintenance schedules and other navigation-related information.

07-18

See response to Comment 07-17.

07-19

Most of the riparian habitat in the project area is dominated by nonnative species, although some native species are present, as noted in Section 3.7.1.2, *Environmental Setting*, under *Nonnative Riparian Woodland*. Because of the dominance of nonnatives, the term *nonnative riparian* was used to describe the plant community. Impact VEG-2, Loss of Nonnative Riparian Habitat, does note that a levee stability analysis will identify any native vegetation that could be retained. Shaded riverine aquatic habitat is included in the description of riparian habitat functions in Mitigation Measure VEG-MM-2, Compensate for Loss of Nonnative Riparian Habitat. Riparian scrub occurs intermittently between larger riparian trees and was not extensive enough to map and calculate as a separate plant community type. The riparian mitigation ratio in Mitigation Measure VEG-MM-2 is stated to be a minimum. The final mitigation ratio will be determined in coordination with resource agencies during the permitting process to ensure that all regulatory requirements are met.

07-20

As described in Section 3.10.3.1, *Assessment Methods*, "simulation vantage points were selected to provide representative public views from which specific project elements from each alternative would be most visible." The simulations were prepared using project design data and are an accurate representation of each alternative. It is not feasible to simulate every affected view for all three alternatives; therefore, the locations were chosen in an unbiased manner to illustrate impacts across all three alternatives as they would affect the largest number of sensitive viewers, making them representative of project impacts. The simulations do not supersede the written analysis. The simulations serve as an analytical tool for the author and can help to illustrate the impacts, in conjunction with the text descriptions, for the reader. It is helpful if the simulations are viewed in conjunction with the analysis. For example, the analysis of the simulations generally states that "introducing a large, industrial-looking wall and gate structure that visually impounds Atherton Cove and Smith Canal would alter the existing visual character and quality of views associated with the study area and would result in significant visual impacts that would negatively affect sensitive residential and recreational viewers." The analysis, as a whole, finds that there will be significant and unavoidable visual impacts for Impacts VIS-1 through VIS-3 for all three alternatives based on all affected views. Therefore, the existing simulations adequately reflect the project impacts. Additional simulations are not needed at this time.

07-21

The project will be designed pursuant to ULDC requirements. Per the design funding agreement, SJAFCA must utilize an independent panel of experts to assure ULDC compliance.

9.6 Individual Comments and Responses

9.6.1 Letter 08—W. Gregory Mullally

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

COMMENT CARD

Smith Canal Gate Project
Draft Environmental Impact Report
Public Meeting

Wednesday, July 8, 2015

The San Joaquin Area Flood Control Agency (SJAFCA) is proposing the Smith Canal Gate Project (project), near the mouth of Smith Canal, adjacent to the San Joaquin River, to reduce area flood risk. The project would construct a fixed wall with a gate-type structure to isolate the canal from the San Joaquin River during high flow and tide events, reducing flood risk for approximately 8,000 properties and 24,000 people. Anyone interested in commenting on the Draft Environmental Impact Report (EIR) for this project is encouraged to do so.

Comments will be accepted until Monday, August 10, 2015. Send comments via U.S. Postal Service to ***Megan Smith, Project Manager, ICF International, 630 K Street, Suite 400, Sacramento, CA 95814*** or via email to ***megan.smith@icfi.com***.

Alternatively, you may write your comments in the space below and turn it in tonight to a team member, or you may take home this self-mailer to fill out and send in to SJAFCA by August 10, 2015.

Name W. Gregory Mullally

Organization or affiliation (if applicable) _____

Address MAILING: P. O. Box 4455, Stockton 95204-0455 - RESIDENCE: 2303 Moreing Road

City, State, Zip _____

Phone (209) 941-0346

E-Mail _____

Please write legibly.

(SEE TWO-PAGE SUPPLEMENT, ATTACHED HERETO.)

Note: *Your name and affiliation may be included with your comment and be made publicly available as part of the EIR process.*

Visit ***http://www.sjafca.com/smith_canal_closure.php*** to learn more.

SUPPLEMENT TO SJAFCA COMMENT CARD RE SMITH CANAL GATE PROJECT
Page 1 of 2

In June 2013 I voted - and most reluctantly so! - for the originally proposed project, Alternative #1, which then added a new direct charge of $540.38 to my annual property-tax bill, effective with tax year 2013 - continuing till doomsday in all likelihood.

I don't intend to vote for one more dime to be added to that bill, which either Alternative #2 or #3 would do (and a whole lot of dimes at that, given #2 would cost some $22 million and #3, $13 million, more than #1, with the entire increase being the responsibility of persons living in the affected area given it appears there would be no additional funding available from either the state or federal government). Thus, from a financial perspective alone, Alternatives #2 and #3 are an absolute no-go for me. Additionally, the constructing and maintaining of Alternative #1 appears to intrude on far fewer residential properties than does either #2 or #3. 08-01

This whole matter is one of the biggest governmental boondoggles I've ever seen - in the final analysis more social engineering than civil or hydraulic - and essentially to the benefit of no one except maybe all the various engineers, attorneys, financial specialists, sundry "consultants" and "facilitators" involved, making fairly good sums of money for themselves, most of whom if not all don't even live in the affected area. (Well, at least it's keeping them off the welfare rolls! But, in fairness to the specific vendors presently involved, if it weren't engineering firm X or attorney X at this time then it would be engineering firm Y or attorney Y perhaps as far away as Los Angeles, which is not to say that there aren't instances of moneymakers currently involved who are not local and thus money paid them goes out of the community altogether.)

How very much I now regret that I didn't sell the Moreing Road house after having inherited it (mortgage free) from my mother in 2003 rather than committing myself to a major remodelling project because then no sooner did I sign off on that commitment but the Great Recession came along, overnight devaluing the property - and then "Categate," which if not completed would then, we were being told, see astronomical increases in flood-insurance premiums, essentially another form of property devaluation at time of sale. And how I now regret having encumbered the property with a mortgage - modest though it was up against the value of the house at the time - prior to the remodelling, but I gave no thought to the matter of substantial increases in flood-insurance premiums given that wasn't a hot topic at the time, plus, even though mortgage free, my mother routinely carried flood insurance just as she routinely carried homeowner insurance. It must be borne in mind, too, that once the gate is completed there's still no guarantee - there's no requirement - that flood-insurance premiums won't dramatically increase.

If a new election is held because the SJAFCA board selects Alternative #2 or #3, it's my belief the counting of ballots will have to comport to the recently signed SB 553, which prohibits - and correctly so - the counting of ballots by any party having an interest in the outcome and mandating that an 08-02

SUPPLEMENT TO SJAFCA COMMENT CARD RE SMITH CANAL GATE PROJECT
Page 2 of 2

impartial agent do the counting. In all likelihood that will mean having to use project-related funds to pay for tabulation, even if that ends up being done by the County Registrar of Voters Office because, if not mandated by the Elections Code to do this - and I don't believe it is - that office will undoubtedly file a claim with SJAFCA for expenses incurred. So, now, in addition to all the other aforenoted vendors involved in all this those of us in the affected area will have to cover the expenses of a professional vote-counter!

08-02 cont'd

A massive boondoggle, Gategate. That's all it is, on so many levels.

9.6.1.1 Response to Letter 08

08-01

The commenter's preference for Alternative 1 is acknowledged.

08-02

The commenter's concern is noted.

9.6.1 Letter 09—Bob and Janet Kavanaugh

Smith Canal Gate Project
Comment Card #2
July 21, 2015

Bob and Janet Kavanaugh
9 Atherton Island
Stockton, Ca. 95204

209 943-5443

r.kavanaugh@att.net

We want to repeat that we are in favor of Alternative #1 as it is less expensive, complex and has less affect on private property - The Culverts under Moreing Road will enable water flows which will help keep Atherton Cove much cleaner and should have been done when the Road was extended to Atherton Island - Gate will provide a Breakwater which will cut down on Erosion of Atherton Island and properties on Atherton Cove - We look forward to the start of the Project 09-01

Bob Kavanaugh
Janet L Kavanaugh

9.6.1.1 Response to Letter 09

09-01

The commenter's preference for Alternative 1 is acknowledged.

9.6.2 Letter 10—David C. Hui

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

COMMENT CARD

Smith Canal Gate Project
Draft Environmental Impact Report
Public Meeting

Wednesday, July 8, 2015

The San Joaquin Area Flood Control Agency (SJAFCA) is proposing the Smith Canal Gate Project (project), near the mouth of Smith Canal, adjacent to the San Joaquin River, to reduce area flood risk. The project would construct a fixed wall with a gate-type structure to isolate the canal from the San Joaquin River during high flow and tide events, reducing flood risk for approximately 8,000 properties and 24,000 people. Anyone interested in commenting on the Draft Environmental Impact Report (EIR) for this project is encouraged to do so.

Comments will be accepted until Monday, August 10, 2015. Send comments via U.S. Postal Service to ***Megan Smith, Project Manager, ICF International, 630 K Street, Suite 400, Sacramento, CA 95814*** or via email to ***megan.smith@icfi.com***.

Alternatively, you may write your comments in the space below and turn it in tonight to a team member, or you may take home this self-mailer to fill out and send in to SJAFCA by August 10, 2015.

Name David C. Hui
Organization or affiliation (if applicable) —
Address 3048 W. Monterey Avenue
City, State, Zip Stockton, CA 95204
Phone —
E-Mail —

Please write legibly.

Dear MS. Smith,

Thank you for accepting comments from the public.

My property tax, and fees, has risen to almost 300% in the past 16 years.

Being on a fixed income, the continuing growth trend of Taxes and fees may force me from my property.

Therefore, I opt for Alternative 1, the least expensive of the 3 alternatives for Flood-control. 10-01

Thank you for your consideration. Sincerely, 7/11/2015

Note: *Your name and affiliation may be included with your comment and be made publicly available as part of the EIR process.*

Visit ***http://www.sjafca.com/smith_canal_closure.php*** to learn more.

9.6.2.1 Response to Letter 10

10-01

The commenter's preference for Alternative 1 is acknowledged.

9.6.3 Letter 11—John and Elaine Bradbury

Humphrey, Andrew

From: Smith, Megan
Sent: Monday, August 10, 2015 9:55 AM
To: Humphrey, Andrew
Subject: FW: Smith Canal gate project

Follow Up Flag: Follow up
Flag Status: Flagged

-----Original Message-----
From: Elaine Bradbury [mailto:jbtaxe@gmail.com]
Sent: Sunday, August 09, 2015 8:14 PM
To: Smith, Megan <Megan.Smith@icfi.com>
Cc: John Bradbury <jhbradbury45@gmail.com>
Subject: Smith Canal gate project

We attended the public meeting regarding the proposed Smith Canal gate on July 8, 2015.

We support the proposed project as the least expensive and, hopefully, the quickest way to efficiently satisfy the flood prevention requirements and ELIMINATE the need for the current required flood insurance. 11-01

We have lived in our house since 1973 and in other parts of Stockton for
30 years prior to that so are well aware of Stockton's past flood history.
Also, we live near one of the boundaries of the flood plain where one side of the street is designated to flood but not the other side.

We do not have a mortgage on our home but do have an equity line with, currently, a zero balance that still makes flood insurance mandatory. We can close the equity line but eliminating the current flood insurance means anyone buying our house in the future will not have benefit of the current greatly reduced premiums now available. This would be a major disadvantage in a neighborhood where housing prices are not high.

The current building codes required for new or remodeled homes are also a huge disadvantage in a neighborhood of older, rental, foreclosed homes that need or require major improvements. If the proposed gate will also ease this problem, another reason to support it.

John and Elaine Bradbury
2034 Bristol Ave.
Stockton, Ca. 95204

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9.6.3.1 Response to Letter 11

11-01

The commenter's support of the proposed project is acknowledged.

9.6.4 Letter 12—Don Coelho

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

COMMENT CARD

Smith Canal Gate Project
Draft Environmental Impact Report
Public Meeting

Wednesday, July 8, 2015

The San Joaquin Area Flood Control Agency (SJAFCA) is proposing the Smith Canal Gate Project (project), near the mouth of Smith Canal, adjacent to the San Joaquin River, to reduce area flood risk. The project would construct a fixed wall with a gate-type structure to isolate the canal from the San Joaquin River during high flow and tide events, reducing flood risk for approximately 8,000 properties and 24,000 people. Anyone interested in commenting on the Draft Environmental Impact Report (EIR) for this project is encouraged to do so.

Comments will be accepted until Monday, August 10, 2015. Send comments via U.S. Postal Service to ***Megan Smith, Project Manager, ICF International, 630 K Street, Suite 400, Sacramento, CA 95814*** or via email to ***megan.smith@icfi.com***.

Alternatively, you may write your comments in the space below and turn it in tonight to a team member, or you may take home this self-mailer to fill out and send in to SJAFCA by August 10, 2015.

Name Don Coelho
Organization or affiliation (if applicable) _____
Address 1211 W. Walnut St.
City, State, Zip Stockton, Ca 95203
Phone 925. 339. 4652
E-Mail doncoelho@gmail.com

Please write legibly.

12-01

I live near the East end of Smith Canal near Yosemite Lake at american legion Park. during heavy rain surface water is pumped into the lake. High water comes from the east of me NOT from the West end (San Joquin River). A flood gate could cause flooding for me, Not stop it. Due to my elevation and location a flood gate at the mouth will not help.

12-02

Furthermore we have limited tidal flow as we are over a mile from the mouth of Smith a permanent 40 foot gate will restrict tide flow even further causing stagnant water. No homes are built on the levy, the canal has never flooded and during a severe drought it all seems ridiculous to me

Note: *Your name and affiliation may be included with your comment and be made publicly available as part of the EIR process.*

Visit ***http://www.sjafca.com/smith_canal_closure.php*** to learn more.

9.6.4.1 Response to Letter 12

12-01

As described in detail in Subsection 2.3.1.3, *Operations and Maintenance*, if a high flow event were anticipated, the gate would be closed at the lowest tide prior to the forecasted high tide, and the gate would remain closed until the water level in Smith Canal is higher than the San Joaquin River. Should a local area rainfall event occur simultaneously with a high flow or high tide event in the San Joaquin River, the one-way design of the gate structure would operate passively to prevent stormwater runoff from accumulating in Smith Canal. When the water level behind the gate is higher than that of the water in front of it, the gate would automatically open, allowing accumulated interior drainage behind the gate structure to flow out through Smith Canal between high tides.

In Section 3.1, *Flood Risk, Hydrology, and Geomorphology*, analysis of Impact FC-2: Increased Flood Risk from Confining Local Stormwater Runoff, determined the project alternatives would not result in localized flooding.

12-02

See discussion of Impact WQ-3, Accumulation of Contaminants, Organic Material, and Nutrients Resulting from a Reduction in Water Circulation in Atherton Cove and Smith Canal. Tidal flow is driven by the elevation difference between low tide and high tide and by the upstream surface area. These would not be changing and the modeling indicates that the 50-foot wide gate opening would be large enough to still allow full tidal exchange.

Regarding the lack of need for the project, see Section 1.4, *Project Need, Purpose, and Objectives*.

9.6.5 Letter 13—Louie Diaz

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

COMMENT CARD

Smith Canal Gate Project
Draft Environmental Impact Report
Public Meeting

Wednesday, July 8, 2015

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Alternatively, you may write your comments in the space below and turn it in tonight to a team member, or you may take home this self-mailer to fill out and send in to SJAFCA by August 10, 2015.

Name Louie Diaz
Organization or affiliation (if applicable) N/A
Address 1437 Pelem Ct
City, State, Zip Stockton Ca 95203
Phone 209-943-3067
E-Mail louiediaz442@yahoo.com

Please write legibly.

13-01

My comet is if the Smith canal Levee weke to break who would it affect? I believe international ships would be forced to stop coming to the port because the loss of water they could get Stuck in. Farmers would want the levee to get fixed because they use it for their crops. I feel smith canal resdedents are being misleads this project should be a county and city of Stockton project. What would the enviromental affect be if the Levee were to break? City and county wide! This projet is a city project.

Note: *Your name and affiliation may be included with your comment and be made publicly available as part of the EIR process.*

Visit ***http://www.sjafca.com/smith_canal_closure.php*** to learn more.

9.6.5.1 Response to Letter 13

13-01

A levee breach or overtopping in the project area would primarily affect city of Stockton and San Joaquin County residents. SJAFCA is a Joint Powers Authority who has a four-member Board of Directors, comprised of two members from the Stockton City Council and two members from the San Joaquin County Board of Supervisors. As the public agency with principal responsibility for approving and carrying out the project, SJAFCA is the CEQA lead agency and implementing agency.

The likely impacts of a levee breach are discussed in Section 2.4.2, *Consequences of Levee Failure.* The 8,000 properties protected by the Smith Canal levee would be most affected during a levee break. The water level in the San Joaquin River and Delta region would not be appreciably impacted by a levee failure.

9.6.6 Letter 14—John Neal

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

COMMENT CARD

Smith Canal Gate Project
Draft Environmental Impact Report
Public Meeting

Wednesday, July 8, 2015

The San Joaquin Area Flood Control Agency (SJAFCA) is proposing the Smith Canal Gate Project (project), near the mouth of Smith Canal, adjacent to the San Joaquin River, to reduce area flood risk. The project would construct a fixed wall with a gate-type structure to isolate the canal from the San Joaquin River during high flow and tide events, reducing flood risk for approximately 8,000 properties and 24,000 people. Anyone interested in commenting on the Draft Environmental Impact Report (EIR) for this project is encouraged to do so.

Comments will be accepted until Monday, August 10, 2015. Send comments via U.S. Postal Service to ***Megan Smith, Project Manager, ICF International, 630 K Street, Suite 400, Sacramento, CA 95814*** or via email to ***megan.smith@icfi.com***.

Alternatively, you may write your comments in the space below and turn it in tonight to a team member, or you may take home this self-mailer to fill out and send in to SJAFCA by August 10, 2015.

Name John Neal
Organization or affiliation (if applicable) home owner
Address 2312 Idaho Ave
City, State, Zip Stockton 95204
Phone 209- 465- 1102
E-Mail jjneal@sbcglobal.net

Please write legibly.

14-01

Preference for construction — Alternative I
- timely and most cost effective.

Note: *Your name and affiliation may be included with your comment and be made publicly available as part of the EIR process.*

Visit ***http://www.sjafca.com/smith_canal_closure.php*** to learn more.

9.6.6.1 Response to Letter 14

14-01

The commenter's preference for Alternative 1 is acknowledged.

9.6.7 Letter 15—Sharon E. Nordstrom

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

COMMENT CARD

Smith Canal Gate Project
Draft Environmental Impact Report
Public Meeting

Wednesday, July 8, 2015

The San Joaquin Area Flood Control Agency (SJAFCA) is proposing the Smith Canal Gate Project (project), near the mouth of Smith Canal, adjacent to the San Joaquin River, to reduce area flood risk. The project would construct a fixed wall with a gate-type structure to isolate the canal from the San Joaquin River during high flow and tide events, reducing flood risk for approximately 8,000 properties and 24,000 people. Anyone interested in commenting on the Draft Environmental Impact Report (EIR) for this project is encouraged to do so.

Comments will be accepted until Monday, August 10, 2015. Send comments via U.S. Postal Service to ***Megan Smith, Project Manager, ICF International, 630 K Street, Suite 400, Sacramento, CA 95814*** or via email to ***megan.smith@icfi.com***.

Alternatively, you may write your comments in the space below and turn it in tonight to a team member, or you may take home this self-mailer to fill out and send in to SJAFCA by August 10, 2015.

Name Sharon E. Nordstrom
Organization or affiliation (if applicable) Retired-Stockton Unified School District
Address 2857 W. Alpine Ave.
City, State, Zip Stockton, Ca. 95204
Phone (209) 463-8338
E-Mail nordstroms@prodigy.net

Please write legibly.

15-01

We need to get started with Alternative #1. (Single Gated Wall to Dad's Point) With FEMA accreditation, 8,000 residents will be relieved of the rising costs of flood insurance. Let's get this project moving forward!

Note: *Your name and affiliation may be included with your comment and be made publicly available as part of the EIR process.*

Visit ***http://www.sjafca.com/smith_canal_closure.php*** to learn more.

9.6.7.1 Response to Letter 15

15-01

The commenter's preference for Alternative 1 is acknowledged.

9.6.8 Letter 16—Art and Florencia Sanchez-Smith

Humphrey, Andrew

From: Smith, Megan
Sent: Monday, August 03, 2015 1:32 PM
To: Humphrey, Andrew
Subject: FW: Smith Canal

Follow Up Flag: Follow up
Flag Status: Completed

Smith Canal comment letter

From: Sanchez, Florencia [mailto:Florencia.Sanchez@McKesson.com]
Sent: Friday, July 03, 2015 12:27 PM
To: Smith, Megan <Megan.Smith@icfi.com>
Subject: Smith Canal

We would like to see plan #1, as it has the most property protection for the least cost – thank you 16-01

Art and Florencia Sanchez Smith
Riviera Drive

1

9.6.8.1 Response to Letter 16

16-01

The commenter's preference for Alternative 1 is acknowledged.

9.6.9 Letter 18—Don Coelho

PROCEEDINGS

MR. DON COELHO: Well, first of all, we know that if Smith Canal is never flooded and it is false that there are homes built along the canal prohibiting inspection, as anyone with a boat driving up and down Smith Canal will realize. I live at 1211 West Walnut Street near American Legion park. 18-01

I have studied the hydrology of the canal for 12 years. When there is heavy rain, surface water is pumped into American Legion Park by the pumping plant and water runs from east to west. If the canal is built, it could actually block the water from draining out. The flooding is not coming from the San Joaquin. It would come from the opposite end, based on where I live. So to restrict -- to block the canal gate and not allow the water to discharge from American Legion Park accumulation would be causing flooding instead of preventing flooding. 18-02

I'm also concerned that a 40-foot-wide gate would limit the flow of water. There's already limited tidal flow where I live, which is a mile and a half upstream from the mouth, and a 40-foot opening would restrict tidal flow to the point where the water would not flow and would stagnate. 18-03

So I -- I actually voted for the canal as being 18-04

1

a lesser of two evils compared to mandatory FEMA flood insurance. However, upon studying the canal gate, I realize that it would be ineffective and actually create possible flooding on my property which would not exist otherwise. 18-04 cont'd

Okay. Thank you.

---o0o---

MR. RICHARD GACER: My observation is that if we don't select design number 1, that design number 2 and 3 will require another assessment because you are talking about additional funds and the funds that -- design number 1 is adequate at this time to build up the flood gate. So I don't want another assessment.

---o0o---

MR. LOU DIAZ: Okay. Well, I want to make my comment that this Smith Canal, if it was to break, it would Affect, you know, the Port of Stockton, where the ships come in, where the international ships come in. They would be stopped from coming in because they would leak. So international ships come in, why should it just be the Smith Canal residents' obligation for the flood gate? That's my comment.

---o0o---

MR. JIM HOBLITZELL: I would like to know who the idiot is what would hold this meeting at

2

9.6.9.1 Response to Letter 18

18-01

See response to Comments 06-02 and 06-04.

18-02

The issue of confining the stormwater runoff behind a closed Smith Canal gate is presented in Section 3.1.2.3, *Impacts and Mitigation Measures*, Impact FC-2, for Alternative 1. The evaluation concluded the presence of the fixed wall structure and gate would not cause the water level in Atherton Cove and Smith Canal to be any higher than it would be in the absence of the fixed wall structure and gate, so Alternative 1 would have no impact.

18-03

See response to Comment 12-02.

18-04

See responses to Comments 12-01 and 18-02.

9.6.10 Letter 19—Richard Gacer

a lesser of two evils compared to mandatory FEMA flood insurance. However, upon studying the canal gate, I realize that it would be ineffective and actually create possible flooding on my property which would not exist otherwise.

Okay. Thank you.

---o0o---

MR. RICHARD GACER: My observation is that if we don't select design number 1, that design number 2 and 3 will require another assessment because you are talking about additional funds and the funds that -- design number 1 is adequate at this time to build up the flood gate. So I don't want another assessment. 19-01

---o0o---

MR. LOU DIAZ: Okay. Well, I want to make my comment that this Smith Canal, if it was to break, it would Affect, you know, the Port of Stockton, where the ships come in, where the international ships come in. They would be stopped from coming in because they would leak. So international ships come in, why should it just be the Smith Canal residents' obligation for the flood gate? That's my comment.

---o0o---

MR. JIM HOBLITZELL: I would like to know who the idiot is what would hold this meeting at

9.6.10.1 Response to Letter 19

19-01

The commenter's preference for Alternative 1 is acknowledged.

9.6.11 Letter 20—Lou Diaz

a lesser of two evils compared to mandatory FEMA flood insurance. However, upon studying the canal gate, I realize that it would be ineffective and actually create possible flooding on my property which would not exist otherwise.

Okay. Thank you.

---o0o---

MR. RICHARD GACER: My observation is that if we don't select design number 1, that design number 2 and 3 will require another assessment because you are talking about additional funds and the funds that -- design number 1 is adequate at this time to build up the flood gate. So I don't want another assessment.

---o0o---

MR. LOU DIAZ: Okay. Well, I want to make my comment that this Smith Canal, if it was to break, it would Affect, you know, the Port of Stockton, where the ships come in, where the international ships come in. They would be stopped from coming in because they would leak. So international ships come in, why should it just be the Smith Canal residents' obligation for the flood gate? That's my comment. 20-01

---o0o---

MR. JIM HOBLITZELL: I would like to know who the idiot is what would hold this meeting at

9.6.11.1 Response to Letter 20

20-01

See response to Comment 13-01.

9.6.12 Letter 21—Jim Hoblitzell

a lesser of two evils compared to mandatory FEMA flood insurance. However, upon studying the canal gate, I realize that it would be ineffective and actually create possible flooding on my property which would not exist otherwise.

Okay. Thank you.

---o0o---

MR. RICHARD GACER: My observation is that if we don't select design number 1, that design number 2 and 3 will require another assessment because you are talking about additional funds and the funds that -- design number 1 is adequate at this time to build up the flood gate. So I don't want another assessment.

---o0o---

MR. LOU DIAZ: Okay. Well, I want to make my comment that this Smith Canal, if it was to break, it would Affect, you know, the Port of Stockton, where the ships come in, where the international ships come in. They would be stopped from coming in because they would leak. So international ships come in, why should it just be the Smith Canal residents' obligation for the flood gate? That's my comment.

---o0o---

MR. JIM HOBLITZELL: I would like to know who the idiot is what would hold this meeting at

5:00 o'clock? Typical government.

Number 2, we think this is a sham and that money is being taken by the federal government to replace funds deleted as a result of Hurricane Katrina. There's never been a flood or a threat of a flood in Smith Canal for over a hundred years. We are -- our perception is, we're getting really screwed. 21-01

Can you tell which side we're on?

---o0o---

MR. DAVID HUI: A quick comment: I prefer the lowest cost, alternative 1. Furthermore, I believe that was the only one which will allow the state to help fund the project.

End of comment.

---o0o---

MR. PAUL GUERRERO: I didn't see -- I went through what's here and I looked at it at home. I didn't see any reference to the local sea lion or any of those critters are around the canal. Now, I don't know if they were reviewed in there and I missed it or what. But what effect is it going to have on wildlife, specifically the sea lion and the fish? I didn't see it addressed in there.

The other thing that -- the EIR addresses mitigation. Most agencies that have an EIR also address

1

9.6.12.1 Response to Letter 21

21-01

See response to Comment 06-02. Section 1.3, *Project Background*, describes the process for determining present levels of flood risk.

9.6.13 Letter 22—David Hui

5:00 o'clock? Typical government.

Number 2, we think this is a sham and that money is being taken by the federal government to replace funds deleted as a result of Hurricane Katrina. There's never been a flood or a threat of a flood in Smith Canal for over a hundred years. We are -- our perception is, we're getting really screwed.

Can you tell which side we're on?

---o0o---

MR. DAVID HUI: A quick comment: I prefer the lowest cost, alternative 1. Furthermore, I believe that was the only one which will allow the state to help fund the project. 22-01

End of comment.

---o0o---

MR. PAUL GUERRERO: I didn't see -- I went through what's here and I looked at it at home. I didn't see any reference to the local sea lion or any of those critters are around the canal. Now, I don't know if they were reviewed in there and I missed it or what. But what effect is it going to have on wildlife, specifically the sea lion and the fish? I didn't see it addressed in there.

The other thing that -- the EIR addresses mitigation. Most agencies that have an EIR also address

9.6.13.1 Response to Letter 22

22-01

The commenter's preference for Alternative 1 is acknowledged.

9.6.14 Letter 23—Paul Guerrero

5:00 o'clock? Typical government.

Number 2, we think this is a sham and that money is being taken by the federal government to replace funds deleted as a result of Hurricane Katrina. There's never been a flood or a threat of a flood in Smith Canal for over a hundred years. We are -- our perception is, we're getting really screwed.

Can you tell which side we're on?

---o0o---

MR. DAVID HUI: A quick comment: I prefer the lowest cost, alternative 1. Furthermore, I believe that was the only one which will allow the state to help fund the project.

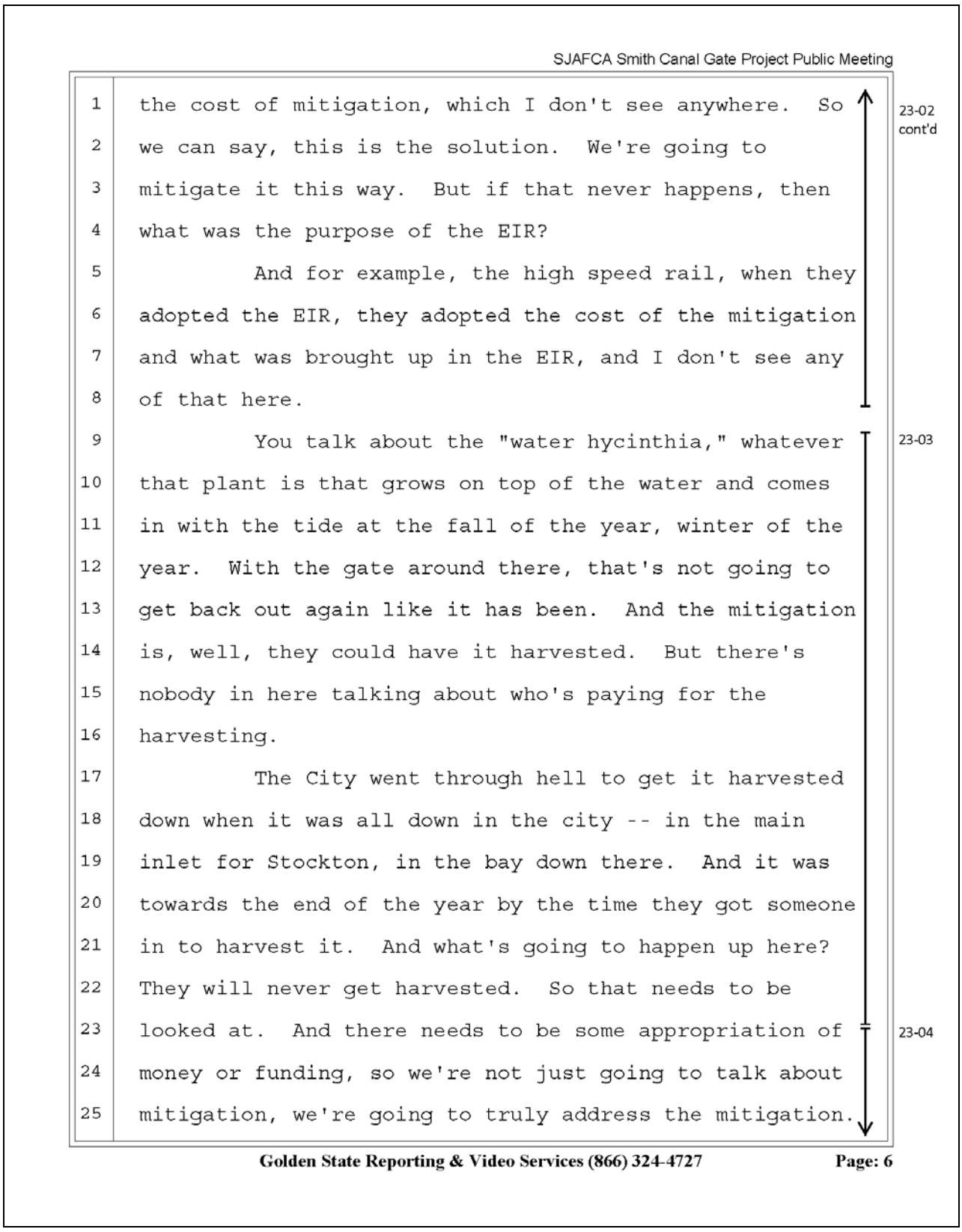
End of comment.

---o0o---

MR. PAUL GUERRERO: I didn't see -- I went through what's here and I looked at it at home. I didn't see any reference to the local sea lion or any of those critters are around the canal. Now, I don't know if they were reviewed in there and I missed it or what. But what effect is it going to have on wildlife, specifically the sea lion and the fish? I didn't see it addressed in there. 23-01

The other thing that -- the EIR addresses mitigation. Most agencies that have an EIR also address 23-02

1



SJAFCA Smith Canal Gate Project Public Meeting

the cost of mitigation, which I don't see anywhere. So we can say, this is the solution. We're going to mitigate it this way. But if that never happens, then what was the purpose of the EIR? 23-02 cont'd

And for example, the high speed rail, when they adopted the EIR, they adopted the cost of the mitigation and what was brought up in the EIR, and I don't see any of that here.

You talk about the "water hycinthia," whatever that plant is that grows on top of the water and comes in with the tide at the fall of the year, winter of the year. With the gate around there, that's not going to get back out again like it has been. And the mitigation is, well, they could have it harvested. But there's nobody in here talking about who's paying for the harvesting. 23-03

The City went through hell to get it harvested down when it was all down in the city -- in the main inlet for Stockton, in the bay down there. And it was towards the end of the year by the time they got someone in to harvest it. And what's going to happen up here? They will never get harvested. So that needs to be looked at. And there needs to be some appropriation of money or funding, so we're not just going to talk about mitigation, we're going to truly address the mitigation. 23-04

Golden State Reporting & Video Services (866) 324-4727 Page: 6

2

That goes too -- that's for the algae also.

That's about it.

(Time noted: 5:54 p.m.)

---o0o---

23-04 cont'd

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9.6.14.1 Response to Letter 23

23-01

Sea lions were only observed on Rough and Ready Island, which is discussed in Impact WILD-6. The potential for sea lions to be in the canals and locked behind the gates was not analyzed because the gate would only be closed during high flow events. Sea lions and other aquatic wildlife would be able to exit through the gate(s) once tides subside and the gate(s) are opened. There would be no other potential impact on sea lions. Similarly, because the gate is only closed during high flow events, any fish inside the gate will only be there temporarily and able to move out once the gate is open.

23-02

See responses to Comments 03-03 and 06-40.

23-03

Regular water hyacinth monitoring and removal as needed is described in Subsection 2.3.1.3, *Operations and Maintenance*, and is part of the project. As such, costs for removal would be borne by SJAFCA.

23-04

See response to comment 06-37. Implementation of feasible mitigation measures that reduce a significant impact are required under CEQA. Such measures are described in the MMRP that SJAFCA would prepare and adopt at the time of project approval. Compliance with the MMRP would be a condition of project approval.

An O&M assessment district has been formed and will run indefinitely to fund any of the O&M and mitigation items of the project. See response to Comment 06-43.

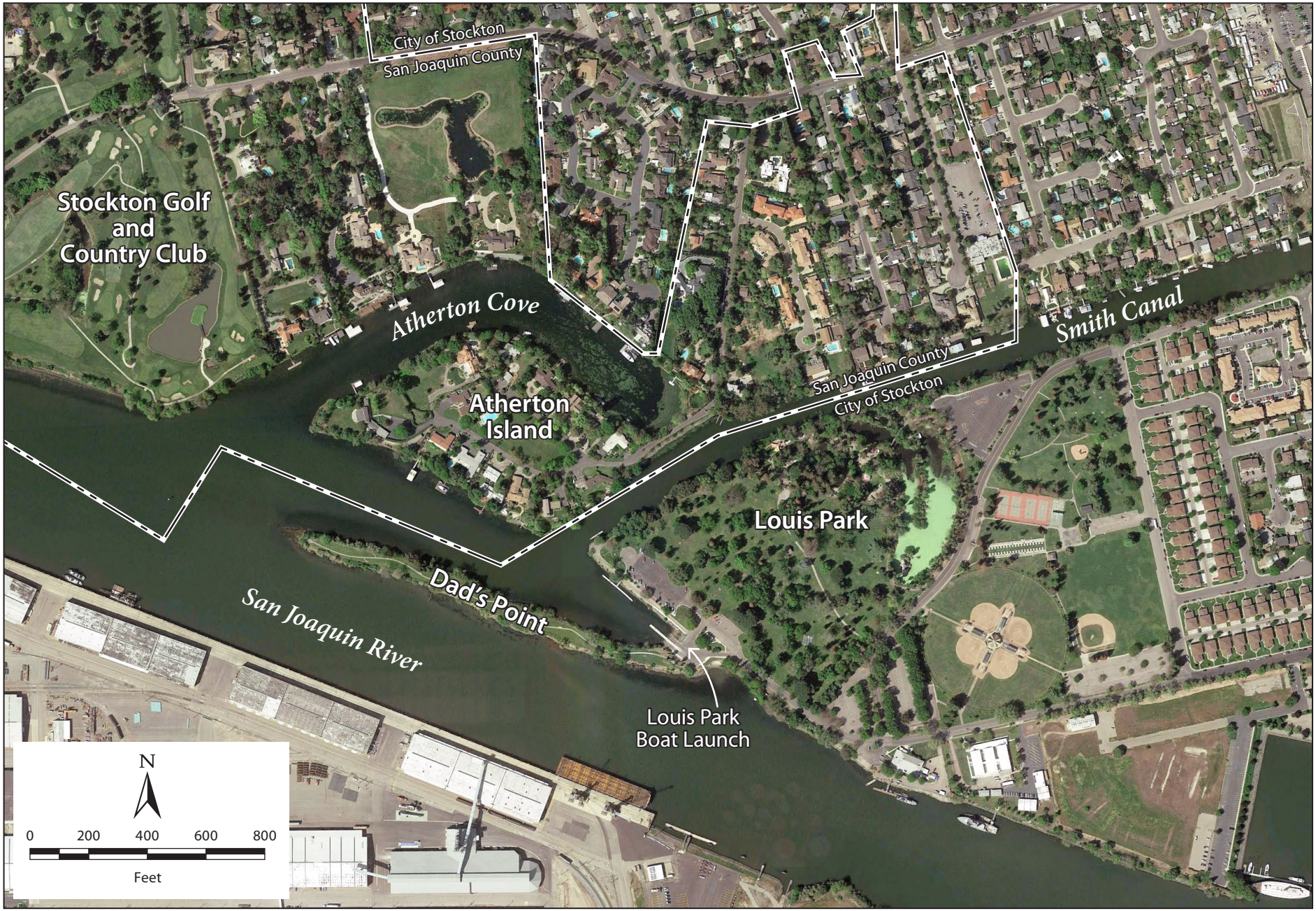
Source: Peterson, Brustad, Inc. 2014

Graphics ... 00150.14 (4-15-2015) tm

ICF INTERNATIONAL

Smith Canal Gate Project

Plate 1-1
Project Region



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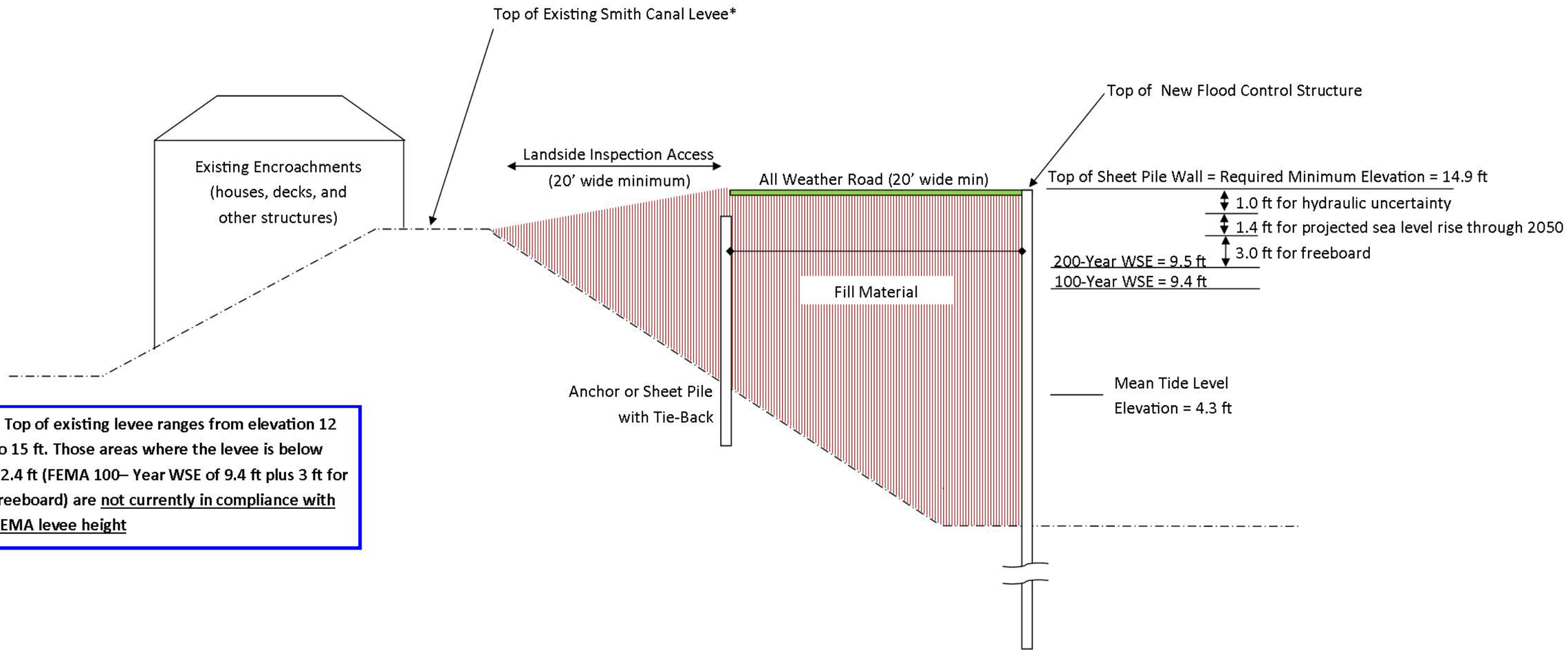
Smith Canal Gate Project

Plate 1-2
Project Area



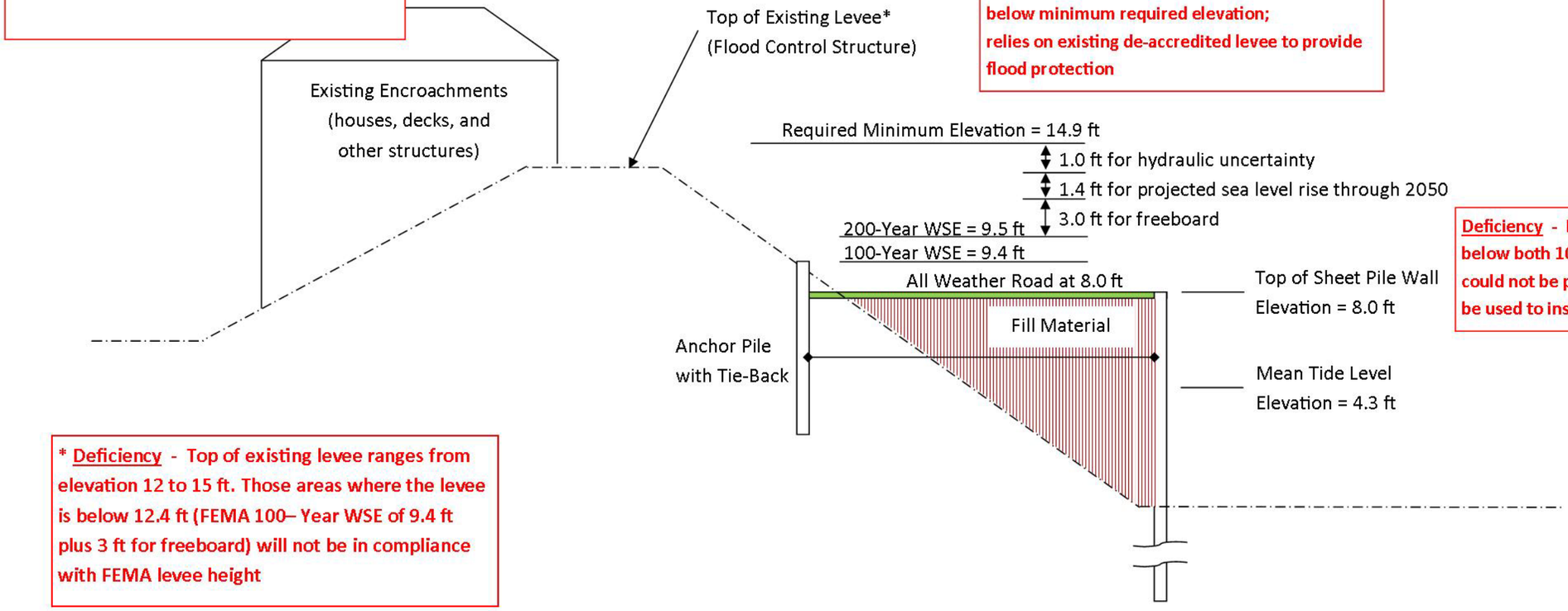
* Top of existing levee ranges from elevation 12 to 15 ft. Those areas where the levee is below 12.4 ft (FEMA 100– Year WSE of 9.4 ft plus 3 ft for freeboard) are not currently in compliance with FEMA levee height

Graphics ... 00150.14 (10-2015) SS

Plate 2-0a
FEMA/ULDC Compliant Single Sheet Pile Wall Alternative

Deficiency - **Inspection and maintenance access to the landside of the levee is not corrected; existing encroachments remain, which does not allow the levee to be accredited**

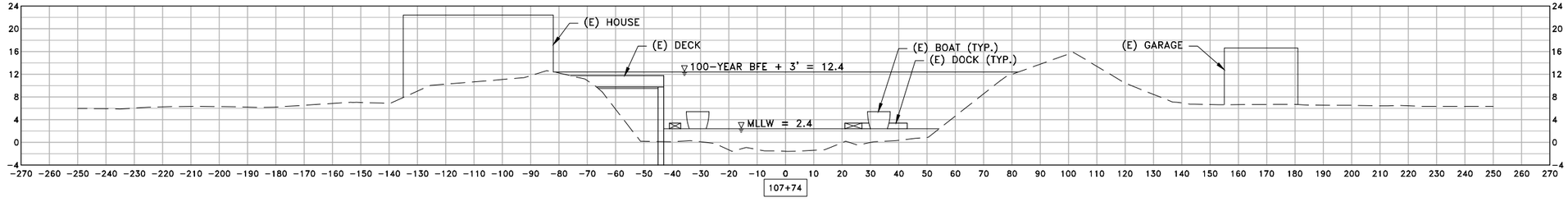
Deficiency - **Elevation of New Sheet Pile Wall is below minimum required elevation; relies on existing de-accredited levee to provide flood protection**



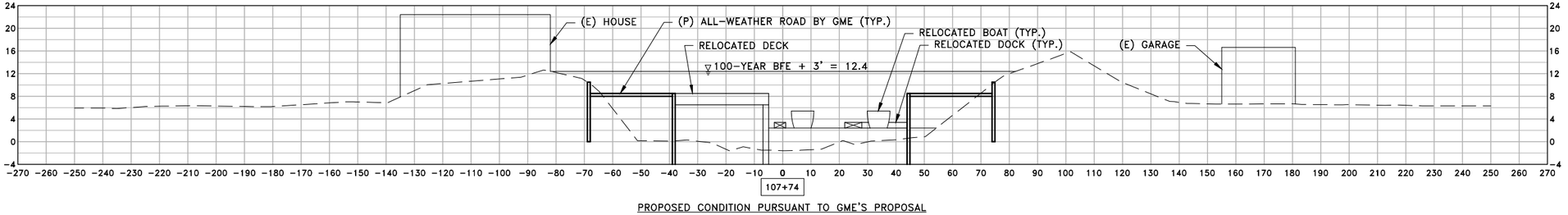
Deficiency - **Elevation of All Weather Road is below both 100-year and 200 year WSE; road could not be patrolled during flood event or be used to inspect the landside of the levee**

* **Deficiency** - **Top of existing levee ranges from elevation 12 to 15 ft. Those areas where the levee is below 12.4 ft (FEMA 100– Year WSE of 9.4 ft plus 3 ft for freeboard) will not be in compliance with FEMA levee height**

Graphics ... 00150.14 (10-2015) SS



EXISTING CONDITION

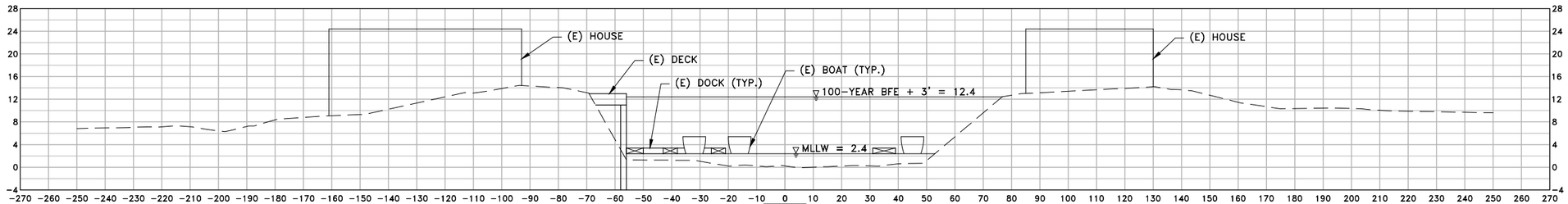


PROPOSED CONDITION PURSUANT TO GME'S PROPOSAL

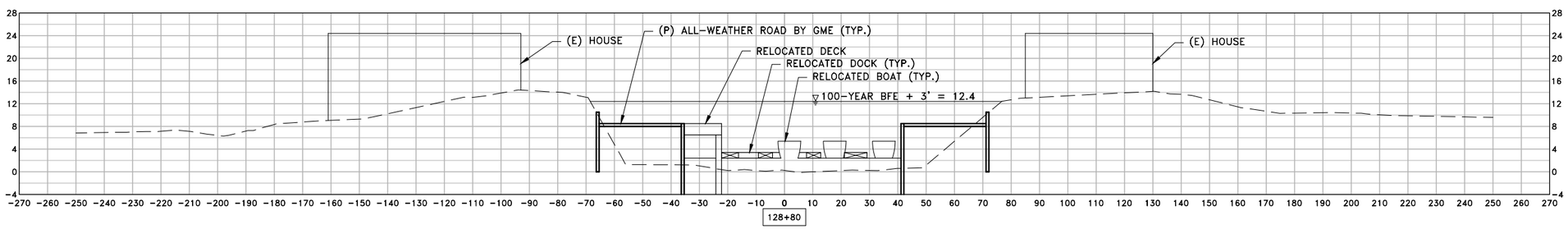
KSN INC.	KJELDSEN SINNOCK NEUDECK Civil Engineers and Land Surveyors	711 N Pershing Avenue Stockton, CA 95203 209-946-0268 1355 Halyard Drive, Suite 100 West Sacramento, CA 95691 916-403-5900 www.ksninc.com	Scale H: 1" = 20' V: 1" = 10' Original Drawing Scale 0 ½" 1"	N	SJAFCA SMITH CANAL SECTION STA. 107+74	EXHIBIT A PAGE 6

Graphics ... 00150.14 (10-2015)SS

Plate 2-0c
Single Vinyl Sheet Pile Wall Cross-Section (Station 107+74)



EXISTING CONDITION



PROPOSED CONDITION PURSUANT TO GME'S PROPOSAL

KSN INC.	KJELDSEN SINNOCK NEUDECK Civil Engineers and Land Surveyors	711 N Pershing Avenue Stockton, CA 95203 209-946-0268 1355 Halyard Drive, Suite 100 West Sacramento, CA 95691 916-403-5900 www.ksninc.com	Scale H: 1" = 20' V: 1" = 10' Original Drawing Scale 0 ½" 1"	N	SJAFCA SMITH CANAL SECTION STA. 128+80	EXHIBIT A PAGE 7

Graphics ... (00150.14 (10-2015)) SS

ICF INTERNATIONAL

Smith Canal Gate Project

Plate 2-0d
Single Vinyl Sheet Pile Wall Cross-Section (Station 128+80)

Path: K:\Projects_1\City_of_Stockton\00150_14_SmithCanalGate\mapdoc\Working\Plate_2-1_Project_Construction_Area_20150605.mxd User: 28266 Date: 6/9/2015

ICF INTERNATIONAL

Smith Canal Gate Project

Plate 2-1
Project Construction Area

Stockton Golf Course and Country Club

Atherton Cove

Approximate Location of Moreing Road Culverts

Atherton Island

Moreing Rd

Smith Canal

Louis Park

Dad's Point

San Joaquin River

Legend

- Construction Area
- Approximate location of Gate Structure Control Building
- Gate Structure
- Fixed Dual Sheet Pile Wall

N

0 125 250

Feet

Path: K:\Projects_1\City_of_Stockton\00150_14_SmithCanalGate\mapdoc\Working\Plate_2_2_Alt1_20150416.mxd; User: 28266; Date: 4/17/2015

ICF INTERNATIONAL

Smith Canal Gate Project

Plate 2-2
Alternative 1 – Single Gated Wall to Dad's Point

Stockton Golf Course and Country Club

Atherton Cove

Approximate Location of Moreing Road Culverts

Atherton Island

Moreing Rd

Smith Canal

Louis Park

Dad's Point

San Joaquin River

Legend

- Construction Area
- Approximate location of Gate Structure Control Building
- Gate Structure
- Fixed Dual Sheet Pile Wall

N

0 125 250

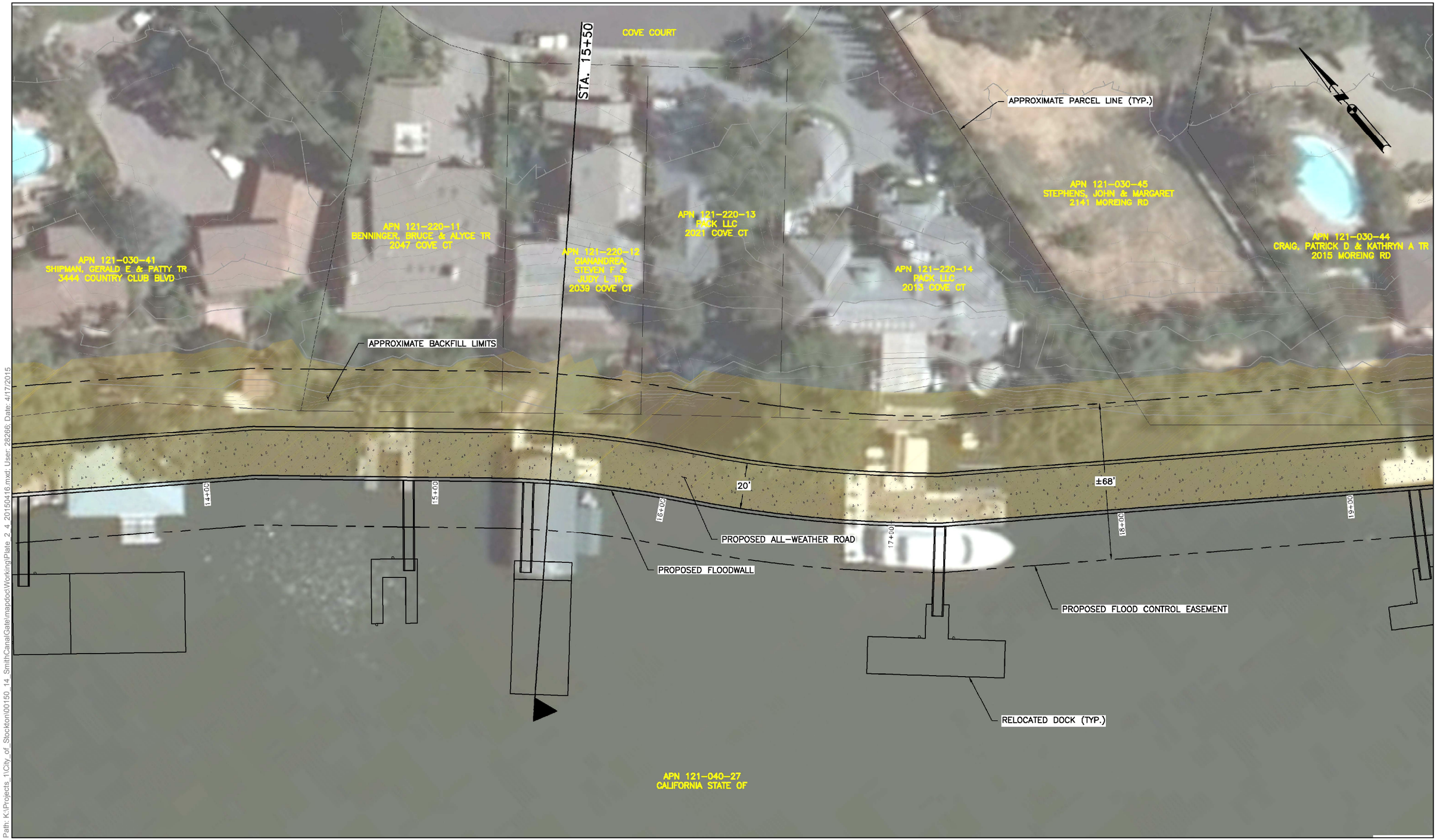
Feet

Path: K:\Projects_1\City_of_Stockton\00150_14_SmithCanalGate\mapdoc\Working\Plate_2_3_Alt 2_20150416.mxd; User: 28266; Date: 4/17/2015

ICF INTERNATIONAL

Smith Canal Gate Project

Plate 2-3
Alternative 2 – Atherton Cove Floodwall with Smith Canal Gate



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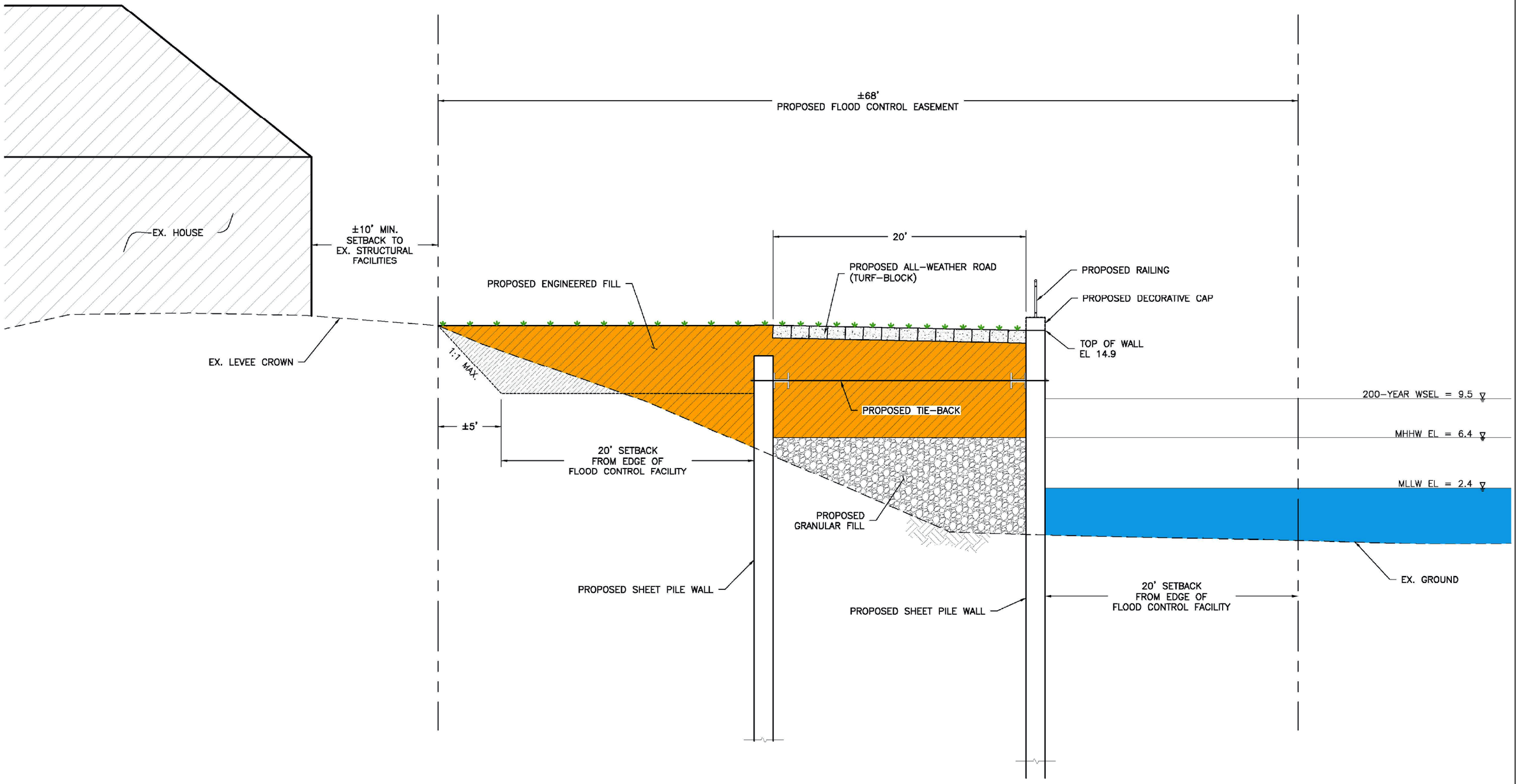
Smith Canal Gate Project

Plate 2-4
Atherton Floodwall



1 DOUBLE SHEET PILE WALL SYSTEM

SCALE: N.T.S.

Path: K:\Projects_1\City_of_Stockton\00150_14_SmithCanalGate\mapdocs\Working\Plate_2_5_20150416.mxd User: 28266 Date: 4/17/2015

Stockton Golf Course and Country Club

Atherton Cove

Approximate Location of Moreing Road Culverts

Atherton Island

Moreing Rd

Smith Canal

Louis Park

Dad's Point

San Joaquin River

Legend

- Construction Area
- Approximate location of Gate Structure Control Building
- Gate Structure
- Fixed Dual Sheet Pile Wall
- Floodwall Access Road

N

0 125 250

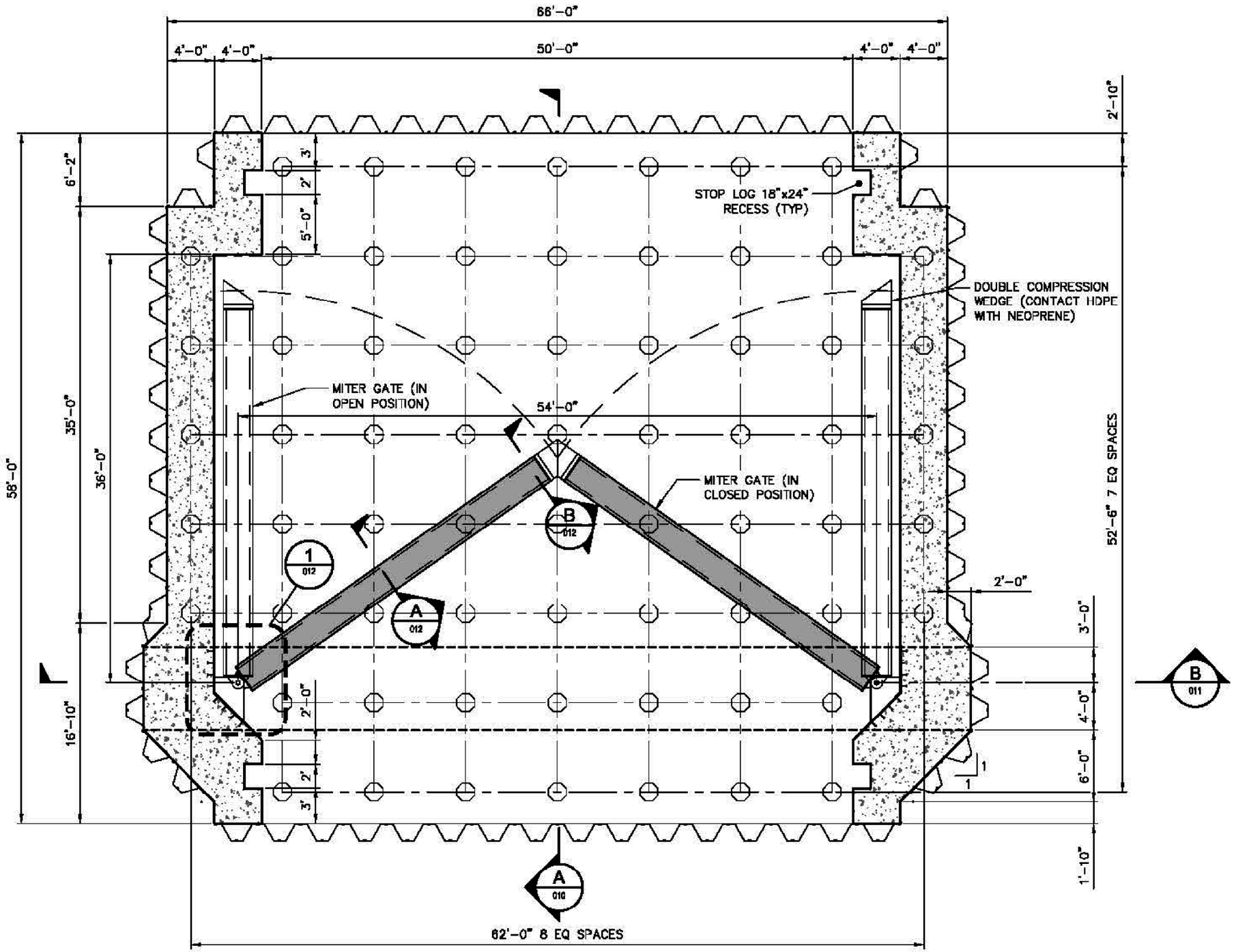
Feet

Path: K:\Projects_1\City_of_Stockton\00150_14_SmithCanalGate\mapdoc\Working\Plate_2_6_Alt3_20150416.mxd; User: 28266; Date: 4/17/2015

Smith Canal Gate Project

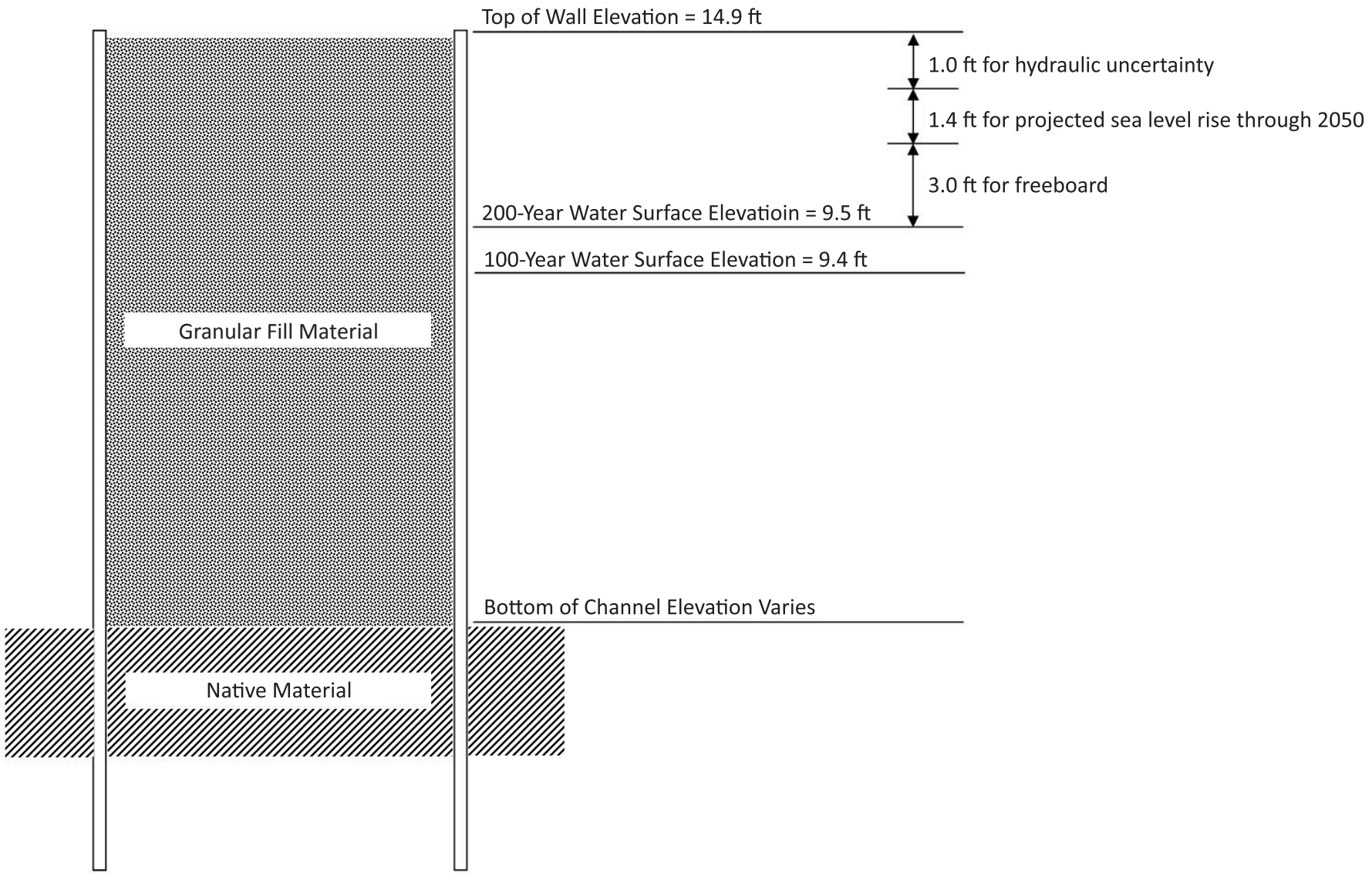
Plate 2-6
Alternative 3 – Dual Gated Walls to Atherton Cove and Smith Canal

Path: K:\Projects_1\City_of_Stockton\00150_14_SmithCanalGate\mapdoc\Working\Plate_2_7_20150416.mxd User: 28266 Date: 4/17/2015



Smith Canal Gate Project

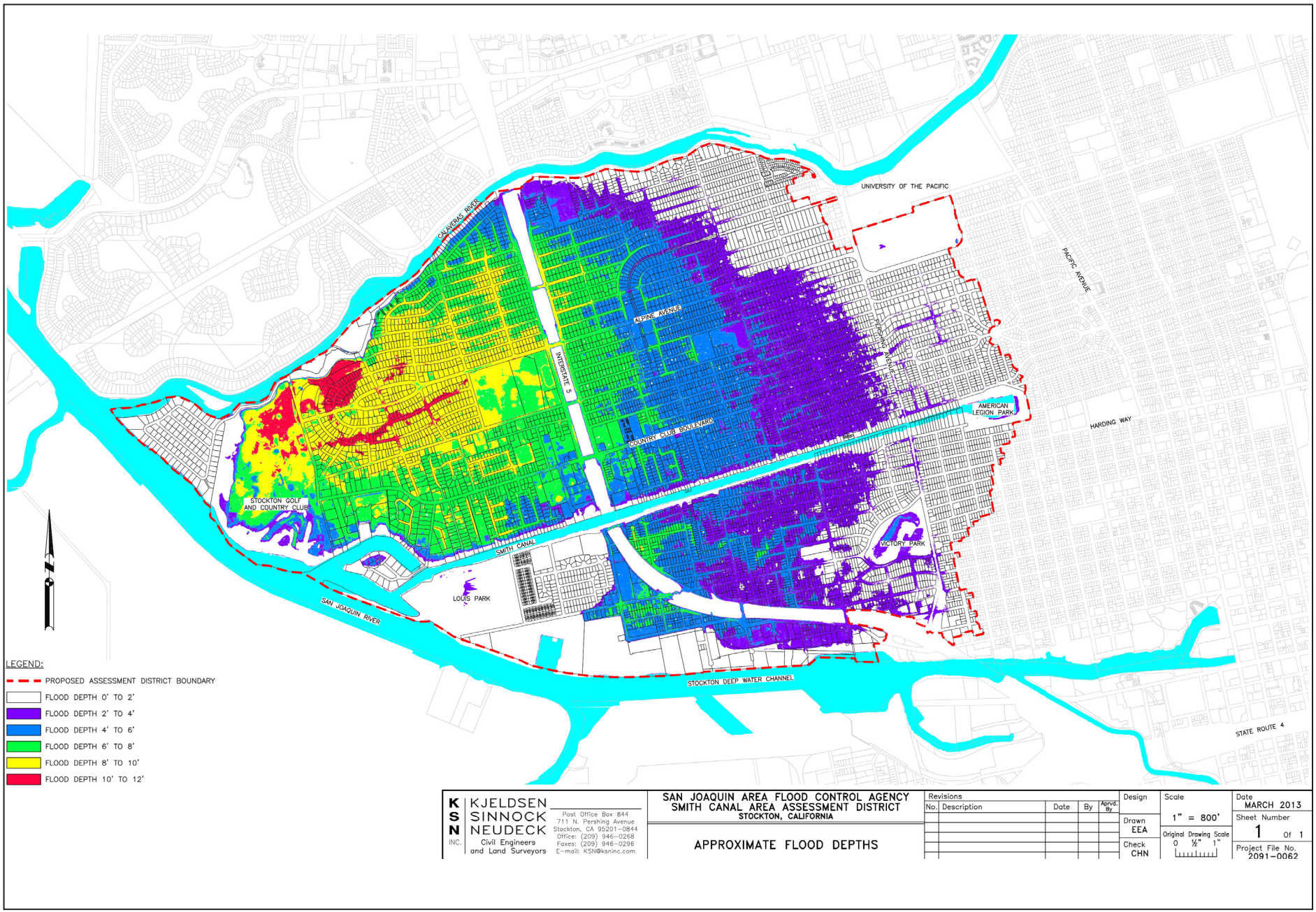
Plate 2-7
Opening Portion of the Gate Structure



Graphics ... 00150.14 (06-02-2015) SS

Smith Canal Gate Project

Plate 2-8
Design Height – Dual Sheet Pile Fixed Wall



KSN INC. KJELDSEN SINNOCK NEUDECK
Civil Engineers and Land Surveyors
Post Office Box 844
711 N. Pershing Avenue
Stockton, CA 95201-0844
Office: (209) 946-0268
Faxes: (209) 946-0296
E-mail: KSN@ksninc.com

SAN JOAQUIN AREA FLOOD CONTROL AGENCY
SMITH CANAL AREA ASSESSMENT DISTRICT
STOCKTON, CALIFORNIA

APPROXIMATE FLOOD DEPTHS

Revisions				
No.	Description	Date	By	Aprvd. By

Design
Drawn EEA
Check CHN

Scale 1" = 800'
Original Drawing Scale 0 ½" 1"

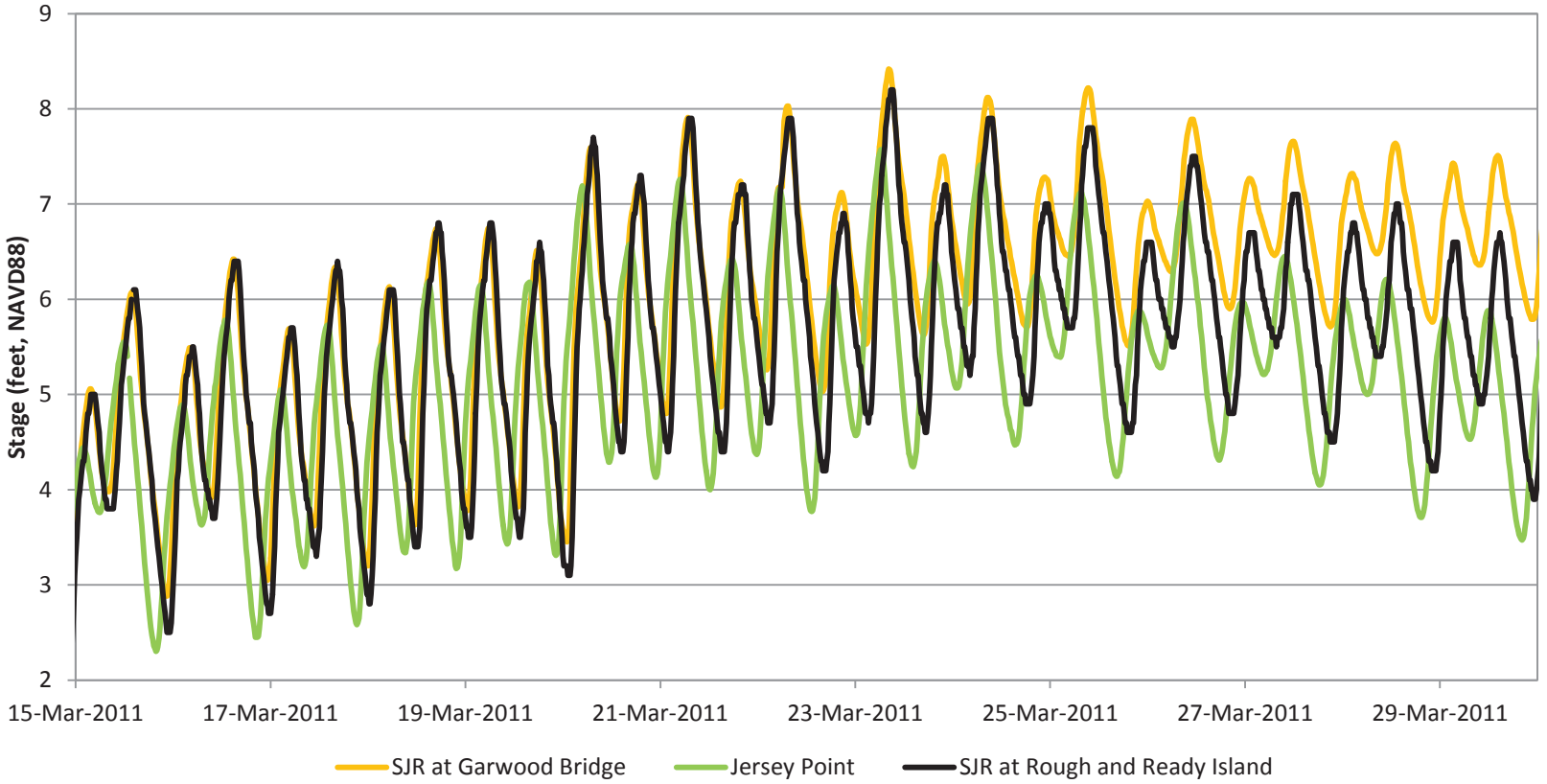
Date MARCH 2013
Sheet Number 1 Of 1
Project File No. 2091-0062

Graphics ... 00150.14 (4-23-2015) SS

ICF INTERNATIONAL

Smith Canal Gate Project

Plate 3.1-1
Approximate Flood Depths during a 100-Year Flood Event



Data source: California Data Exchange Center 2014 and 2015.

Graphics ... 00150.14 (4-23-2015) SS

Plate 3.1-2
Peak Tidal Elevations in the San Joaquin River during the High Flows of 2011

Path: K:\Projects_1\City_of_Stockton\00150_14_SmithCanalGate\mapdoc\Working\Plate_3_3_1_20150605.mxd User: 28266 Date: 6/9/2015

Smith Canal Gate Project

Plate 3.3-1
Project Area Roadway Network

Stockton Golf Course and Country Club

Atherton Cove

Atherton Island

Smith Canal

Louis Park

Dad's Point

San Joaquin River

Legend

- Study Area Boundary
- Valley Oak Tree
- Valley Oak Tree (Heritage Tree)

Land Cover Type

- Developed/Landscaped
- Ditch
- Tidal Perennial Drainage Mean High Water Line
- Non-native Riparian below Mean High Water Line
- Non-native Riparian
- Tidal Emergent Wetland

N

0 100 200

Feet

Path: K:\Projects_1\City_of_Stockton\00150_14_SmithCanalGate\mapdoc\Working\Plate_3_7_1_Landcover_20150421.mxd; User: 28266; Date: 4/21/2015

Smith Canal Gate Project

Plate 3.7-1
Land Cover Types in the Study Area

121°21'10"W
121°21'0"W
121°20'50"W
121°20'40"W
37°57'30"N
37°57'20"N
Stockton Golf Course and Country Club
Atherton Cove
Moreing Rd
Atherton Island
Smith Canal
Louis Park
Dad's Point
San Joaquin River

Smith Canal Gate Project
April 2015

Legend

- Study Area Boundary
- Tree to be Removed
- Valley Oak Tree
- Valley Oak Tree (Heritage Tree)

Land Cover Type

- Developed/Landscaped
- Ditch
- Tidal Perennial Drainage Mean High Water Line
- Non-native Riparian below Mean High Water Line
- Non-native Riparian
- Tidal Emergent Wetland

Alternative 1

- Proposed Improvements
- Access Route
- Disturbance Area
- Area of Permanent Impact for Gate Structures
- Area of Invasive Species Removal

Land Cover Permanent Impacts	Acres
Tidal Perennial Drainage Mean High Water Line	0.540
Non-Native Riparian	0.811
Tidal Emergent Wetland	0.029
Total	**1.380**

N

0 125 250
Feet

Path: K:\Projects_1\City_of_Stockton\00150_14_SmithCanalGate\mapdoc\Working\Plate_3_7_2a_Landcover_Impacts_20150304.mxd; Author: ; Date: 4/23/2015

Smith Canal Gate Project

Plate 3.7-2a
Alternative 1 - Impacts to Land Cover Types

121°21'10"W
121°21'0"W
121°20'50"W
121°20'40"W
37°57'30"N
37°57'20"N

Stockton Golf Course and Country Club
Atherton Cove
Moreing Rd
Atherton Island
Smith Canal
Louis Park
Dad's Point
San Joaquin River

Smith Canal Gate Project
April 2015

Legend

- Study Area Boundary
- Valley Oak Tree
- Valley Oak Tree (Heritage Tree)

Land Cover Type

- Developed/Landscaped
- Ditch
- Tidal Perennial Drainage Mean High Water Line
- Non-native Riparian below Mean High Water Line
- Non-native Riparian
- Tidal Emergent Wetland

Alternative 2

- Proposed Improvements
- Access Route
- Disturbance Area
- Area of Permanent Impact for Gate and Wall Structures
- Area of Invasive Species Removal

Land Cover Permanent Impacts	Acres
Tidal Perennial Drainage Mean High Water Line	1.890
Non-Native Riparian below Mean High Water Line	0.006
Non-Native Riparian	0.832
Total	**2.728**

N

0 125 250
Feet

Path: K:\Projects_1\City_of_Stockton\00150_14_SmithCanalGate\mapdoc\Working\Plate_3_7_2b_Landcover_Impacts_20150304.mxd; Author: ; Date: 4/23/2015

Smith Canal Gate Project

Plate 3.7-2b
Alternative 2 - Impacts to Land Cover Types

121°21'10"W
121°21'0"W
121°20'50"W
121°20'40"W
37°57'30"N
37°57'20"N

Stockton Golf Course and Country Club
Atherton Cove
Moreing Rd
Atherton Island
Smith Canal
Louis Park
Dad's Point
San Joaquin River

Smith Canal Gate Project
April 2015

Legend

- Study Area Boundary
- Tree to be Removed
- Valley Oak Tree
- Valley Oak Tree (Heritage Tree)

Land Cover Type

- Developed/Landscaped
- Ditch
- Tidal Perennial Drainage Mean High Water Line
- Non-native Riparian below Mean High Water Line
- Non-native Riparian
- Tidal Emergent Wetland

Alternative 3

- Proposed Improvements
- Access Route
- Disturbance Area
- Area of Permanent Impact for Gate and Wall Structures

Land Cover Permanent Impacts	Acres
Tidal Perennial Drainage Mean High Water Line	0.472
Non-Native Riparian below Man High Water Line	0.002
Non-Native Riparian	0.807
Total	**1.281**

N

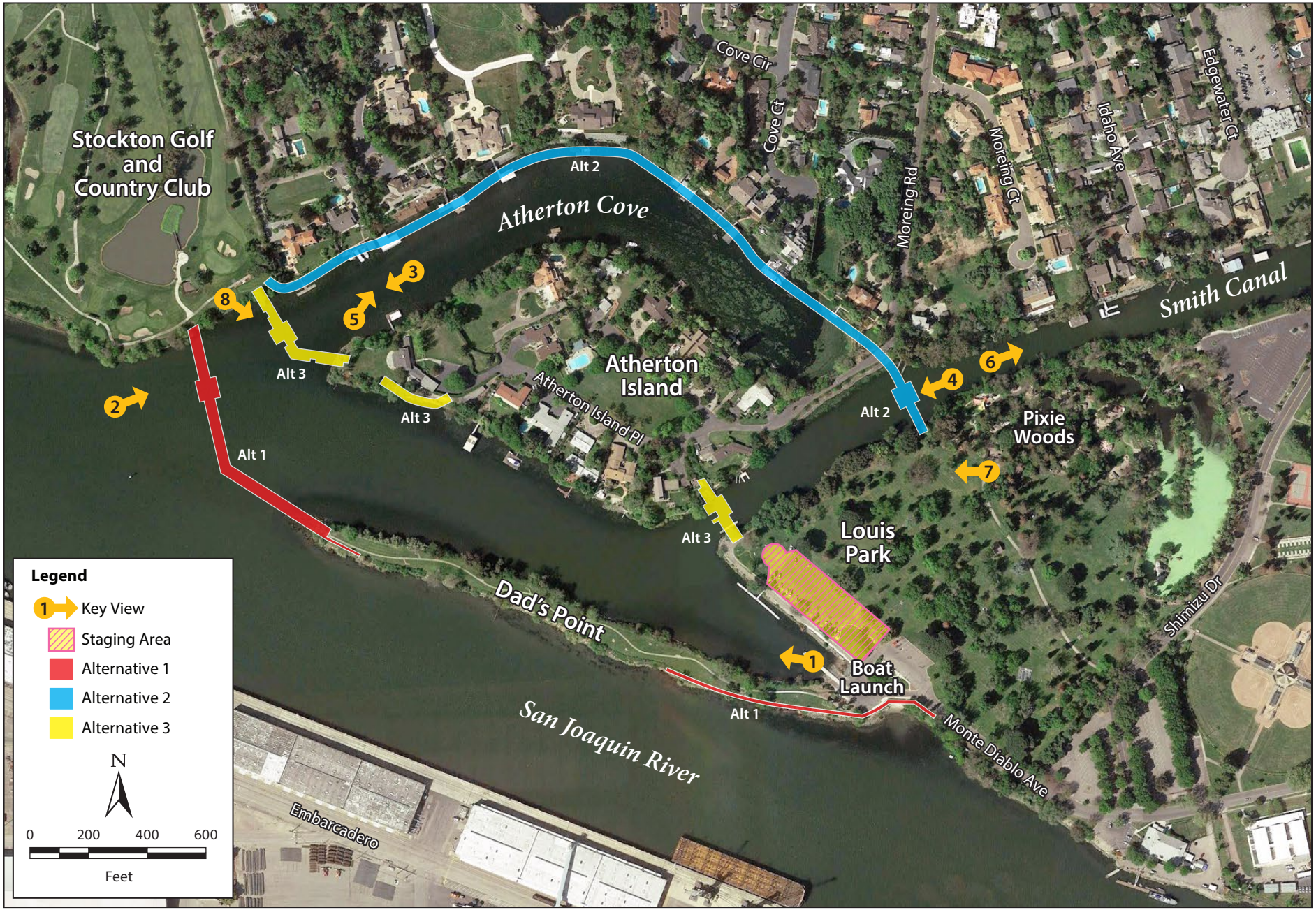
0 125 250
Feet

Path: K:\Projects_1\Volly_of_Stockton\00150_14_SmithCanalGate\mapdocs\Working\Plate_3_7_2c_Landcover_Impacts_20150304.mxd; Author: ; Date: 4/23/2015

ICF INTERNATIONAL

Smith Canal Gate Project

Plate 3.7-2c
Alternative 3 - Impacts to Land Cover Types



ICF INTERNATIONAL

Smith Canal Gate Project

Plate 3.10-1a
Representative Key View Locations

Photo 1. Looking northwest from the boat launch at Louis Park toward the study area.

Photo 2. Looking east from the river toward the study area.

Photo 3. Looking southwest from Atherton Cove toward the study area.

Photo 4. Looking southwest from Smith Canal toward the study area.

Graphics ... 00150.14 (6-3-2015) tm

Photo 5. Looking northeast from Atherton Cove toward the study area and residences along the shoreline.

Photo 6. Looking northeast from the study area toward residences along Smith Canal.

Photo 7. Looking southwest from near the entry of Pixie Woods toward the study area and Smith Canal.

Photo 8. Looking southeast from the Stockton Golf and Country Club toward the study area.

Graphics ... 00150.14 (6-3-2015) tm

ICF INTERNATIONAL

Smith Canal Gate Project

Plate 3.10-3
Representative Photographs of the Project Location