SMITH CANAL GATE PROJECT
FINAL ENVIRONMENTAL IMPACT REPORT

TECHNICAL APPENDICES

November 2015



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Appendix A

Environmental Impact Report Scoping Summary and Notice of Preparation

Memorandum

Date:	September 12, 2014
To:	Juan Neira, SJAFCA Dave Peterson, PBI
Cc:	Kim Floyd, Floyd Communication
From:	Megan Smith, ICF International Jennifer Rogers, ICF International
Subject:	**Smith Canal Gate Project CEQA Public Scoping Summary**

Introduction

To comply with the California Environmental Quality Act (CEQA), the San Joaquin Area Flood Control Agency (SJAFCA) is preparing an environmental impact report (EIR) for the Smith Canal Gate Project (project). The EIR will analyze and disclose the potential effects the project may have on the natural and human environment and identify mitigation measures and alternatives to avoid any significant effects. SJAFCA is the project proponent and lead agency under CEQA.

This memo describes the project's objectives and alternatives, public noticing process, public scoping meeting, comments received during the scoping period, and anticipated next steps.

Proposed Project

SJAFCA is proposing to construct a gate-type closure structure at the mouth of Smith Canal, adjacent to the San Joaquin River, in and adjacent to the city of Stockton. The project is needed because the existing levees along the 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. This leaves approximately 8,000 properties and 24,000 people with increased flood risk. The project would conform to federal and state flood risk-reduction criteria by isolating Smith Canal from the San Joaquin River during high-water events, allowing existing Smith Canal levees to function as a secondary means of reducing flood risk. Further, implementing this project would remove the affected region from the FEMA 100-year floodplain (a "100-year flood event" is one that has a 1% chance of occurring in any given year), contribute toward 200-year protection in combination with other projects, secure FEMA accreditation, and eliminate mandatory flood insurance.

Noticing

Notice of Preparation

Per State CEQA Guidelines Section 15082, SJAFCA prepared and filed 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. The NOP (Attachment A) contains a brief description of the project and its probable environmental effects; the date, time, and place of the public scoping meeting; and lead agency contact information. On the afternoon of June 24, 2014, the NOP was hand-delivered to the State Clearinghouse and filed with the County of San Joaquin Clerk/Recorder's Office. The 30-day comment period began on June 25, 2014, and ended on July 25, 2014. On June 26, 2014, the NOP was mailed by certified mail directly to 18 responsible, trustee, and interested agencies, as well as parties who had previously submitted written requests for information concerning the project. Receipt of all copies was confirmed by USPS return receipt. Copies of all receipts are included as Attachment B.

Mailings

On Thursday, June 26, and Friday, June 27, 2014, SJAFCA mailed approximately 475 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, included as Attachment C, invited landowners to the public scoping meeting and informed them of the scoping period and commencement of the EIR preparation. Approximately 85 postcards were returned because of erroneous addresses, vacant residences, or related issues.

Website

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. The scoping meeting materials were posted on the website after the meeting to serve as a public record of the event and provide information to those who were not in attendance. A screenshot of the webpage is included as Attachment D.

Legal Notices

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. The legal notice is included as Attachment E.

Public Scoping Meeting

SJAFCA held a public scoping meeting to inform the public of the project and seek input on the scope of the EIR. The meeting was held on Wednesday, July 16, 2014, at the Ambler's Club at 2000 Amblers Lane in Stockton from 6 to 8 p.m. The time and date for the meeting were chosen to accommodate the schedules of the public agency representatives and the general public in the vicinity of the project area. Forty people attended the meeting.

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. ICF staff prepared 11 graphic display boards for attendees to view, included in Attachment F. The boards described 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.

A 20-minute presentation was given at approximately 6:20 p.m. to introduce the project and discuss project objectives, the schedule, potential alternatives, and environmental compliance. Questions from the audience were addressed following the presentation.

Comment cards were offered to provide scoping meeting attendees the opportunity to provide feedback on the project and alternatives. These cards, included in Attachment F, could be filled out during the meeting and given to a project team member or filled out after the meeting and sent to ICF International on behalf of SJAFCA by July 25, 2014.

Comments Received

SJAFCA received a total of 21 comment letters, including 3 comment letters received following the close of the comment period. Public comment also was received orally during a question-and-answer session at the public scoping meeting held July 16, 2014.

Below is a summary of the topics and concerns expressed by agencies and the public during the scoping period regarding the scope of the EIR and project in general. Attachment G also contains all written comments received during the scoping period.

Oral Comments

The majority of oral comments provided at the public scoping meeting did not pertain to the scope of the EIR but rather expressed concern about the general need for the project and about FEMA oversight in the region. Key discussion points are summarized below.

- The "Save Dad's Point," or Green Mountain Alternative, should be presented to the public for consideration in the EIR.
- The public should be informed as to the likely cost, funding methods, and expense for each project alternative.

- Alternatives 1 and 3, the fixed structure alternatives, would affect water quality in Smith Canal, turning it into a cesspool.
- The EIR should discuss the need for federal permits, such as Clean Water Act Section 404 and Section 401. These permits require that an environmental justice analysis be conducted, which should be included in the EIR.
- Alternative 2, the Atherton Cove Flood Wall Alternative, would require a gate control structure and a generator in Pixie Woods that should be disclosed and analyzed in the EIR.
- The EIR should disclose and analyze SJAFCA's preferred alternative.
- The EIR should consider an alternative that includes removal of the encroachments along Smith Canal. Seizure of land for a public purpose is permitted and should be analyzed.
- The project is unnecessary and should not proceed. The region has no history of flooding; FEMA has mapped the area into the floodplain in order to collect funds to support the flood insurance program.
- SJAFCA's $330,000 annual operation and maintenance budget should not be used to initiate this project, as that was not the intended use. Future state cost share is uncertain, and the funds may not be repaid.
- The cost of the Smith Canal assessment district is burdensome on landowners when considered in light of other recent municipal costs, such as improvements in the water treatment system.

Written Comments

- The EIR must analyze and mitigate for effects on continued boat access to the San Joaquin River for recreational use.
- The EIR must analyze and mitigate for effects on the functionality and aesthetics of the Stockton Golf & Country Club (SG&CC) land. Specifically, SG&CC requests an opportunity to work with SJAFCA's design team to minimize effects on its operations
- The EIR should discuss the existing geotechnical status of SG&CC levees.
- Project alternatives should include consideration of the Department of Water Resources' (DWR) dam design at the Carquinez Strait.
- SJAFCA should consider rip-rapping new banks with stones and permanent vegetation.
- The project is unnecessary, as there has never been a devastating flood in the area.
- Proposed project is within the Primary Zone of the Legal Delta and must be consistent with the Land Use and Resource Management Plan (LURMP) [Ed. Note: the project is in the secondary zone of the legal Delta.]
- The project must acquire all necessary permits through Central Valley Regional Water Quality Control Board and State Lands Commission.

- EIR must examine the effect of the project's construction and operation on water quality, aesthetics, and aquatic resources in Smith Canal.
- Potential discharge from the flood storm drain pumps could increase water levels in Smith Canal during a flood event; the EIR must examine the operational effects of the project and disclose any risk of localized flooding.
- The EIR must analyze potential impacts on biological resources near the project area.
- The EIR should disclose the costs and environmental impacts associated with SJAFCA's acquisition of any right-of-way needed for the project.
- The public meeting and NOP were inadequately noticed to the public.
- Alternative 1, the EIR's proposed project, is the superior alternative and should be constructed by SJAFCA.
- The project's cost to the public is too great, and the project is unnecessary.
- SJAFCA's EIR must analyze the project's construction- and operation-related air quality effects, any toxic air contaminants risk to health, and the project's contribution to cumulative air quality impacts.
- The Central Valley Flood Protection Board is a CEQA responsible agency for the project, and SJAFCA must complete and submit a Board Encroachment Permit application to the Central Valley Flood Protection Board.
- To maintain floodway channel capacity, SJAFCA should consider inclusion of mitigation measures to prevent woody vegetation from developing in Atherton Cove and Smith Canal.

Next Steps and Recommendations

Comments received during the scoping period will help determine the issues that will be evaluated in detail in the draft EIR. Alternatives developed through the scoping process also will be analyzed in the draft EIR. Following release of the draft EIR in early 2015, agencies and the public will have 45 days to comment on the document. At least one public meeting will be held during that time.

Once the 45-day public comment review period ends, SJAFCA will consider and respond to all comments through preparation of a final EIR. SJAFCA will consider all written comments to decide which alternative(s) to select and implement, documenting that selection in a notice of determination (NOD), in compliance with CEQA. Should SJAFCA select an alternative that would result in significant and unavoidable impacts, a statement of overriding consideration must be filed that explains the social and economic benefits of implementing the project.

Attachment A
Notice of Preparation

Notice of Preparation

To: State Clearinghouse, Responsible Agencies, Trustee Agencies, Interested Parties
(Agency)
See Distribution List
(Address)

From:
San Joaquin Area Flood Control Agency
(Agency)
22 East Weber Avenue, Suite 301
(Address)
Stockton, CA 95202-2317

Subject: Notice of Preparation of an Environmental Impact Report for the Smith Canal Gate Project

The San Joaquin Area Flood Control Agency (SJAFCA) is proposing the Smith Canal Gate Project (project) 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 the county of San Joaquin, California. The project location is shown in Figure 1. The Smith Canal is a backwater slough of the Sacramento-San Joaquin Delta (Delta), just north of the DWSC and south of the Calaveras River. The project area, shown in Figure 2, encompasses the areas of construction of proposed risk-reduction measures along the DWSC corridor, abutting Stockton Golf and Country Club to the northwest; Louis Park to the southeast; Atherton Cove to the north; and Dad's Point to the south.

The proposed project is needed because 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, placing approximately 5,000 properties and approximately 15,000 residents at increased risk from flooding. Additionally, based on topographical data recently developed by the California Department of Water Resources (DWR), FEMA is presently remapping the region to include an additional 3,000 properties and 9,000 residents in the FEMA 100-year floodplain, an area identified by FEMA as having an increased flood risk. The proposed project would isolate the canal from the main channel of the river during high flow events to facilitate 100-year and ultimately 200-year performance (i.e., passage of high-flow events that have a 1% and 0.5% chance occurring in any given year, respectively.)The resulting flood protection system would conform to Federal and state flood protection criteria. SJAFCA, acting as project proponent and lead agency under the California Environmental Quality Act (CEQA), has determined that a project-level Environmental Impact Report (EIR) should be prepared for the project.

Responsible and Trustee Agencies
Responsible and trustee agencies under CEQA may include Reclamation Districts (RD) 1614 and 828, City of Stockton, San Joaquin County, California Department of Fish and Wildlife, Central Valley Flood Protection Board, Central Valley Regional Water Quality Control Board, State Lands Commission, and DWR.

Public and Agency Input
SJAFCA is requesting your input on the scope and content of the Smith Canal Gate Project EIR. All interested parties are invited to comment for a period of 30 days, beginning Wednesday, June 25, 2014. Please send comments by email or standard mail by 5 p.m., Friday, July 25, 2014.

Megan Smith, Project Manager, ICF International
630 K Street, Suite 400, Sacramento, CA 95814
Email: megan.smith@icfi.com

If commenting on behalf of a public agency or non-governmental organization, please include the name of a contact person.

The public can meet with lead agency representatives and provide written comments at a public scoping meeting to be held Wednesday, July 16, 2014 at 6:00 p.m. at the Ambler's Club, located at 2000 Amblers Lane, Stockton, CA 95204.

The attachment includes supplemental information for the proposed Smith Canal Gate Project.

Date: 6/19/14

Signature: Roger Churchwell
Title: Deputy Executive Director
Telephone: 209 937-8866

Reference: California Code of Regulations, Title 14, (State CEQA Guidelines) Sections 15082(a), 15103, 15375.

Attachment to Notice of Preparation
Environmental Impact Report Additional Information

Location of Project Area:

As introduced in the Notice of Preparation, the San Joaquin Area Flood Control Agency (SJAFCA), in partnership with Reclamation Districts (RD) 1614 and 828, is proposing the Smith Canal Gate Project (project) 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 the county of San Joaquin, California. The project location is shown in Figure 1. The Smith Canal is a backwater slough of the Sacramento-San Joaquin Delta (Delta), just north of the DWSC and south of the Calaveras River. The project area, shown in Figure 2, encompasses the areas of construction of proposed risk-reduction measures along the DWSC, abutting Stockton Golf and Country Club to the northwest; Louis Park to the southeast; Atherton Cove to the north; and Dad's Point to the south.

Project Purpose and Lead Agency:

The primary purpose of the proposed project is to reacquire Federal Emergency Management Agency (FEMA) accreditation that was revoked in 2008, causing a large portion of central Stockton to be mapped as a Special Flood Hazard Area. 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 from flooding. Additionally, based on topographical data recently developed by the California Department of Water Resources (DWR), FEMA is presently remapping the region to include an additional 3,000 structures and 9,000 residents in the 100-year floodplain. In addition, SJAFCA has a goal consistent with state law to provide a minimum 200-year level of flood risk reduction performance by 2025. Isolation of the 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, complying with state law.

The project would also serve secondary objectives to provide water quality and recreation enhancements.

SJAFCA will act as lead agency under the California Environmental Quality Act (CEQA). As such, SJAFCA has principal responsibility for carrying out and approving the project, and has determined that a project-level Environmental Impact Report (EIR) should be prepared for the project.

Other relevant state and local regulatory agencies with potential jurisdiction over affected resources may include, but not be limited to, City of Stockton, San Joaquin County, California Department of Fish and Wildlife, Central Valley Flood Protection Board, Central Valley Regional Water Quality Control Board, State Lands Commission, and DWR. Federal agencies with resource or regulatory jurisdiction may include the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the U.S. Coast Guard.

Project Description:

The EIR will analyze the possible environmental effects of a reasonable range of alternatives that address most or all of the project objectives. The EIR may include the following project alternatives.

- A fixed wall structure with an opening gate structure to allow for navigation and tidal movement of water in Smith Canal, extending from the north tip of Dad's Point Levee, northerly across open water to connect with the San Joaquin River right bank levee at the Stockton Golf and Country Club (golf course).
- A fixed wall structure with an opening gate structure extending across the inlet to Smith Canal from Louis Park on the south side to Moreing Road on the north side; as well as construction of a 2,300 ft floodwall along the waterside of the existing levee along Atherton Cove between Moreing Road and the golf course.
- Two fixed wall structures, each with an opening gate to allow for navigation and tidal movement of water in Smith Canal and Atherton Cove. The Smith Canal fixed structure would extend from Louis Park to Atherton Island. The Atherton Cove fixed structure would extend from the northwest side of Atherton Island to the golf course.

The EIR will consider the environmental impacts of other foreseeable project elements and mitigation measures located in the project area. Foreseeable construction and maintenance of such flood risk-reduction measures likely would include, but not be limited to, the following activities.

- 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.

The project alternatives would also allow for continued use of Smith Canal for recreational boating access to the DWSC, except during high water events and structure testing and maintenance.

Environmental Resources Potentially Impacted:

The environmental resources checked below would potentially be affected by the proposed project (i.e., the project would involve at least one impact that is a "Potentially Significant Impact"). There may also be one or more mandatory findings of significance, as defined by CEQA Guidelines Section 15065.

	Agriculture Resources	X	Air Quality	X	Cultural Resources
X	Fish and Aquatic Resources	X	Flood Management/ Geomorphic Conditions	X	Geology and Seismicity
	Mineral Resources and Soils	X	Land Use/Planning	X	Noise
X	Population/Housing	X	Public Services	X	Recreation
X	Transportation and Navigation	X	Utilities and Public Services	X	Vegetation and Wetlands
X	Visual Resources	X	Water Quality and Groundwater Resources	X	Wildlife

Issues of Expected Controversy:

Based on public feedback on the project to date, issues of expected controversy will likely include the risk of reduced aesthetics/effects to the visual viewshed; reductions in water circulation/quality; and impedance of recreational uses of Atherton Cove and Smith Canal.

Attachment to Notice of Preparation
Distribution List

Reclamation District 1614
c/o Christopher Neudeck
711 North Pershing Avenue
Stockton, CA 95203

Reclamation District 828
c/o Daniel J. Schroeder, Esq
P.O. Box 20
Stockton, CA 95201

City of Stockton
Carl Hefner
Community Dev., Building & Life Safety Division
425 North El Dorado Street
Stockton, CA 95202

San Joaquin County
John Maguire
Flood Management Division
1810 East Hazelton Avenue
Stockton, CA 95205

Central Valley Flood Protection Board
Environmental Review Section
3310 El Camino Avenue
Sacramento, CA 95821

Central Valley Regional Water Quality Control Board
Environmental Review Section
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670

San Joaquin Valley Air Pollution Control District
Environmental Review Section
4800 Enterprise Way
Modesto, CA 95356

San Joaquin County Mosquito & Vector Cntrl District
Environmental Review Section
7759 South Airport Way
Stockton, CA 95206

California Department of Parks and Recreation
Department of Boating and Waterways
1 Capitol Mall, Suite 410
Sacramento, CA 95814

California Department of Water Resources
Paul Morrison
Division of Flood Management
1416 9th Street
Sacramento, CA 95821

U.S. Fish & Wildlife Service
Brian Hansen
Bay-Delta Fish & Wildlife Office
650 Capitol Mall, 8th Floor
Sacramento, CA 95814

National Marine Fisheries Service
Evan Bing Sawyer
NOAA Fisheries West Coast Region
5-100 650 Capitol Mall
Sacramento, CA 95814

California Department of Fish and Wildlife, Region 3
Crystal Spurr
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558

U.S. Army Corp of Engineers, SPK
Tanis Toland
1325 J Street, Room 1513
Sacramento, CA 95814

State Lands Commission
Wendy Hall
100 Howe Avenue, Suite 100 South
Sacramento, CA 95825

U.S. Coast Guard, Eleventh Coast Guard District
Waterways Management Branch
Bridges Section Chief
Bldg. 50-2, CG Island
Alameda, CA 94501-5100

Federal Emergency Management Agency - Region 9
Kathleen Schaefer, P.E., CFM
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

California Native American Heritage Commission
Environmental Review Section
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691

CALTRANS District 10
Environmental Review Section
1976 East Charter Way/East Dr. Martin Luther King, Jr. Blvd
Stockton, CA 95205



Source: Peterson, Brustad, Inc. 2014

Graphics ... 00150.14 NOP (6-4-2014) tm

ICF INTERNATIONAL

Smith Canal Gate Project

Figure 1
Project Region



Graphics ... 00150.14 NOP (6-4-2014) tm

ICF INTERNATIONAL

Smith Canal Gate Project

Figure 2
Project Area

Attachment B

Certified Mail Receipts

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

California Native American Heritage Commission
Environmental Review Section
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1060 0002 0196 1600

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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1. Article Addressed to:

Central Valley Flood Protection Board
Environmental Review Section
3310 El Camino Avenue
Sacramento, CA 95821

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery
6/27/14

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1060 0002 0196 1570

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1. Article Addressed to:

Reclamation District 1614
c/o Christopher Neudeck
711 North Pershing Avenue
Stockton, CA 95203

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X M. Jackson ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1060 0002 0196 1563

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1. Article Addressed to:

City of Stockton, Carl Hefner
Community Dev., Building & Life Safety Division
425 North El Dorado Street
Stockton, CA 95202

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery
6/26/14

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1060 0002 0196 2232

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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Central Valley Regional Water Quality Control Board
Environmental Review Section
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery
JUN 26 2014

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1060 0002 0196 1587

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Brian Hansen
US Fish & Wildlife Service
Bay-Delta Wildlife
650 Capitol, 8th Floor
Sacramento, CA 95814

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Louis Foust Jr. ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* JUN 26 2014 C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No
SUITE 8-300

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1060 0002 0196 1655

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Wendy Hall
State Lands Commission
100 Howe Avenue South
Sacramento, CA 95825

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Tamika Henderson ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* Tamika Henderson C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1060 0002 0196 2249

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

U.S. Army Corp of Engineers, SPK
Tanis Toland
1325 J Street, Room 1513
Sacramento, CA 95814

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X J Boulanois ☒ Agent ☐ Addressee

B. Received by *(Printed Name)* J Tim Boulanois C. Date of Delivery 6/26/14

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1060 0002 0196 1594

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Reclamation District 828
c/o Daniel J. Schroeder, Esq
P.O. Box 20
Stockton, CA 95201

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1060 0002 0196 1532

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

San Joaquin County Air Pollution Dist.
Environmental Review Section
4800 Enterprise Way
Modesto, CA 95356

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery
[signature] 6/26/14

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7010 1060 0002 0196 1624

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Kathleen Schaefer, P.E., CFM
Federal Emergency Management Agency
1111 Broadway/Ste, 1200
Oakland, CA 94607-4052

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery
6-27-14

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service 7010 1060 0002 0196 1686

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Cal Dept. of Parks & Rec./Div. of
Boating & Waterways
Environmental Review Section
1 Capitol Mall/Ste. 410
Sacramento, CA 95814

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery
SCOTT SAETERN 6/26/14

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No
JUN 26 2014

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7010 1060 0002 0196 2287

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

U.S.C.G-11 Coast Guard District
Waterways Management Branch
Bridge Section Chief
Bldg 50-2, CG Island
Alameda, CA 94501-5100

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery
G. [illegible] 6/27/14

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

JUN 27 2014 COAST GUARD ALAMEDA CA 94501

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service 7010 1060 0002 0196 2263

PS Form 3811, Febru Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

San Joaquin County Mosquito &
Vector Control District
Environmental Review Section
7759 South Airport Way
Stockton, CA 95206

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery
Emily Nicholas 6-26-14

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7010 1060 0002 0196 2270

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

CALTRANS District 10
Environmental Review Section
1976 E. Charter Way/East MLK Jr Blvd
Stockton, CA 95205

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery
6/26/14

D. Is delivery address different from item 1? ☑ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7010 1060 0002 0196 1631

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Paul Morrison
Cal Dept. of Water Resources
Division of Flood Management
1416 9th Street
Sacramento, CA 95814

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) Kevin Freeman C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

USPS SACRAMENTO CA JUN 26 2014 ROCO 95811-14

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1060 0002 0196 1648

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

San Joaquin County
John Maguire
Flood Management Div.
1810 East Hazelton Avenue
Stockton, CA 95205

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☑ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1060 0002 0196 2256

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

NMFS
Evan Bing Sawyer
NOAA Fisheries West Coast Reg.
5-100 650 Capitol Mall
Sacramento, CA 95814

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery JUL 0 3 2014

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1060 0002 0196 1662

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Calif Dept. of Fish & Wildlife
Crystal Spurr
Bay-Delta Region
7329 Silverado Trail
Napa, CA 94558

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery 6-30

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service l* 7010 1060 0002 0196 1679

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

Attachment C

Notice of Preparation Postcard

5.8 x 4 in (Front)

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Join Us to Learn More About Local Flood Risk Reduction Efforts!

The San Joaquin Area Flood Control Agency is proposing the Smith Canal Gate Project (project), near the mouth of Smith Canal, to reduce area flooding. The project would construct a gate-type structure to isolate the canal from the San Joaquin River during high-water events, reducing flood risk for approximately 8,000 properties and 24,000 people.

Join Us! A public scoping meeting will be held so the public can learn more about the proposed project, as well as the environmental impact report (EIR) being prepared for the project, and provide comments about the scope of analysis in the EIR.

Public Meeting

Date: Wednesday, July 16, 2014
Time: 6 p.m. – 8 p.m.
Place: Ambler's Club, 2000 Amblers Lane, Stockton, CA

Anyone who is interested in commenting on the scope of the EIR is encouraged to do so. **Comments will be accepted** between Wednesday, June 25, 2014 and Friday, July 25, 2014. Send comments to **Megan Smith, Project Manager, ICF International, 630 K Street, Suite 400, Sacramento, CA 95814** or via email to ***megan.smith@icfi.com***.

Visit ***http://www.sjafca.com/smith_canal_closure.php*** to learn more about the project and view the Notice of Preparation for the EIR. Please contact Jennifer Rogers at ***jennifer.rogers@icfi.com*** to make accommodations for people with disabilities at least 72 hours in advance of the meeting.

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Join Us to Learn More About Local Flood Risk Reduction Efforts!

The San Joaquin Area Flood Control Agency is proposing the Smith Canal Gate Project (project), near the mouth of Smith Canal, to reduce area flooding. The project would construct a gate-type structure to isolate the canal from the San Joaquin River during high-water events, reducing flood risk for approximately 8,000 properties and 24,000 people.

Join Us! A public scoping meeting will be held so the public can learn more about the proposed project, as well as the environmental impact report (EIR) being prepared for the project, and provide comments about the scope of analysis in the EIR.

Public Meeting

Date: Wednesday, July 16, 2014
Time: 6 p.m. – 8 p.m.
Place: Ambler's Club, 2000 Amblers Lane, Stockton, CA

Anyone who is interested in commenting on the scope of the EIR is encouraged to do so. Comments will be accepted between Wednesday, June 25, 2014 and Friday, July 25, 2014. Send comments to Megan Smith, Project Manager, ICF International, 630 K Street, Suite 400, Sacramento, CA 95814 or via email to megan.smith@icfi.com.

Visit http://www.sjafca.com/smith_canal_closure.php to learn more about the project and view the Notice of Preparation for the EIR. Please contact Jennifer Rogers at jennifer.rogers@icfi.com to make accommodations for people with disabilities at least 72 hours in advance of the meeting.

5.8 x 4 in (Back)

San Joaquin Area Flood Control Agency
c/o ICF International
Attn: Jennifer Rogers
630 K Street, Suite 400
Sacramento, CA 95814

Join Us to Learn More About Local Flood Risk Reduction Efforts!

San Joaquin Area Flood Control Agency
c/o ICF International
Attn: Jennifer Rogers
630 K Street, Suite 400
Sacramento, CA 95814

Join Us to Learn More About Local Flood Risk Reduction Efforts!

Attachment D

SJAFCA Web Page

Search

Search

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- Board of Directors
- Staff
- Board Meetings
- Contact Us
- Related Links

Home > Projects > Smith Canal Gate Structure

PROJECTS - Smith Canal Gate Structure

SJAFCA is proposing the Smith Canal Gate Project (project) 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. SJAFCA, acting as lead agency under the California Environmental Quality Act (CEQA), has determined that a project-level Environmental Impact Report (EIR) should be prepared. The Notice of Preparation (NOP), available for download **here**, describes the proposed project and its possible environmental effects.

The proposed project is needed because 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, placing approximately 8,000 properties and approximately 24,000 people at increased risk from flooding.

The proposed project would close off Smith Canal during high flow events, causing existing Smith Canal levees to function as a secondary risk-reduction measure. This system would conform to Federal and state flood protection criteria.

SJAFCA Wants Your Input. SJAFCA invites the public to review the NOP and provide their input on the scope of what is analyzed and considered in the Smith Canal Gate Project EIR. All interested parties are invited to provide comments for a 30-day period, beginning Wednesday, June 25, 2014 and ending Friday, July 25, 2014. Comments will be accepted via email or standard mail; send comments to **Megan Smith, Project Manager, ICF International, 630 K Street, Suite 400, Sacramento, CA 95814** or to megan.smith@icfi.com.

Public Scoping Meeting. The public can learn more about the proposed project, speak with lead agency representatives, and provide comments at a public scoping meeting held Wednesday, July 16, 2014 at 6:00 p.m. at the Ambler's Club, located at 2000 Amblers Lane, Stockton, CA 95204. Please contact Jennifer Rogers at jennifer.rogers@icfi.com to make accommodations for people with disabilities at least 72 hours in advance of the scoping meeting.

Related Documents

- Scoping Meeting Comment Card
- Scoping Meeting
- Potential Alternatives
- Smith Canal NOP
- Technical Memorandum
- CLOMR Submittal
- Response to FEMA's Comments
- FEMA's Concurrance Letter
- EIP Funding Request
- Appeals Process

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Attachment E
Legal Notice

Trustee Sale No. : 20120169803467 Title Order No.: 120212588 FHA/VA/PMI No.: NOTICE OF TRUSTEE'S SALE YOU ARE IN DEFAULT UNDER A DEED OF TRUST, DATED 07/21/2005. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDING AGAINST YOU, YOU SHOULD CONTACT A LAWYER. NDEx West, L.L.C., as duly appointed Trustee under and pursuant to Deed of Trust Recorded on 07/28/2005 as Instrument No. 2005-184277 of official records in the office of the County Recorder of SAN JOAQUIN County, State of CALIFORNIA. EXECUTED BY: MANUEL B ALFONSO AND LILLY L ALFONSO, WILL SELL AT PUBLIC AUCTION TO HIGHEST BIDDER FOR CASH, CASHIER'S CHECK/CASH EQUIVALENT or other form of payment authorized by California Civil Code 2924h(b), (payable at time of sale in lawful money of the United States). DATE OF SALE: 07/14/2014 TIME OF SALE: 9:00 AM PLACE OF SALE: AT THE EAST WEBER AVENUE ENTRANCE TO THE COUNTY COURTHOUSE AT 222 EAST WEBER AVENUE, STOCKTON, CA. STREET ADDRESS and other common designation, if any, of the real property described above is purported to be: 7227 RICHLAND WAY, STOCKTON, CALIFORNIA 95207 APN#: 082-360-05 The undersigned Trustee disclaims any liability for any incorrectness of the street address and other common designation, if any, shown herein. Said sale will be made, but without covenant or warranty, expressed or implied, regarding title, possession, or encumbrances, to pay the remaining principal sum of the note(s) secured by said Deed of Trust, with interest thereon, as provided in said note(s), advances, under the terms of said Deed of Trust, fees, charges and expenses of the Trustee and of the trusts created by said Deed of Trust. The total amount of the unpaid balance of the obligation secured by the property to be sold and reasonable estimated costs, expenses and advances at the time of the initial publication of the Notice of Sale is $284,893.61. The beneficiary under said Deed of Trust heretofore executed and delivered to the undersigned a written Declaration of Default and Demand for Sale, and a written Notice of Default and Election to Sell. The undersigned caused said Notice of Default and Election to Sell to be recorded in the county where the real property is located. NOTICE TO POTENTIAL BIDDERS: If you are considering bidding on this property lien, you should understand that there are risks involved in bidding at a trustee auction. You will be bidding on a lien, not on the property itself. Placing the highest bid at a trustee auction does not automatically entitle you to free and clear ownership of the property. You should also be aware that the lien being auctioned off may be a junior lien. If you are the highest bidder at the auction, you are or may be responsible for paying off all liens senior to the lien being auctioned off, before you can receive clear title to the property. You are encouraged to investigate the existence, priority, and size of outstanding liens that may exist on this property by contacting the county recorder's office or a title insurance company, either of which may charge you a fee for this information. If you consult either of these resources, you should be aware that the same lender may hold more than one mortgage or deed of trust on the property. NOTICE TO PROPERTY OWNER: The sale date shown on this notice of sale may be postponed one or more times by the mortgagee, beneficiary, trustee, or a court, pursuant to Section 2924g of the California Civil Code. The law requires that information about trustee sale postponements be made available to you and to the public, as a courtesy to those not present at the sale. If you wish to learn whether your sale date has been postponed, and, if applicable, the rescheduled time and date for the sale of this property, you may call 916-939-0772 for information regarding the trustee's sale or visit this Internet Web site www.nationwideposting.com for information regarding the sale of this property, using the file number assigned to this case 20120169803467. Information about postponements that are very short in duration or that occur close in time to the scheduled sale may not immediately be reflected in the telephone information or on the Internet Web site. The best way to verify postponement information is to attend the scheduled sale. FOR TRUSTEE SALE INFORMATION PLEASE CALL: NATIONWIDE POSTING & PUBLICATION 2 A DIVISION OF FIRST AMERICAN TITLE INSURANCE COMPANY 5005 WINDPLAY DRIVE, SUITE 1 EL DORADO HILLS, CA 95762-9334 916-939-0772 www.nationwideposting.com NDEx West, L.L.C. MAY BE ACTING AS A DEBT COLLECTOR ATTEMPTING TO COLLECT A DEBT. ANY INFORMATION OBTAINED WILL BE USED FOR THAT PURPOSE. NDEx West, L.L.C. as Trustee Dated: 06/13/2014 **NPP0231931 To: STOCKTON RECORD 06/18/2014, 06/25/2014, 07/02/2014 #1005938**

NOTICE OF PUBLIC AUCTION

Take notice that on the **27th day of June, 2014 at 11:30am, Advanced Mini Storage 7739 Murray Dr. Stockton Ca 95210** will sell at public auction to the highest bidder.

Name General Desc
Mukasa-Clark, Nightingale boxes, tubs, furniture
Mukasa-Clark, Nightingale furniture, shelving, boxes
Turner, Harold boxes, tubs, misc
McAllister Laura c/o Harrington Delmus boxes, tv, misc
Clark, Debra household, furniture, boxes, refrigerator
Rosen, Mark furniture, misc
Galindo, Marcella toys, boxes, tubs
Bonds, Mack pocket bike, tubs, misc
Celestine, LaVerne boxes, tubs, furniture, tv, household
Serafini, Tina boxes
Perona, Nathaniel boxes, household misc
Scholz, Dorothy boxes, bags, household

Anyone having a legal claim and an interest in the goods may pay the storage fees and redeem the items before the sale. We reserve the right to reject any and all bids. Auction by Storage Auction Experts

#1005589 6/18, 6/25, 2014

FICTITIOUS BUSINESS NAME STATEMENT DOC. NO. 2014-050619

The following person(s) is/are doing business as: **Wash Time,** 2824 Farmington Rd., Ste. 5E, Stockton, CA 95206
Bobby Junior Sourivong
3554 Garofolo Ct.
Stockton, CA 95212
Sengphachanh Thixayavong
2814 Sonata Cir.
Stockton, CA 95212
The business is conducted by: Co-Partners
The registrant(s) commenced to transact business under the fictitious business name or names listed above on: N/A
SENG THIXAYAVONG
Filed: May 21, 2014
Kenneth W. Blakemore, MAI
Recorder/County Clerk
County of San Joaquin

#1004382 6/4, 11, 18, 25, 2014

SUMMONS
CASE NO. 39-2014-00310049-CU-OR-STK

NOTICE TO DEFENDANT): JOSEPHINE R. FERNANDEZ, the testate and intestate successors of JOSEPHINE R. FERNANDEZ (deceased or believed to be deceased), all persons claiming by, through, or under such decedents, all persons unknown, claiming any legal or equitable right, title, estate, lien, or interest in the property described in the complaint adverse to Plaintiff's title, or any cloud on Plaintiff's title thereto, and DOES 1 thugh 10, inclusive.
YOU ARE BEING SUED BY PLAINTIFF: ROXANNE DE LA CRUZ
NOTICE! You have been sued. The court may decide against you without your being heard unless you respond within 30 days. Read the information below.
You have 30 CALENDAR DAYS after this summons and legal papers are served on you to file a written response at this court and have a copy served on the plaintiff. A letter or phone call will not protect you. Your written response must be in proper legal form if you want the court to hear your case. There may be a court form that you can use for your response. You can find these court forms and more information at the California Courts Online Self-Help Center (www.courtinfo.ca.gov/selfhelp), your county law library or the courthouse nearest you. If you cannot pay the filing fee, ask the court clerk for a fee waiver form. If you do not file your response on time, you may lose the case by default, and your wages, money and property may be taken without further warning from the court.
There are other legal requirements. You may want to call an attorney right away. If you do not know an attorney, you may want to call an attorney referral service. If you cannot afford an attorney, you may be eligible for free legal services from a nonprofit legal services program. You can locate these nonprofit groups at the California Legal Services Web site (www.lawhelp california.org) the California Courts Online Self-Help Center (www.courtinfo.ca.gov/selfhelp), or by contacting your local court or county bar association.
NOTE: The court has a statutory lien for waived fees and costs on any settlement or arbitration award of $10,000 or more in a civil case.The court's lien must be paid before the court will dismiss the case.
The name and address of the court is: SAN JOAQUIN COUNTY SUPERIOR COURT, 222 E. WeberAve., Stockton, CA 95202
The name, address and telephone number of plaintiff's attorney or plaintiff without an attorney, is: Emilio J. Huerta, SBN 165177, Law Office of Emilio J. Huerta, PO Box 2244, Bakersfield, CA 93301, 661-326-8000
Date: April 14, 2014
Rosa Junqueiro, Clerk
Jennifer Castello, Deputy

#1004370 6/4, 11, 18, 25, 2014

FICTITIOUS BUSINESS NAME STATEMENT DOC. NO. 2014-055517

The following person(s) is/are doing business as: **Mr & Mrs Photography,** 3126 Bryant Dr., Stockton, CA 95212
Levi Donta Wells
3125 Bryant Dr.
Stockton, CA 95212
The business is conducted by: An Individual
The registrant(s) commenced to transact business under the fictitious business name or names listed above on: N/A
LEVI D. WELLS
Filed: June 5, 2014
Kenneth W. Blakemore, MAI
Recorder/County Clerk
County of San Joaquin

#1005327 6/11, 18, 25, 7/2, 2014

NOTICE OF PUBLIC AUCTION

Take notice that on the **27th day of June, 2014 at 9:30am, Advanced Mini Storage 2625 Monte Diablo Ave. Stockton Ca 95203** will sell at public auction to the highest bidder.

Name General Desc
Crumb, Mykeal bags, furniture, misc
Farias, Anita boxes, appliances, household
La Stella, Amuel boxes, tubs, wood
Perryman, Gwendolyn bags, tubs
Laughlin, April boxes, appliances, household
Bland-Vallare, Carla bags, tubs, aquarium, household
Gallardo, R. Anthony boxes, household, misc
Beach Jr., James boxes, toys, crib
La Stella, Amuel boxes, furniture, misc
Gonzalez, Gloria furniture, boxes, household
Halcon, Danial boxes, tubs, stove
Hilburn, Gary household, furniture
Fogarty, Sean lp records, furniture, toolbox
Collett, Anjelique tubs, furniture

Anyone having a legal claim and an interest in the goods may pay the storage fees and redeem the items before the sale. We reserve the right to reject any and all bids. Auction by Storage Auction Experts

#1005581 6/18, 6/25, 2014

Notice of Preparation of an Environmental Impact Report for the Smith Canal Gate Project and Public Scoping Meeting

The San Joaquin Area Flood Control Agency (SJAFCA) is proposing the Smith Canal Gate Project (project) 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 the county of San Joaquin, California. The Smith Canal is a backwater slough of the Sacramento-San Joaquin Delta, just north of the DWSC and south of the Calaveras River. The project area includes the areas of construction of proposed risk-reduction measures along the DWSC corridor, abutting Stockton Golf and Country Club to the northwest; Louis Park to the southeast; Atherton Cove to the north; and Dad's Point to the south.

The proposed project is needed because 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, placing approximately 8,000 properties and approximately 24,000 people at increased risk from flooding. The proposed project would close off Smith Canal during high flow events, causing existing Smith Canal levees to function as a secondary risk-reduction measure. The resulting flood protection system would conform to Federal and state flood protection criteria.

EIR to be Prepared. SJAFCA, acting as lead agency under the California Environmental Quality Act (CEQA), has determined that a project-level Environmental Impact Report (EIR) should be prepared and has issued a Notice of Preparation (NOP) for the EIR. The NOP and related information can be viewed at SJAFCA's website: http://www.sjafca.com/smith_canal_closure.php. SJAFCA requests your input on the scope and content of the Smith Canal Gate Project EIR. All interested parties are invited to comment for a 30-day period, beginning Wednesday, June 25, 2014 and ending Friday, July 25, 2014. Send comments to Megan Smith, Project Manager, ICF International, 630 K Street, Suite 400, Sacramento, CA 95814 or to **megan.smith@icfi.com**

Public Scoping Meeting to be Held. The public can meet with lead agency representatives and provide written comments on the scope of the EIR at a public scoping meeting to be held Wednesday, July 16, 2014 at 6:00 p.m. at the Ambler's Club, located at 2000 Amblers Lane, Stockton, CA 95204.

#1006837 6/25/2014

NOTICE OF TRUSTEE'S SALE Trustee Sale No. 127840-5 Loan No. 64000360 Title Order No. 8413374 APN 119-270-29 TRA No.: YOU ARE IN DEFAULT UNDER A DEED OF TRUST DATED 06/14/2013. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDINGS AGAINST YOU, YOU SHOULD CONTACT A LAWYER. On 07/09/2014 at 09:00AM, MORTGAGE LENDER SERVICES, INC. as the duly appointed Trustee under and pursuant to Deed of Trust Recorded on 06/21/2013 as Document No. 2013-082133 of official records in the Office of the Recorder of SAN JOAQUIN County, California, executed by: JESSE DANIAL RAMIREZ, as Trustor, WILL SELL AT PUBLIC AUCTION TO THE HIGHEST BIDDER FOR CASH (payable at time of sale in lawful money of the United States, by cash, a cashier's check drawn by a state or national bank, a check drawn by a state or federal credit union, or a check drawn by a state or federal savings and loan association, savings association, or savings bank specified in section 5102 of the Financial Code and authorized to do business in this state). At the East Weber Avenue entrance to the County Courthouse at 222 East Weber Avenue, Stockton, CA., all right, title and interest conveyed to and now held by it under said Deed of Trust in the property situated in said County, California describing the land therein: AS MORE FULLY DESCRIBED IN SAID DEED OF TRUST. The property heretofore described is being sold "as is". The street address and other common designation, if any, of the real property described above is purported to be: 3040 KENYON STREET, STOCKTON, CA 95205. The undersigned Trustee disclaims any liability for any incorrectness of the street address and other common designation, if any, shown herein. Said sale will be made, but without covenant or warranty, expressed or implied, regarding title, possession, or encumbrances, to pay the remaining principal sum of the note(s) secured by said Deed of Trust, with interest thereon, as provided in said note(s), advances, if any, under the terms of the Deed of Trust, estimated fees, charges and expenses of the Trustee and of the trusts created by said Deed of Trust, to-wit: $56,618.62 (Estimated). Accrued interest and additional advances, if any, will increase this figure prior to sale. The Beneficiary may elect to bid less than the full credit bid. The beneficiary under said Deed of Trust heretofore executed and delivered to the undersigned a written Declaration of Default and Demand for Sale, and a written Notice of Default and Election to Sell. The undersigned caused said Notice of Default and Election to Sell to be recorded in the county where the real property is located and more than three months have elapsed since such recordation. NOTICE TO POTENTIAL BIDDERS: If you are considering bidding on this property lien, you should understand that there are risks involved in bidding at a trustee auction. You will be bidding on a lien, not on the property itself. Placing the highest bid at a trustee auction does not automatically entitle you to free and clear ownership of the property. You should also be aware that the lien being auctioned off may be a junior lien. If you are the highest bidder at the auction, you are or may be responsible for paying off all liens senior to the lien being auctioned off, before you can receive clear title to the property. You are encouraged to investigate the existence, priority, and size of outstanding liens that may exist on this property by contacting the county recorder's office or a title insurance company, either of which may charge you a fee for this information. If you consult either of these resources, you should be aware that the same lender may hold more than one mortgage or deed of trust on the property. NOTICE TO PROPERTY OWNER: The sale date shown on this notice of sale may be postponed one or more times by the mortgagee, beneficiary, trustee, or a court, pursuant to Section 2924g of the California Civil Code. The law requires that information about trustee sale postponements be made available to you and to the public, as a courtesy to those not present at the sale. If you wish to learn whether your sale date has been postponed, and, if applicable, the rescheduled time and date for the sale of this property, you may call (916) 939-0772 or visit this Internet Web site www.nationwideposting.com using the file number assigned to this case 127840-5. Information about postponements that are very short in duration or that occur close in time to the scheduled sale may not immediately be reflected in the telephone information or on the Internet Web site. The best way to verify postponement information is to attend the scheduled sale. Date: 06/11/2014 MORTGAGE LENDER SERVICES, INC. 81 BLUE RAVINE ROAD, SUITE 100, FOLSOM, CA 95630 (916) 962-3453 Sale Information Line: (916) 939-0772 or www.nationwideposting.com LAUREN MEYER, ASSISTANT VICE PRESIDENT. MORTGAGE LENDER SERVICES, INC. MAY BE A DEBT COLLECTOR ATTEMPTING TO COLLECT A DEBT. ANY INFORMATION OBTAINED WILL BE USED FOR THAT PURPOSE. **NPP0232152 To: STOCKTON RECORD PUB: 06/18/2014, 06/25/2014, 07/02/2014 #1005956**

Attachment F

Scoping Meeting Boards and Comment Card

Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Welcome!

Smith Canal Gate Project
Environmental Impact Report
Scoping Meeting

July 16, 2014

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

About the Smith Canal Gate Project

The San Joaquin Area Flood Control Agency (SJAFCA) is proposing the Smith Canal Gate Project (project) 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.

The proposed project is needed because 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. Consequently, approximately 8,000 properties and approximately 24,000 people face an increased flood risk.

The proposed project would conform to Federal and state flood risk reduction criteria by isolating Smith Canal from the San Joaquin River during high water events, causing existing Smith Canal levees to function as a secondary means of reducing flood risk. As described at Station 2, SJAFCA has developed three alternatives for analysis in the EIR. However, public and agency input is needed during the scoping period (June 24, 2014, to July 25, 2014) to influence and inform both the design and environmental analysis of the project.

While this area does not have a history of extreme flood events, SJAFCA is being proactive in its approach to increase the level of flood risk reduction for the region. Property owners approved an Assessment District in 2013 to fund a portion of a flood risk reduction project for Smith Canal. Implementing this project will:

- ❑ Achieve removal of the affected region from the FEMA 100-year floodplain (a "100-year flood event" is one that has a 1% chance of occurring in any given year)
- ❑ Contribute toward 200-year protection, in combination with other projects
- ❑ Secure FEMA accreditation and eliminate mandatory flood insurance

Smith Canal Gate Project Location Map

Stockton Golf and Country Club

Atherton Cove

Atherton Island

Smith Canal

Louis Park

Dad's Point

Deep Water Ship Channel

Louis Park Boat Launch

San Joaquin River

N

0 200 400 600 800

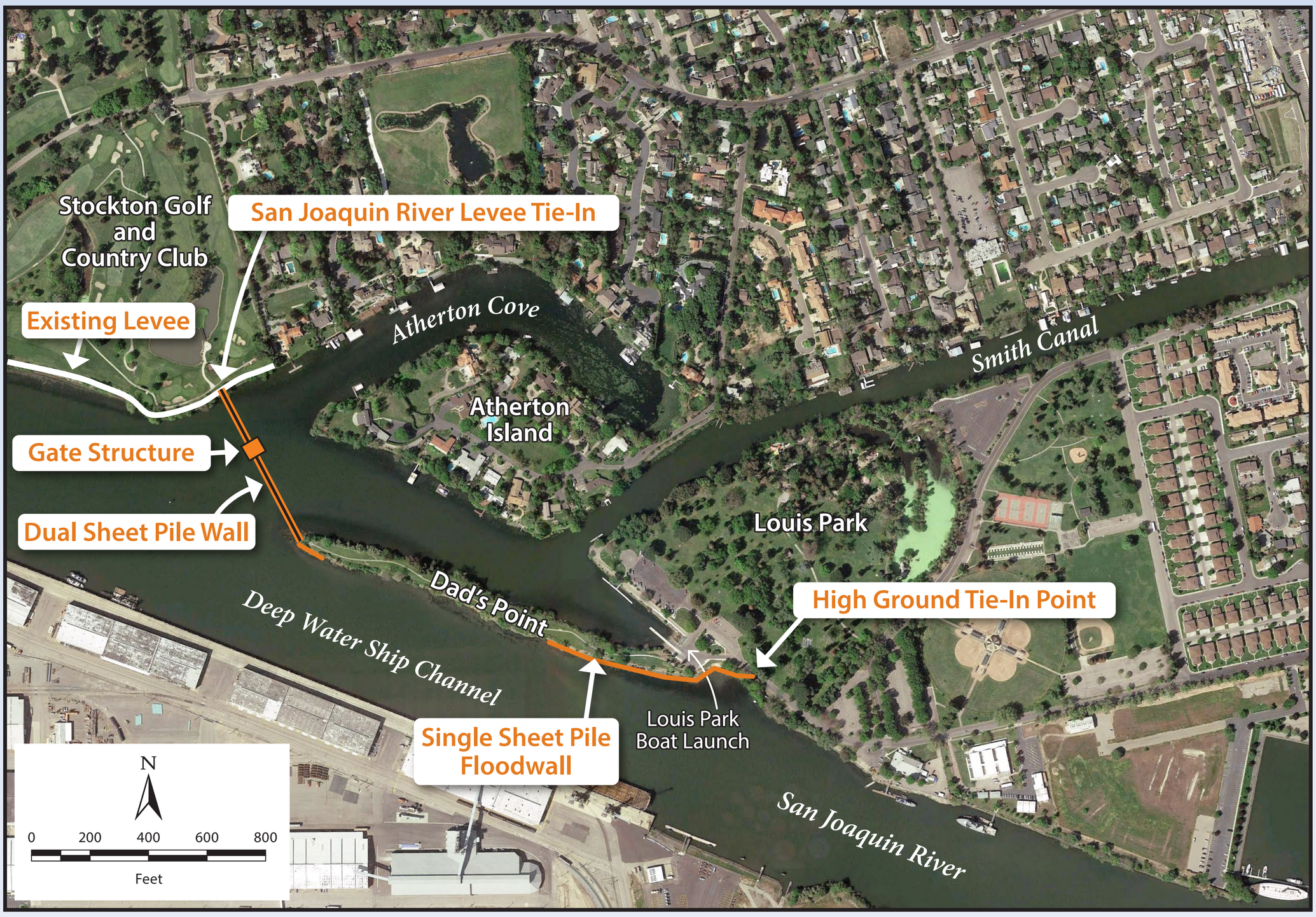
Feet



Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Alternative #1: Single Gated Wall to Dad's Point



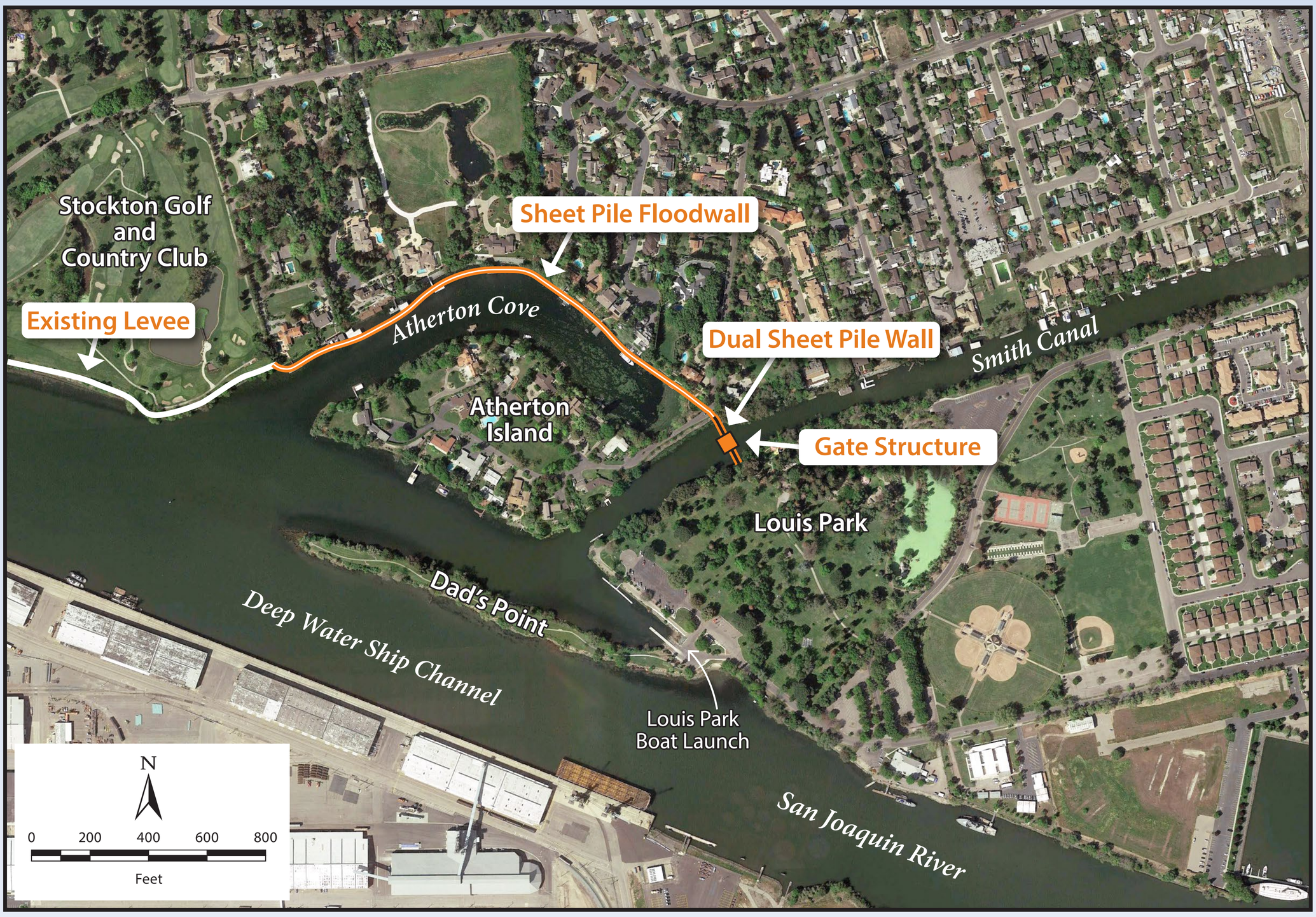
This alternative would isolate Atherton Cove and Smith Canal from the San Joaquin River, reducing flood risk through the use of a gated fixed-wall structure. The fixed dual sheet pile wall would extend approximately 800 ft from the north tip of Dad's Point Levee to the San Joaquin River right bank at the golf course and would feature a 50 ft gate that could be closed during high water events. The gate would be closed only as needed for flood control, remaining open to allow for recreation, navigation, and tidal movement of water in Smith Canal.

Additionally, approximately 1,000 ft of Dad's Point would be modified to tie into high ground at Louis Park through installation of a sheet pile flood wall.

Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Alternative #2: Atherton Cove Flood Wall with Smith Canal Gate

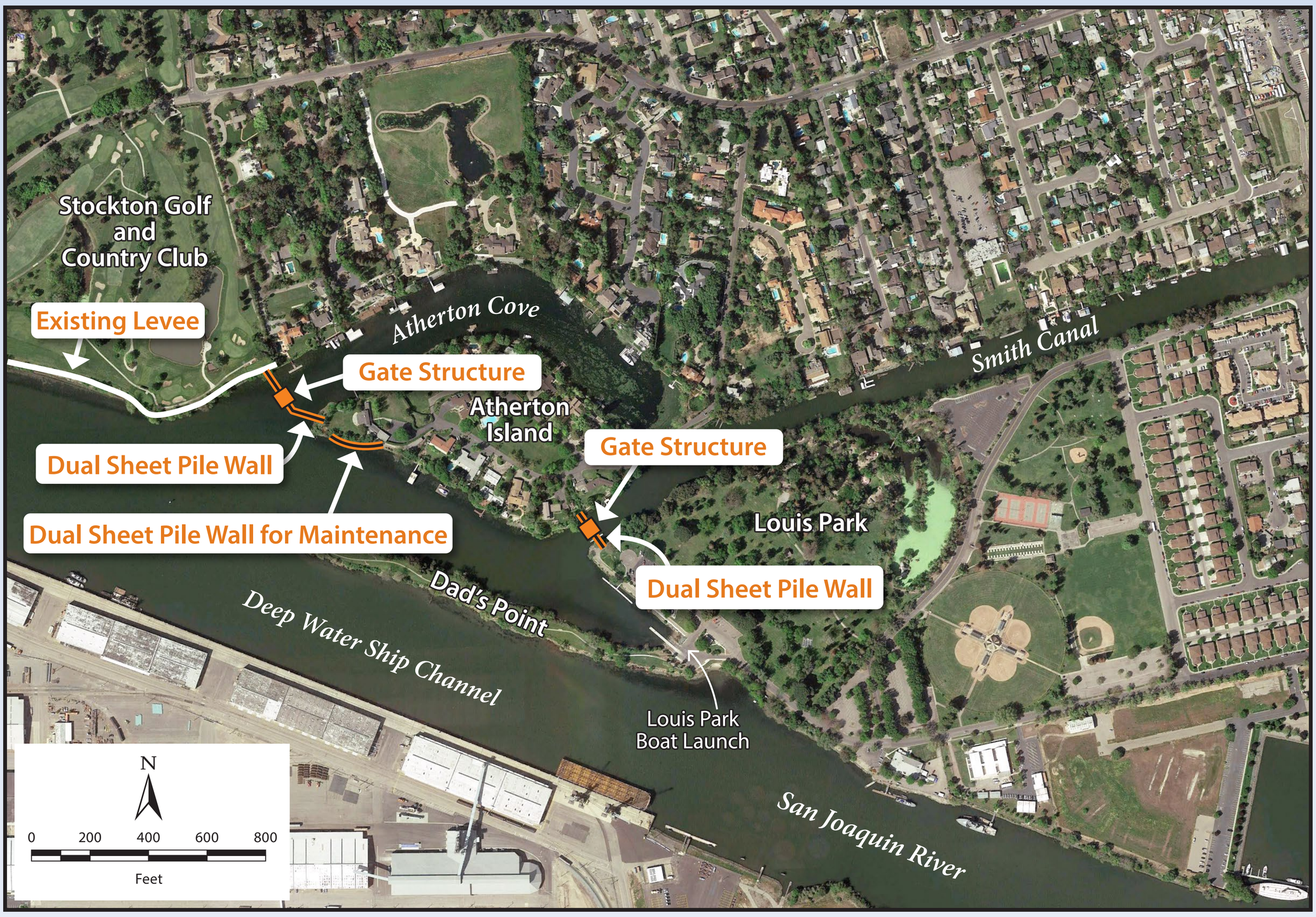


This alternative would reduce flood risk by constructing a 2,300 ft sheet pile floodwall along the waterside of the existing levee abutting the north side of Atherton Cove, tying into the existing FEMA-accredited levee at the golf course. Alternative 2 would also use a gated fixed wall structure to isolate Smith Canal from the San Joaquin River, extending 225 ft across Smith Canal from Louis Park to Moreing Road. As in Alternative 1, the fixed dual sheet pile wall would feature a 50 ft gate that could be closed during high water events. The gate would be closed only as needed for flood control, remaining open to allow for recreation, navigation, and tidal movement of water in Smith Canal.

Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

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



This alternative would isolate Atherton Cove and Smith Canal from the San Joaquin River, reducing flood risk through the use of separate gated fixed wall structures. One gated dual sheet pile wall would extend across Smith Canal approximately 250 ft from Louis Park to Atherton Island. A second gated wall would extend approximately 650 ft across Atherton Cove from the northwest side of Atherton Island to the golf course, tying in to the existing FEMA-accredited levee.

Both fixed walls would feature 50 ft gates that could be closed during high water events. The gates would be closed only as needed for flood control, remaining open to allow for recreation, navigation, and tidal movement of water in Smith Canal.

Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

The California Environmental Quality Act

The California Environmental Quality Act (CEQA) is a state law enacted to ensure a proposed activity's (project's) potential significant effects on both the natural and built environments are analyzed and disclosed to the public. Analysis of the project's alternatives and development of mitigation measures to reduce effects are also required.

This analysis is presented in an environmental impact report (EIR). An EIR discloses a project's potential environmental effects to assist decision makers in weighing the consequences of a proposed project and making an informed decision. The San Joaquin Area Flood Control Agency (SJAFCA) is the lead agency and project proponent under CEQA for the Smith Canal Gate Project. Based on a preliminary analysis, SJAFCA has determined that the proposed project may have significant effects on the environment, triggering the need for an EIR to analyze and disclose those effects.

Overall, CEQA and the EIR process serve to inform decision makers, affect public awareness and input on projects that would impact their communities, and increase collaboration amongst different agencies. Other Federal, state, and local agencies will participate in the proposed project as decision makers, including the U.S. Army Corps of Engineers, California Department of Water Resources, California Department of Fish and Wildlife, Central Valley Water Quality Control Board, Central Valley Flood Protection Board, County of San Joaquin, City of Stockton, and others.

Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

About the Scoping Process

Scoping is an important part of the CEQA process; its purpose is to inform the public of a proposed activity, a "project," that must be approved by a governmental body. It provides the public an opportunity to comment and share local information related to the range of alternatives being analyzed, the effects of those alternatives, and/or issues of concern related to the proposed project.

Scoping can be particularly informative in a flood risk reduction project because the local residents could have unique knowledge about flood history, specific locations of high flood risk, deficiencies in current flood risk reduction features/measures, and other valuable insights related to environmental resources that could inform the project.

The comments received from public scoping will be used to inform the development of the alternatives, define the environment and resources potentially affected by the alternatives, and analyze the effects resulting from the alternatives. The affected environment broadly includes physical, biological, and social topic areas. Effects of both project construction and long-term operations and maintenance are analyzed.

Ways to comment on what is analyzed in or considered when developing the EIR:

1. Send written comments to
   Megan Smith, ICF International
   630 K Street, Suite 400, Sacramento, CA 95814
2. Via email to megan.smith@icfi.com
3. Fill out a comment card and leave it with a project team member tonight
4. Mail in a self-addressed comment card by July 25

All comments must be received by July 25, 2014.

Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Environmental Resources Analyzed

The environmental impact report for the Smith Canal Gate Project will examine the effects the project could have on the built and natural environments. It will also identify mitigation measures to reduce these effects or avoid them when possible.

Resources analyzed will include but not be limited to:

Air quality

Cultural resources

Fish & aquatics

Flood management

Geomorphology

Groundwater

Land use & planning

Noise

Population & housing

Public services

Recreation

Transportation & navigation

Vegetation & wetlands

Visual resources

Water quality

Wildlife

Based on public feedback on the project to date, issues of expected controversy will most likely include the risk of reduced aesthetics/effects to the visual viewshed, reductions in water circulation/quality, and impedance of recreational uses of Atherton Cove and Smith Canal.

Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

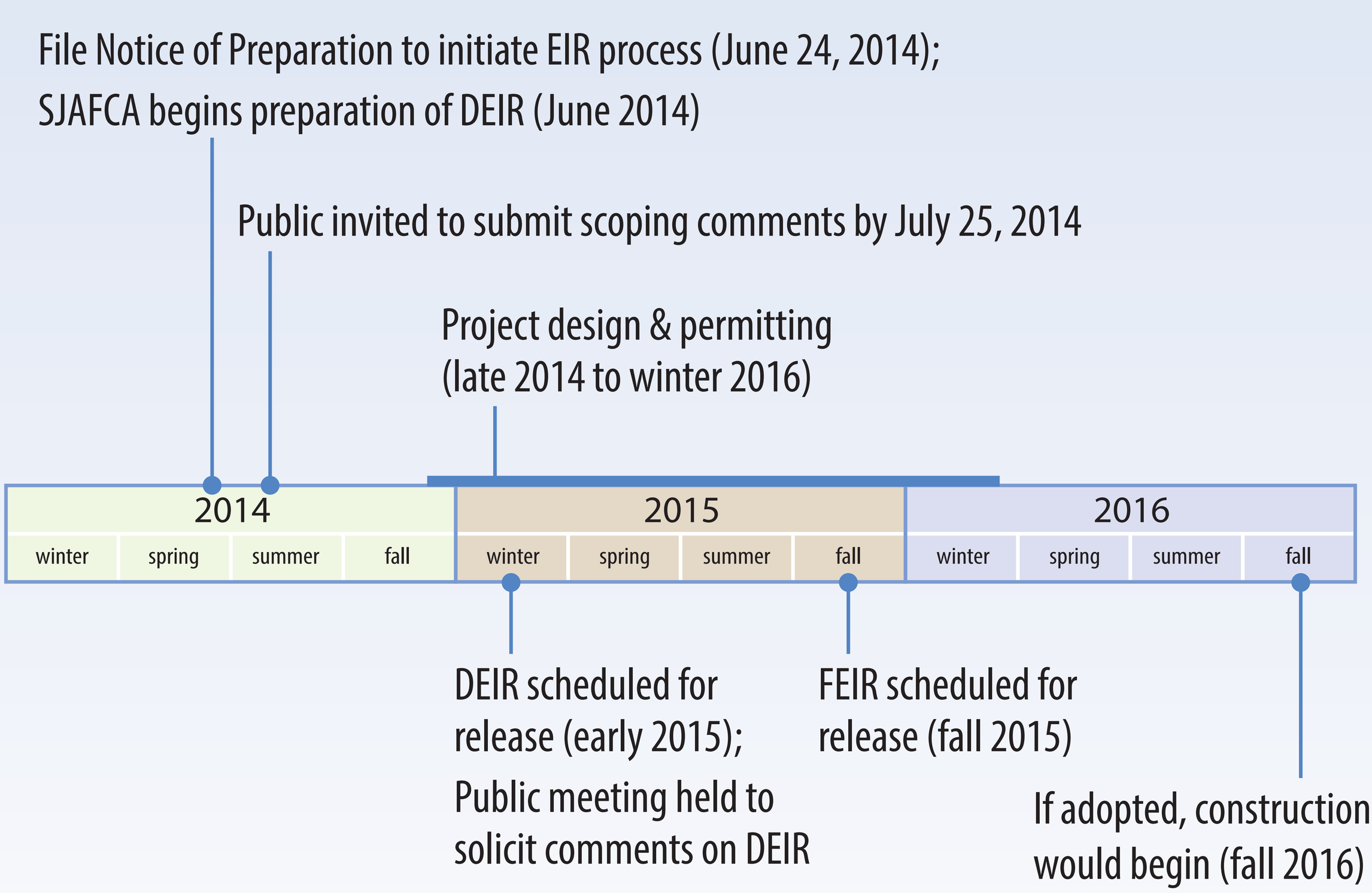
Funding and Proposed Timeline

Funding

The San Joaquin Area Flood Control Agency (SJAFCA) has received a state grant of $2.4 million for design and environmental work for the Smith Canal Gate Project (project). The Assessment District approved by property owners in 2013 will share 50% responsibility for funding this project; the other 50% will come from the state. This includes project design, environmental compliance, and construction.

The SJAFCA Board of Directors authorized $3.5 million to be spent on design and environmental compliance.

Timeline



Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Comments

Please fill out a comment card to provide input on the scope of the Smith Canal Gate Project EIR

Comments Will Be Accepted through July 25, 2014

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

COMMENT CARD

Smith Canal Gate Project
Public Scoping Meeting

Wednesday, July 16, 2014
Ambler's Club, Stockton, CA

The San Joaquin Area Flood Control Agency (SJAFCA) is proposing the Smith Canal Gate Project (project), near the mouth of Smith Canal, to reduce area flood risk. The project would construct a gate-type closure structure to isolate the canal from the San Joaquin River during high flow events, reducing flood risk for approximately 8,000 properties and 24,000 people. Anyone interested in commenting on the scope of the Environmental Impact Report (EIR) for this project is encouraged to do so.

Comments will be accepted between Wednesday, June 25, 2014 and Friday, July 25, 2014. 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 July 25, 2014.

Name _____

Organization or affiliation (if applicable) _____

Address _____

City, State, Zip _____

Phone _____

E-Mail _____

Please write legibly.

_____

_____

_____

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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.

San Joaquin Area **FLOOD CONTROL** Agency

SJAFCA

FOLD HERE

Megan Smith, Project Manager
ICF International
630 K Street, Suite 400
Sacramento, CA 95814

PLACE
POSTAGE
HERE

Megan Smith, Project Manager
ICF International
630 K Street, Suite 400
Sacramento, CA 95814

Attachment G

Scoping Comments Summary

Smith Canal Gate Project Draft EIR Scoping Comments - July 25, 2014

Commenter Name	Commenter Type	Topics	Comments
Patricia E. Vannucci	Letter - Individual	Bank Stabilization; Air Quality	Commentor has lived on Atherton Island for 60 years and has never seen a flood. Made sure the house was not in the floodplain. Muck from fish and fowl turns into a smelly mess on the water. New banks should be rip-rapped with stones and permanent vegetation. Will not be able to attend the meeting.
Samantha Workman	Email	Navigation; Recreation	Commentor is concerned about boat access to the San Joaquin River for recreational use.
Stockton Golf & Country Club	Letter - Organization	Aesthetics, Land Taking, Water Quality, Air Quality, Alternatives	Taking SG&CC land will impair the functionality of the golf course and aesthetics. The 50 foot gate opening will impair tidal movement, resulting in debris behind the dam and odors. Additional impacts that would result from the proposed alternative include water and air quality. The commentor suggests the consideration of other alternatives, one that would avoid the direct impact on the golf course. The commenter inquires why a geotechnical study of the existing SG&CC levees was not conducted to determine the adequacy of the existing levees. The commentor inquires why the DWR design for a similar type of dam located at Carquinez Strait was not considered as an alternative.
CVRWQCB	Letter-Agency	Permits	The commentor provided a list of potential permits the proposed project could need. The permits include the following: Construction Storm Water General Permit, Phase 1 and II Municipal Separate Storm Sewer System, Industrial Storm Water General Permit, Clean Water Act Section 404 and 401 permits, Waste Discharge Requirements, and National Pollution Discharge Elimination System (NPDES).
Caltrans	Letter-Agency	Traffic	The commentor has no comments on the NOP.
Maxwell William	Letter - Individual	Project Description; Water quality degradation	The commentor provided comments and question about the cost of each alternative, operation cost, and availability to mitigate the cost of flood insurance. The commenter stated that the proposed project is about meeting FEMA's standards and insurance and not about flood risk. Additional comments inquired about the amount of money that will be raised. The commentor stated his concern for the degradation of water quality in Smith Canal.
Maxwell William	Letter - Individual		The commenter comments involved FEMA's involvement and insurance. The commenter stated that FEMA needs to have a representative at every meeting. Can the community opt out of FEMA's insurance scheme and create own local agency? What percentage of insurance premiums goes to FEMA and what percentage goes to the private insurance companies?
Ron McIntosh	Meeting Comment Card	Alternative	I prefer Alternative 2 Atherton Cove wall and Smith Canal Gate.

Smith Canal Gate Project Draft EIR Scoping Comments - July 25, 2014

Commenter Name	Commenter Type	Topics	Comments
Tom Lornson	Meeting Comment Card	Alternative	I am 44 years old lived almost my whole life in Stockton and it has never flooded to the point of FEMA needing to be called in or the Red Cross. This is nothing more than a Shakedown by the Federal govt. to exhort money from tax payers all on the heels of Hurricane Katrina. Creating a problem where none exist.
Chuck Biggs	Meeting Comment Card	Hydrology and Water Quality	Is the discharge from the flood storm drain pumps increasing the water level in the canal?
CDFW - Scott Wilson	Letter-Agency	Biological Resources; Hydrology and Water Quality	The commentor states that the EIR should include an assessment of habitats, flora, and fauna within and adjacent to the project area, including protected species and their sensitive habitats. The assessment should include reasonably foreseeable direct and indirect changes (temporary and permanent) that may occur with implementation of the project. Rare, threatened and endangered species that meeting CEQA definition should be included in the EIR. The commentor also suggests that the EIR should address water quality issues associated with the long-term operation of the Smith Canal Gate, including potential impacts on aquatic species and their habitats. The commentor advises that a CESA permit should be considered if the project has the potential to take state-listed species. The commentor recommends that the EIR must specify impacts, mitigation measures and a mitigation monitoring and reporting program. The commentor states that a LSAA may be required for proposed diversion or obstruction to the natural flow or change to bed, channel or bank of a river or stream. The commentor states that the EIR should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for completion of the LSAA.

Smith Canal Gate Project Draft EIR Scoping Comments - July 25, 2014

Commenter Name	Commenter Type	Topics	Comments
SLC - Cy Oggins	Letter-Agency	Biological Resources; Cultural Resources; Hydrology and Water Quality; Noise and Vibration	The figure in the NOP shows the location of the proposed sheet pile walls, but it is not included in the project description. SLC requests that the Draft EIR includes a thorough and complete project description and adds project structures to the figure 2 of the NOP. The Draft EIR should analyze potential impacts to sensitive species and habitats in the project area; document and discuss the consultation outcomes with regulatory agencies; evaluate noise and vibration impacts to fish and birds from underwater construction and discuss how noise levels will be monitored; discuss how change in bankside vegetative cover would favor non-native fisheries; analyze potential impacts to water quality from in-water construction activities; analyze the project's GHG emissions; consider possible increase in vessel traffic on DWSC from barges used to carry equipment in the Recreation section; and potential impacts to potential submerged cultural resources. In addition, the SLC requests that Draft EIR mention that the title to all abandoned shipwrecks, archeological sites, and cultural resources on or in the tide and submerged lands is vested in the state and under the jurisdiction of the CSLC. Should any cultural resources on state lands be discovered during any construction activities. Any project with the potential to impact dissolved oxygen in the Stockton DWSC must evaluate and fully mitigate those impacts. The Smith Canal project has the potential to increase water residence time in the Canal, which may exacerbate the low dissolved oxygen conditions.
CVRWQCB-Sue McConnell	Letter-Agency	Hydrology and Water Quality	The commentor comments that the Smith Canal is an impaired waterbody for low dissolved oxygen. The City of Stockton is evaluating the impairment through the Low Dissolved Oxygen Work Plan. Water quality studies conducted indicate the dissolved oxygen concentrations are below the CVRWQB's Basin Plan objective of 5 milligrams per liter. The commentor states that the San Joaquin River between Disappointment Slough and Stockton is also impaired for low dissolved oxygen. This stretch of the river is being addressed through a Control Program that's being implemented as part of a TMDL that sets forth requirements for any project with the potential to impact dissolved oxygen conditions in the Stockton DWSC and require a water quality certification.

Smith Canal Gate Project Draft EIR Scoping Comments - July 25, 2014

Commenter Name	Commenter Type	Topics	Comments
Green Mountain Engineering	Letter - Organization	Biological Resources; Hydrology and Water Quality; Recreation; Navigation	The commentor provided questions on the consideration of the two alternatives. These questions are as follows: Why are the Gate at Pixie Woods and the Two Gates options still being considered with the significant additional costs? The scoping outlines states that the existing levees would be challenging and expensive to modify. Could you provide the engineering details and estimate that supports this conclusion? The GME proposal included improvements to the existing levee within budget. What is deficient with this alternative? With the two alternatives (Pixie Woods and Two Gates) being more costly, where will the funds come from? The commenter's letter included question about the importance and compliance with the State's Urban Levee Design Criteria, and the FEMA accreditation of the levees. In addition, the commentor inquired about the need for ROW, acquisition of ROW, and cost of each alternative, including ROW acquisition. Other commentor questions regarded potential impacts to water quality, biological resources, aesthetics, boater safety, and recreation.
Delta Protection	Letter- Agency	Land Use	The Proposed Project is within the Primary Zone of the Legal Delta and must be consistent with the Land Use and Resource Management Plan (LURMP). 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 Proposed Project is consistent with the Levees Goal of the LURMP.
Bob and Janet Kavanaugh	Letter- Individual	Alternative #1	Commenter is in favor of Alternative #1 with a curvature design that would allow debris to move through the opening. Alternative #1 would be a great breakwater and should cut down on wakes. Commenter asks if the bulkhead can be landscaped. The gate opening should be studied for restrictions it could pose on water movement. The building for a generator and controls should be placed on the levee by the 8th tee.
Doris C. Edwards	Letter- Individual	Entire Project	Commenter request that the Project does not move forward due to unreliable cost estimate. Prefers to take risk of flooding than have project implemented.
W. Gregory Mullally	Letter- Individual	Entire Project	Commenter expresses concern over methods and timing of notifying residents of the project meetings and comment cards. Commenter does not support the Project due to financial impacts it will have on residents.
Helena Hutchins	Letter- Individual	Planning process; commenting period	Commenter ask why the Dominic Gulli Plan was not shown and where the other bids are. Commenter asks who received comment cards, and how many of the 8,000 homes received comment cards. Expresses concern over comment period lasting nine days.

Smith Canal Gate Project Draft EIR Scoping Comments - July 25, 2014

Commenter Name	Commenter Type	Topics	Comments
Susan Carson	Letter-Individual	Planning process; Public meeting	Commenter thought the project's design would be chosen after the EIR, but then that order changing was casually mentioned. These changes should be explained. Commenter does not think public meetings are effective when people ask questions and then are not answered as a group.
San Joaquin Valley Air Pollution Control District – Chay Thao	Agency - Letter	Air Quality, Cumulative Impact	The commentor recommends that the Draft EIR analysis identifies and quantifies criteria pollutant emissions, quantify construction and operational emissions separately and evaluate related health impacts if emissions of toxic air contaminants will pose a significant health risk to sensitive receptors. The commentor also noted that health impacts may require a detailed health risk assessment. The District suggested mitigation measures that could be incorporated into the project. In addition, the commentor suggests the discussion include: methodology, model assumptions, components and phases of project and associated emissions, project design elements and mitigation measures, and the cumulative impacts to criteria pollutants.
Central Valley Flood Protection Board	Agency - Letter	Hydrology; Permitting	The commentor recommends that the EIR should reference the Central Valley Flood Protection Board as a responsible agency pursuant to 23 CCR, state a Board Encroachment permit will be completed and submitted to the Central Valley Flood Protection Board, clarify if Project and other adjacent non-SPFC levees will be requested to become SPFC facilities, and consider mitigation measures against the accumulation and establishment of woody vegetation that may decrease floodway channel capacity and become habitat for wildlife and thus be subject to federal or State resource agency requirements for on-site mitigation.

Attachment H

Summary and Evaluation of Alternatives Presented by Green Mountain Engineering

Summary of Alternatives presented by Green Mountain Engineering

Description of Alternatives Considered in the GME Proposal

Note that all elevations listed have been convert from NGVD29 to NAVD88 for consistency with the other alternatives presented in the environmental document (NGVD29 + 2.06 ft = NAVD88)

1. **Atherton Cove Gate (Drawing WA-2)**

   This alternative would reduce the flood risk by constructing the following items:

   - 2,300 ft long timber bulkhead wall along the waterside of the levee on the north side of Atherton Cove (Drawing D-1)
     - Treated timber piles and horizontal timber members to elevation 10.0 at existing waterside levee toe
     - Fill material installed behind timber bulkhead to elevation 10.0 to create 15 ft flat space between bulkhead and existing levee
     - Riprap on waterside of timber bulkhead to elevation 4.0
   - 1,100 ft long dual vinyl sheet pile wall along the waterside of the levee on the north side of the entrance to Smith Canal (Drawing D-3)
     - First vinyl sheet pile installed in waterside slope of levee to elevation 10.0
     - Second vinyl sheet pile installed approximately 30 ft towards the water to elevation 4.0
     - Anchor rod and fill material installed between vinyl sheet piles to create 16 ft wide all weather road at elevation 8.0
   - 200 ft long dual sheet pile wall across Smith Canal located 1,100 east of the entrance to Smith Canal with a 40 ft wide gate opening (Drawings G-1 through G-4)
     - 20 ft wide dual steel sheet pile with fill material between sheet piles to elevation 14.0
     - Two gate types proposed for the opening: slide gate and lift gate
     - Single 48" HDPE culvert with gate valve at installed at invert elevation 2.0 for tide fluctuations

2. **Dual Vinyl Sheet Pile Wall (Drawing WA-3)**

   This alternative would reduce the flood risk by constructing the following items:

   - 2,300 ft long timber bulkhead wall along the waterside of the levee on the north side of Atherton Cove (Drawing D-1)
     - Treated timber piles and horizontal timber members to elevation 10.0 at existing waterside levee toe
     - Fill material installed behind timber bulkhead to elevation 10.0 to create 15 ft flat space between bulkhead and existing levee
     - Riprap on waterside of timber bulkhead to elevation 4.0
   - 9,700 ft long dual vinyl sheet pile wall along the waterside of the levee on the north side of Smith Canal from the entrance to Pershing Avenue (Drawing D-3)
     - First vinyl sheet pile installed in waterside slope of levee to elevation 10.0

    - Second vinyl sheet pile installed approximately 30 ft towards the water to elevation 4.0
    - Anchor rod (elevation 2.0) and fill material installed between vinyl sheet piles to create 16 ft wide all weather road at elevation 8.0
- Two segments of single vinyl sheet pile wall along the waterside of the levee on the south side of Smith Canal – 500 ft under Highway 5 and 2,000 ft between Buena Vista Avenue and Pershing Avenue (Drawing D-4)
    - Single vinyl sheet pile wall installed beyond waterside levee toe to elevation 8.0
    - Anchor pile installed in waterside slope of levee to elevation 10.0 and connected with anchor rod (elevation 2.0) to vinyl sheet pile wall
    - Fill material installed between vinyl sheet pile and existing levee to create 30 ft wide all weather road at elevation 8.0
- 4,000 ft long conventional waterside repair along the waterside of the levee on the south side of Smith Canal from Highway 5 to Buena Vista Avenue (Drawing D-2)
    - Rock dike installed beyond waterside levee toe to elevation 4.0
    - Fill material installed behind rock dike to create 15 ft wide road at elevation 4.0
    - Rip rap installed on waterside of levee to elevation 8.0

3. Timber Bulkhead Wall (Drawing WA-4)

This alternative would reduce the flood risk by constructing the following items:

- 14,000 ft long timber bulkhead wall along the waterside of the levee on the north side of Atherton Cove, the north side of Smith Canal from the entrance to Pershing Avenue, and the south side of Smith Canal from Buena Vista Avenue to Pershing Avenue (Drawing D-1)
    - Treated timber piles and horizontal timber members to elevation 10.0 at existing waterside levee toe
    - Fill material installed behind timber bulkhead to elevation 10.0 to create 15 ft flat space between bulkhead and existing levee
    - Riprap on waterside of timber bulkhead to elevation 4.0

4. Single Vinyl Sheet Pile Wall (Drawing WA-5)

This alternative would reduce the flood risk by constructing the following items:

- 14,000 ft long single vinyl sheet pile wall along the waterside of the levee on the north side of Atherton Cove, the north side of Smith Canal from the entrance to Pershing Avenue, and the south side of Smith Canal from Buena Vista Avenue to Pershing Avenue (Drawing D-4)
    - Single vinyl sheet pile wall installed beyond waterside levee toe to elevation 8.0
    - Anchor pile installed in waterside slope of levee to elevation 10.0 and connected with anchor rod (elevation 2.0) to vinyl sheet pile wall
    - Fill material installed between vinyl sheet pile and existing levee to create 30 ft wide all weather road at elevation 8.0
    - ~~Riprap on waterside of timber bulkhead to elevation 4.0~~

Analysis of Alternatives Considered in the GME Proposal

The four GME alternatives for improvements to the Smith Canal levee system will be evaluated per the three primary project objectives listed below:

A. Improve the level of performance to secure FEMA accreditation within the funding capability of SJAFCA
B. Reduce flood risk to contribute to minimum 200-year level of performance as mandated by SB 5 within the funding capability of SJAFCA
C. Construct improvements in accordance with current Urban Levee Design Criteria

Objective A – Secure FEMA Accreditation

To secure FEMA accreditation the following criteria must be met:

- Provide 100-year flood protection, which equals the 100-yr water surface elevation (9.4 ft) plus 3.0 ft of freeboard – therefore the minimum top of flood protection structure must be elevation 12.4 ft.
- Provide access to patrol and maintain the flood protection structure.
- Provide access to perform inspections, surveys, or subsurface investigations necessary to accredit the flood protection structure.

Table 1 compares the four alternatives to the criteria necessary to meet Project Objective A.

Table 1. GME Alternatives Ability to Meet Project Objective A

GME Alternative	100-Year Flood Protection	Patrol & Maintenance Access	Inspection Access
1 – Atherton Cove Gate	No, top of flood protection is at elevation 10.0[(a)]	No, dual sheet pile wall section provides access at elevation 8.0, which is below the 100-yr flood elevation	No, alternative relies on existing levee that has encroachments limiting access to the landside
2 – Dual Vinyl Sheet Pile Wall	No, top of flood protection is at elevation 10.0[(a)] and provides no improvements east of Pershing Avenue on the north side and east of Buena Vista Avenue on the south side	No, dual sheet pile wall provides access at elevation 8.0, which is below the 100-yr flood elevation	No, alternative relies on existing levee that has encroachments limiting access to the landside
3 – Timber Bulkhead Wall	No, top of flood protection is at elevation 10.0[(a)] and provides no improvements east of Pershing Avenue	~~Yes~~No, 15 ft wide access road provided, but does not allow access to maintain existing levee	No, alternative relies on existing levee that has encroachments limiting access to the landside
4 – Single Vinyl Sheet Pile Wall	No, top of flood protection is at elevation ~~10~~8.0[(a)] and provides no improvements east of Pershing Avenue	No, single sheet pile wall provides access at elevation 8.0, which is below the 100-yr flood elevation	No, alternative relies on existing levee that has encroachments limiting access to the landside
(a) Alternative relies on elevation of existing FEMA de-accredited levee to provide necessary flood protection			

Objective B – Provide 200-Year Level of Performance

To provide the 200-year level of performance the following criteria must be met:

- Provide 200-year flood protection, which equals the 200-yr water surface elevation (9.5 ft) plus 3.0 ft of freeboard – therefore the minimum top of flood protection structure must be elevation 12.5 ft.

Table 2 compares the four alternatives to the criterion necessary to meet Project Objective B.

Table 2. GME Alternatives Ability to Meet Project Objective B

GME Alternative	200-Year Flood Protection
1 – Atherton Cove Gate	No, top of flood protection is at elevation 10.0[(a)]
2 – Dual Vinyl Sheet Pile Wall	No, top of flood protection is at elevation 10.0[(a)] and provides no improvements east of Pershing Avenue on the north side and east of Buena Vista Avenue on the south side
3 – Timber Bulkhead Wall	No, top of flood protection is at elevation 10.0[(a)] and provides no improvements east of Pershing Avenue
4 – Single Vinyl Sheet Pile Wall	No, top of flood protection is at elevation ~~10~~8.0[(a)] and provides no improvements east of Pershing Avenue
(a) Alternative relies on elevation of existing FEMA de-accredited levee to provide necessary flood protection	

Objective C – Compliance with Urban Levee Design Criteria

To achieve compliance with the ULDC the following criteria must be met:

- Provide 20 ft wide all-weather access road to inspect flood protection structure
- Provide 20 ft access on landside of flood protection structure for maintenance
- Provide 20 ft access on waterside of flood protection structure for maintenance

Table 3 compares the four alternatives to the criteria necessary to meet Project Objective C.

Table 3. GME Alternatives Ability to Meet Project Objective C

GME Alternative	20 ft Access Road	20 ft Landside Access	20 ft Waterside Access
1 – Atherton Cove Gate	No, < 20 ft access road along timber bulkhead and dual vinyl sheet pile improvements	No, alternative relies on elevation of existing FEMA de-accredited levee, which was de-accredited due to lack of landside access	Yes
2 – Dual Vinyl Sheet Pile Wall	No, < 20 ft access road along timber bulkhead, dual vinyl sheet pile and conventional waterside repair improvements	No, alternative relies on elevation of existing FEMA de-accredited levee, which was de-accredited due to lack of landside access	Yes
3 – Timber Bulkhead Wall	No, < 20 ft access road along timber bulkhead improvements	No, alternative relies on elevation of existing FEMA de-accredited levee, which was de-accredited due to lack of landside access	Yes
4 – Single Vinyl Sheet Pile Wall	Yes	No, alternative relies on elevation of existing FEMA de-accredited levee, which was de-accredited due to lack of landside access	Yes

Appendix B

Smith Canal Gate Hydrodynamic Modeling Alignment and Gate Evaluation Final Report Appendix

SMITH CANAL GATE

HYDRODYNAMIC MODELING

ALIGNMENT AND GATE WIDTH EVALUATION

FINAL REPORT

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SMITH CANAL GATE

HYDRODYNAMIC MODELING

ALIGNMENT AND GATE WIDTH EVALUATION

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LIST OF ACRONYMS

CDEC	California Data Exchange Center
CDWR	California Department of Water Resources
cfs	Cubic foot per second
DEM	Digital Elevation Model
DHI	Danish Hydraulic Institute
DSM2	Delta Simulation Model II
FEMA	Federal Emergency Management Agency
fps	Feet per second
KSN	Kjeldsen, Sinnock, Neudeck, Inc.
MHHW	Mean Higher High Water
MHW	Mean High Water
MLLW	Mean Lower Low Water
MLW	Mean Low Water
MTL	Mean Tide Level
NAVD88	North American Vertical Datum of 1988
NFIP	National Flood Insurance Program
NRMSE	Normalized Root Mean Square Error
PBI	Peterson Brustad, Inc.
RMSE	Root-Mean-Square Error
RRI	Rough and Ready Island
RRI Gage	Rough and Ready Island Gage
SDWSC	Stockton Deep Water Ship Channel
SGCC	Stockton Golf and Country Club
SJG Gage	San Joaquin River Gage
USGS	United States Geological Service
UTM	Universal Transverse Mercator
WSE	Water Surface Elevation

EXECUTIVE SUMMARY

Smith Canal is located in Stockton, CA off the Stockton Deep Water Ship Channel (SDWSC). Levees along Smith Canal and Atherton Cove serve to prevent back flooding from the San Joaquin Delta during periods of elevated runoff occurring at high tides. Some sections of the levee are encroached upon by existing property along the Canal and Atherton Cove. This precludes the levee sections from being accredited by Federal Emergency Management Agency (FEMA) according to today's standards, which require access to and along the levee for inspection and maintenance purposes.

In order to develop a solution capable of meeting the minimum management criteria of the National Flood Insurance Program (NFIP), FEMA has acknowledged that incorporation of a closure structure at the entrance to Smith Canal would enable the adjoining area to meet FEMA flood protection requirements.

Three closure structure alternative alignments are proposed. These alternatives are:

- Alignment 1: This alignment incorporates a floodwall between Dad's Point and the Stockton Golf and Country Club (SGCC), tying into the existing FEMA-accredited levee. The floodwall will consist of a sheet-pile wall featuring a 50-ft wide gate for access to Atherton Cove and Smith Canal. An additional levee raising would be located between Dad's Point Levee and Louis Park (Figure 1-5).

- Alignment 2: The improvements would consist primarily of bringing the existing levee and terrain up to the elevation required for flood protection. The levee improvements would start at the termination of the existing FEMA-accredited levee along the shore of the SGCC, and terminate at the shore of Smith Canal. A floodwall with a 50-ft wide gate would be incorporated across Smith Canal in order to provide flood protection of the areas surrounding Smith Canal (Figure 1-7).

- Alignment 3: This alternative incorporates a floodwall across the entrance to Atherton Cove between the western tip of Atherton Island and across to the SGCC, where the double sheet-pile floodwall would tie into the existing FEMA-accredited levee along the shore of the SGCC. A second double sheet-pile floodwall and gate would be incorporated across the entrance to Smith Canal. This solution requires the incorporation of two gate structures, one at the entrance to Atherton Cove, and another at the entrance to Smith Canal (Figure 1-8).

Four Water Quality Improvement Options for the Alignment Alternative 1 were also considered and analyzed. These four options are:

- Option 1: Culverts under Moreing Road to Atherton Island – propose to install three 4-ft diameter culverts with an invert elevation of -2 ft NAVD88 under Moreing Road.

- Option 2: Dredging Atherton Cove - propose to dredge the bed elevation in the Cove to an elevation of -4 ft NAVD88.

- Option 3: Combination of Configuration Options #1 and #2 - with both dredging of Atherton Cove and culverts under Moreing Road.

- Option 4: Culverts in Floodwall - Propose to install five 4-ft diameter culverts with an invert elevation of -4 ft NAVD88 within the floodwall.

The objective of the present work focuses on hydrodynamic evaluation of the three proposed closure structure alignments, sensitivity evaluation of gate widths, and effective assessment of the Water Quality Improvement Options. Analysis included evaluation of the tidal flow velocities at the proposed gate locations, flow patterns within Smith Canal and Atherton Cove, and potential impacts to residence time.

MIKE21-FM modeling suite was selected for this study. The hydrodynamic model (MIKE21-FM-HD) was successfully calibrated with stages and discharges measured at gages located in SDWSC and San Joaquin River. The transport model (MIKE21-FM-TR) was calibrated with a dye test conducted in Smith Canal in 2004. The calibrated models were then applied for alternative alignment analyses.

Overall, the proposed closure structures do not create any significant change to the stage in Smith Canal and Atherton Cove and discharge through the entrances to Smith Canal and Atherton Cove. However, the hydrodynamic model results indicate that introduction of the closure structure leads to localized changes in the flow field within the vicinity of the gate. For Alternative Alignment 1 with a 50-ft wide gate, peak spring tidal velocities through the gate reach approximately 2.4 ft per second (fps). However, the spring tide high velocity only occurs a few times a year and the duration of high tidal velocity is relatively short. The duration of the peak velocity exceeding 2.0 fps is less than 3% of the time and that exceeding 1.5 fps is about 10% of the time. For remaining alternatives, the peak tidal velocity reaches about 1.3 fps. Away from the gates, flow patterns within Smith Canal and Atherton Cove are largely unaffected by incorporation of the closure structures. Below is a summary of hydrodynamic modeling results for each alignment:

- For Alternative 1, on the flood tide, the gate redistributes the flow from the SDWSC and creates a jet flow toward the west corner of Atherton Island resulting in a counter-clockwise eddy in the entrance to Atherton Cove and a clockwise eddy in Smith Canal, which would slightly improve the circulation in Atherton Cove. The sensitivity analysis indicates a wider gate opening would typically result in lower flow velocities toward Atherton Cove.

- For Alignment 2, the sheet pile wall within Atherton Cove and gate structure within Smith Canal does not significantly change the hydrodynamics; however, it slightly reduces the water volume in Atherton Cove. Locally around the gate structure, there is an increase in the flow velocity on both ebb and flood tides, but this effect is largely decreased with distance into and out of Smith Canal.

- For Alignment 3, there is a significant change to the flow pattern due to the convergence of the two jets from the gate structures. On the ebb tide, this convergence creates an area of slightly increased flow velocity at the entrance to Smith Canal from the Deep Water Shipping Channel. Changes to the flow field on the flood tide are localized to the gate structures.

Gate width sensitivity analyses indicate a wider gate would reduce the peak tidal velocity through the gate and localized hydraulic impact in the vicinity of the gate; however, it has no significant benefit in terms of tidal circulation or residence time in the hydraulic system modeled.

With regards to siltation, model results show regional changes in peak tidal velocity around the gate structure and indicate a potential for areas of deposition and erosion. With the heightened flow velocities through the gate, there is a potential for mobilization of bottom sediments that will need to be addressed during final design. Siltation would also occur in areas with reduced velocity. No siltation or erosion is expected in the inner Atherton Cove or Smith Canal away from the structures for all alignments. Sedimentation potentials for each alternative alignment are summarized below:

- For Alignment 1, velocity increases at the immediate vicinity of the gate structure, west corner of Atherton Island, north bank of the entrance to Atherton Cove, and the Smith Canal side of the proposed southern floodwall. Siltation may occur on both sides of the northern floodwall away from the gate opening, and flood shoals may form in the entrance to the Smith Canal. Gate width sensitivity analyses indicate that the pattern of the flows with increased gate width remains largely unchanged. Rather, it is the changes to the flow intensity that decreases with increased gate width. Therefore, the sedimentation changes are expected to be similar, but less severe.

- For Alignment 2, erosion may occur in the immediate vicinity of the gate structure along the center of the channel. However, siltation may occur on both sides of the new floodwalls away from the gate opening.

- For Alignment 3, erosion may occur in the immediate vicinity of the gate structures along the center of the channel and the Canal side of the proposed southern floodwall. Siltation may occur on both sides of the new floodwalls away from the gate opening and flood shoal may form in the entrance of Smith Canal.

A literature review indicated the earliest available survey data was established in 1934. Since then, the canal has not been resurveyed and depths indicated on navigation charts to this date reflected the originally surveyed water depths. Bathymetric surveying provided by Kjeldsen, Sinnock, Neudeck, Inc. (KSN) for the current project development indicates that water depths in Smith Canal to the east of I-5 are substantially lower than in past times, whereas water depths in the portion of the canal west of I-5 have increased. Water depths in Atherton Cove have also decreased due to siltation. The historical average siltation rate is around 0.2 to 0.3 ft per year in the past 80 years. More development has occurred in the past 80 years, so it is expected that the future average siltation rate will be slightly reduced.

The model results indicate that residence time is largely unaffected by the introduction of the closure structure for any of the alternatives, as the gate opening is still sufficiently large enough to enable tidal flow to propagate into Smith Canal and Atherton Cove without causing tidal muting. Because of the narrow and elongated extent of Smith Canal, the model results clearly demonstrate that residence time varies significantly from the mouth of Smith Canal, through the canal, and into Yosemite Lake. Typical residence times near the mouth of Smith Canal are around one 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 is very short, less than 2 days in Atherton Cove, indicating good flushing and circulation in the area.

The modeling results of the Water Quality Improvement Options indicate these Options would not change the overall hydrodynamics, circulation efficiency, and sedimentation pattern. The localized impacts and/or benefits are:

- Installing culverts under Moreing Road would slightly reduce residence at the end of Atherton Cove.

- Dredging of Atherton Cove would slightly increase residence time at Atherton Cove as dredging increases the volume of the Cove, but the residence time at Atherton Cove is still very short, less than 2 days.

- Installing culverts in the floodwall would slightly reduce tidal velocity through the 50-ft gate, but would not change the overall circulation. This is consistent with results from the gate width sensitivity analyses.

1. INTRODUCTION

1.1 PROJECT SETTING

The Smith Canal Closure Structure project setting is in the Central California Delta. Figure 1-1 provides a map of the State of California indicating the project location at Stockton, CA within the Central Valley, comprised of the Sacramento Valley and the San Joaquin Valley extending north and south from Stockton.

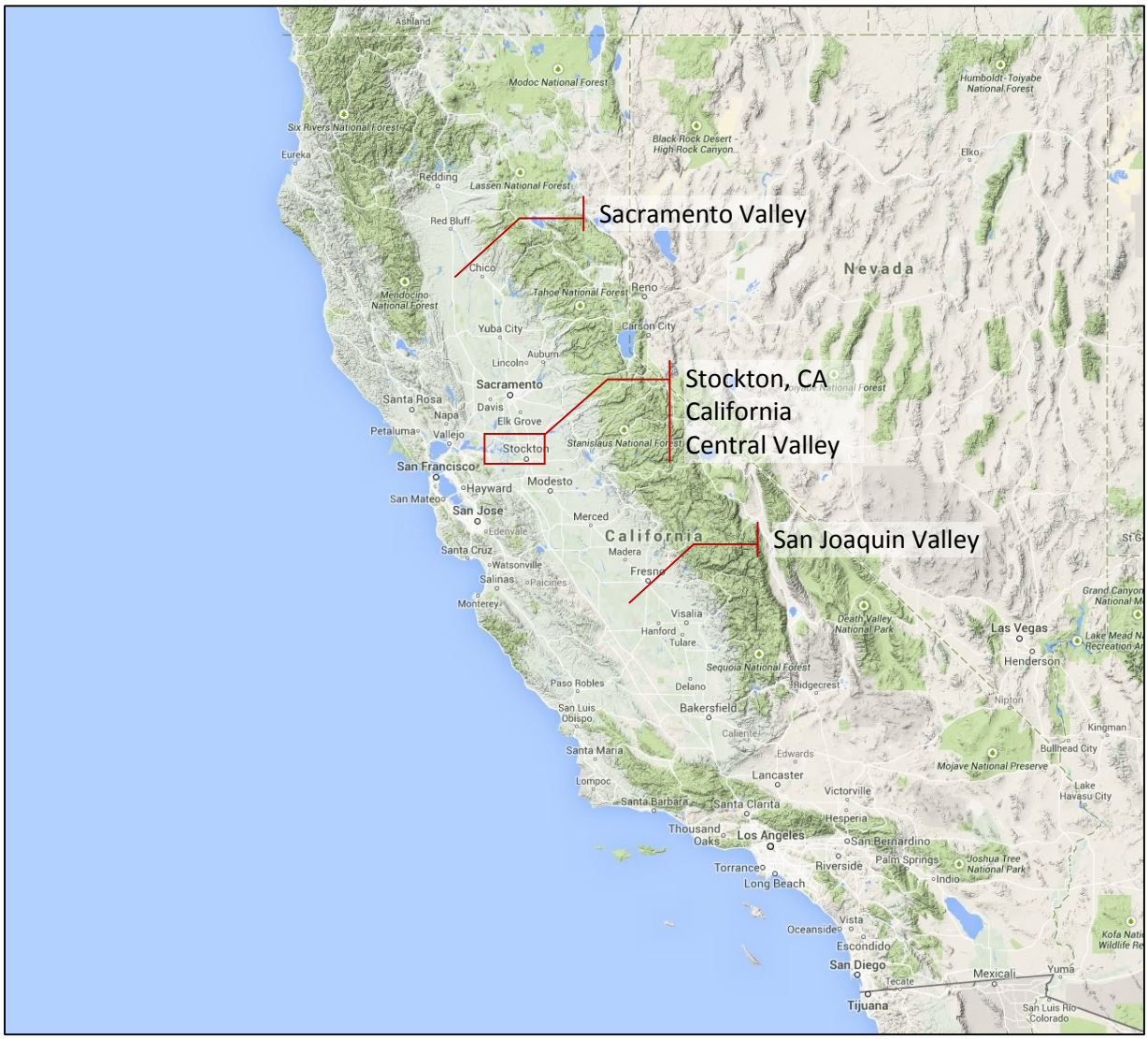


Figure 1-1: Project Location Map

The California Delta is an expansive inland river delta and estuary connected to the Pacific Ocean via the Suisun, San Pablo, and San Francisco Bays. The main sources of fresh water include the Sacramento River from the north, the San Joaquin River from the south, and the Calaveras and Mokelumne Rivers from the east. The total area of the Delta, including both land and water, is approximately 1,100 square miles. The population of the delta exceeds 500,000. The city of Stockton (Figure 1-2) is located on the San Joaquin River on the eastern edge of the Delta with a population of 297,984 (2012).

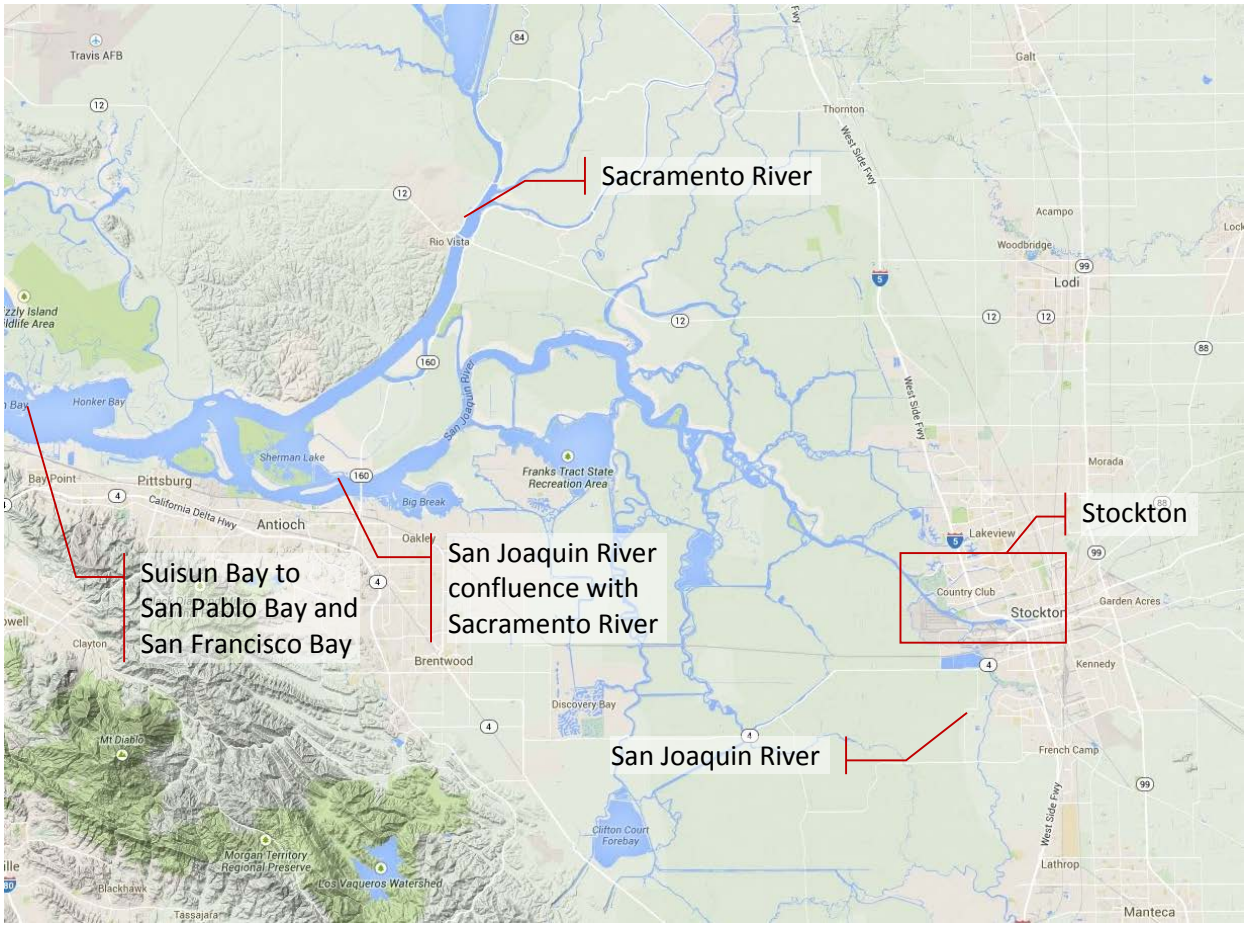


Figure 1-2: Location of Stockton in the California Central Delta

In a geologic setting, the Delta has existed for about 10,000 years. The Delta was formed due to rising sea level following the glaciations during the last Ice Age, which led to accumulation of sediment from the Sacramento and San Joaquin Rivers behind the narrow Carquinez Strait, the only outlet from the Central Valley. Sediment deposition, coupled with tidal action, results in the formation of expansive islands.

In its natural state, the California Delta was a large freshwater marsh, consisting of shallow channels and sloughs surrounding low islands of peat and tule. Since the mid-19th Century, most of the region has been reclaimed for agriculture. In the process of developing islands for agricultural use, levees were built along their shores for flood protection purposes. Today, the Delta consists of approximately 57 reclaimed islands and tracts surrounded by 1,100 miles of levees that border 700 miles of waterways.

Excavation of materials for levee construction, wind erosion and oxidation of the organic carbon of peat soils have led to widespread subsidence on the Central Delta islands so that much of the Delta region today sits below sea level.

Smith Canal is located in Stockton, CA off the Stockton Deep Water Ship Channel (SDWSC). Figure 1-3 shows the geographical location of the canal and surrounding areas with waterways annotated in red and land areas annotated in black.

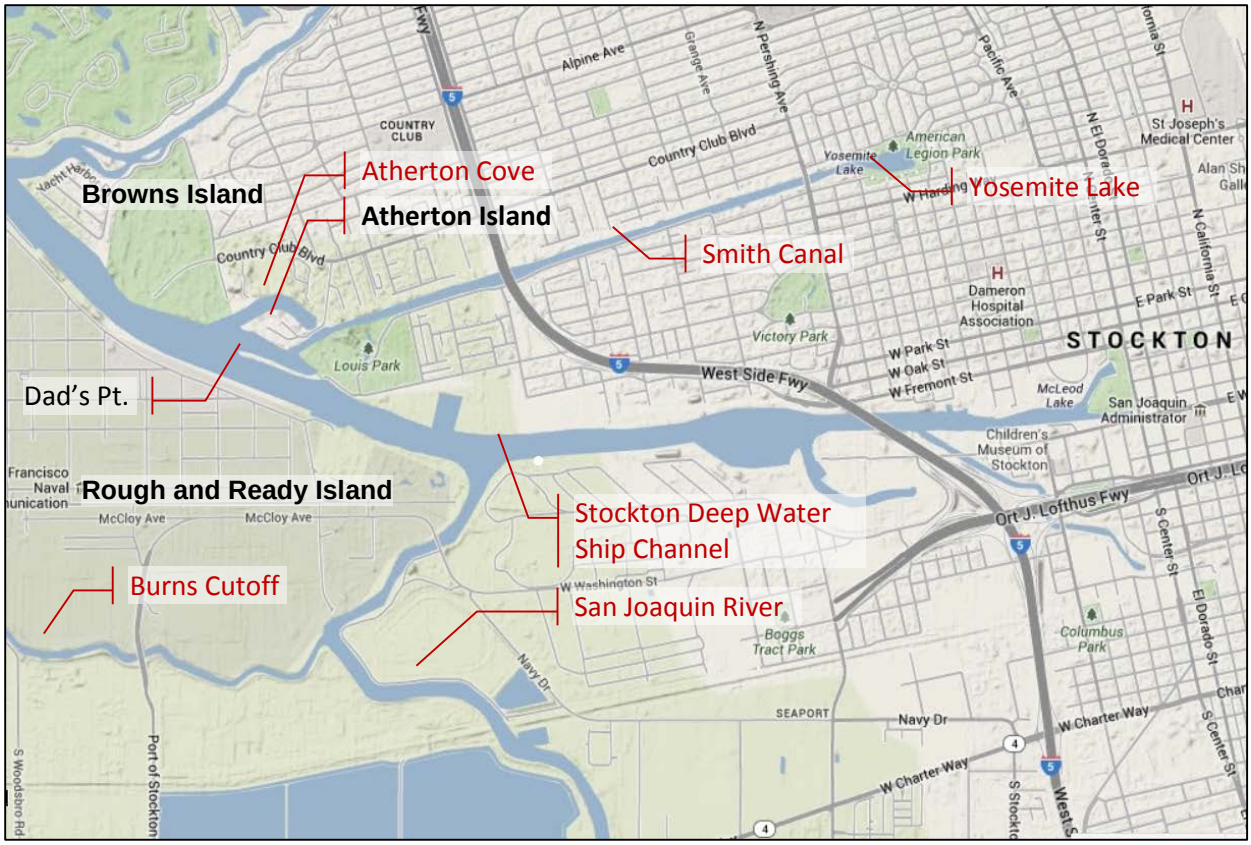


Figure 1-3: Location of Smith Canal Relative to Stockton Deep Water Ship Channel

Smith Canal is approximately 2.6 miles long and terminates at Yosemite Lake. Atherton Cove, Atherton Island, and Dad's Point Levee, adjacent to the SDWSC, form the entrance to Smith Canal.

Levees along Smith Canal and Atherton Cove serve to prevent back flooding from the San Joaquin Delta during periods of elevated runoff occurring at high tides. Some sections of the levee are encroached upon by existing property along the Canal and Atherton Cove. This precludes the levee sections from being accredited by Federal Emergency Management Agency (FEMA) by today's standards, which require access to and along the levee for inspection and maintenance purposes. Approximate flood depths are provided in Figure 1-4.

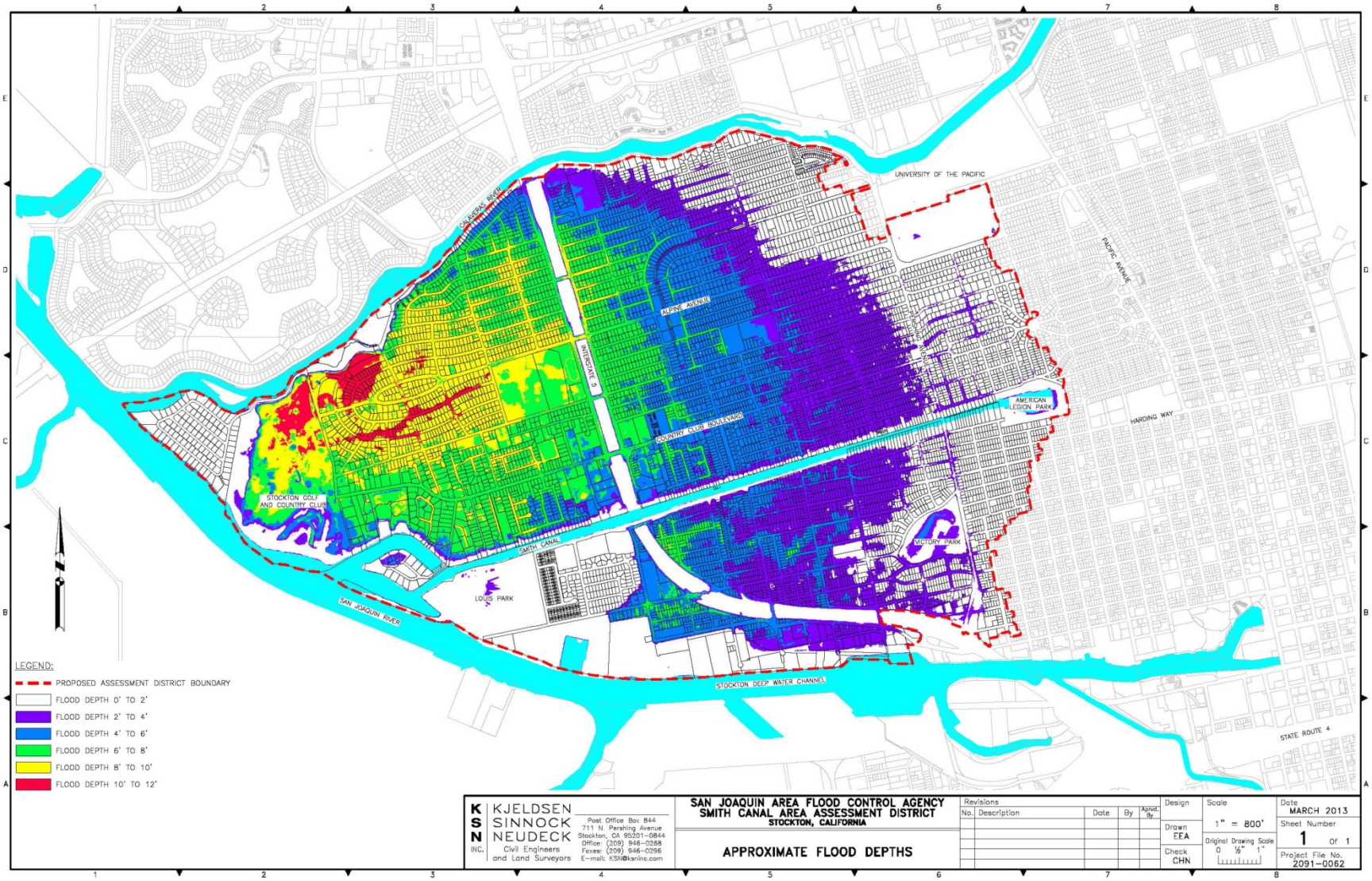


Figure 1-4: Approximate Flood Depths in Stockton Area (San Joaquin Area Flood Control Agency)

In order to develop a solution capable of meeting the minimum management criteria of the National Flood Insurance Program (NFIP), FEMA has acknowledged that incorporation of a closure structure at the entrance to Smith Canal would enable the adjoining area to meet current FEMA flood protection requirements.

1.2 OBJECTIVE

The objective of the present work focuses on hydrodynamic evaluation of three proposed closure structure alignments, sensitivity evaluation of gate width for Alignment 1, and evaluation of four Water Quality Improvement Options.

The scope of work includes the following items:

- Calibration of MIKE21 model to include residence times estimated for Smith Canal based on a dye-tracer test reported in *Jones & Stokes 2005*.
- Development of a hydrodynamic model in the computer code MIKE21 for each of the three proposed Alternative Alignments. These three closure wall and gate layouts are illustrated in Figure 1-5 through Figure 1-8. The numerical modeling includes evaluation of the three alternatives to determine flow velocities at the proposed gate locations, flow patterns, and potential impacts to residence time. The results from the revised alignments are compared and differences highlighted.
- Sedimentation evaluation to identify effects of the project on sedimentation within Smith Canal and Atherton Cove. Currently, water levels are too low in Atherton Cove at low tide for recreational boating, as reported by Atherton Cove homeowners. Historical sedimentation rates within Smith Canal are reviewed based on a comparison of past and present bathymetry. Potential sedimentation within Atherton Cove is estimated for the existing conditions and the proposed condition with the floodwall and gate in place (gate open). Results are compared to assess the impact of the project features (presence of floodwall and gate).
- Sensitivity analysis of Alternative Alignment 1 with respect to gate width, in order to assess the response of the hydrodynamic model to three gate widths: 100-ft and 200-ft openings are compared to the proposed 50-ft gate width.
- Assessment of the following four Water Quality Improvement Options:
    - Culverts under Moreing Road to Atherton Island;
    - Dredging Atherton Cove;
    - Combination of culverts under Moreing Road and dredging of Atherton Cove; and
    - Culverts in floodwall.

1.3 CLOSURE WALL ALIGNMENT ALTERNATIVES

The three proposed alternative closure wall alignments are presented in the following sections.

1.3.1 Alternative Alignment 1

Figure 1-5 shows Alignment 1. This alignment incorporates a floodwall between Dad's Point and the Stockton Golf and Country Club (SGCC) tying into the existing FEMA-accredited levee along

that shore. The floodwall will consist of a double sheet-pile wall featuring a 50-ft wide gate for access to and from Atherton Cove and Smith Canal. The gate control building is envisioned to be located at Dad's Point. A levee raising is proposed along the toe of Dad's Point Levee at Louis Park in order to meet the required elevation for flood protection in this area.

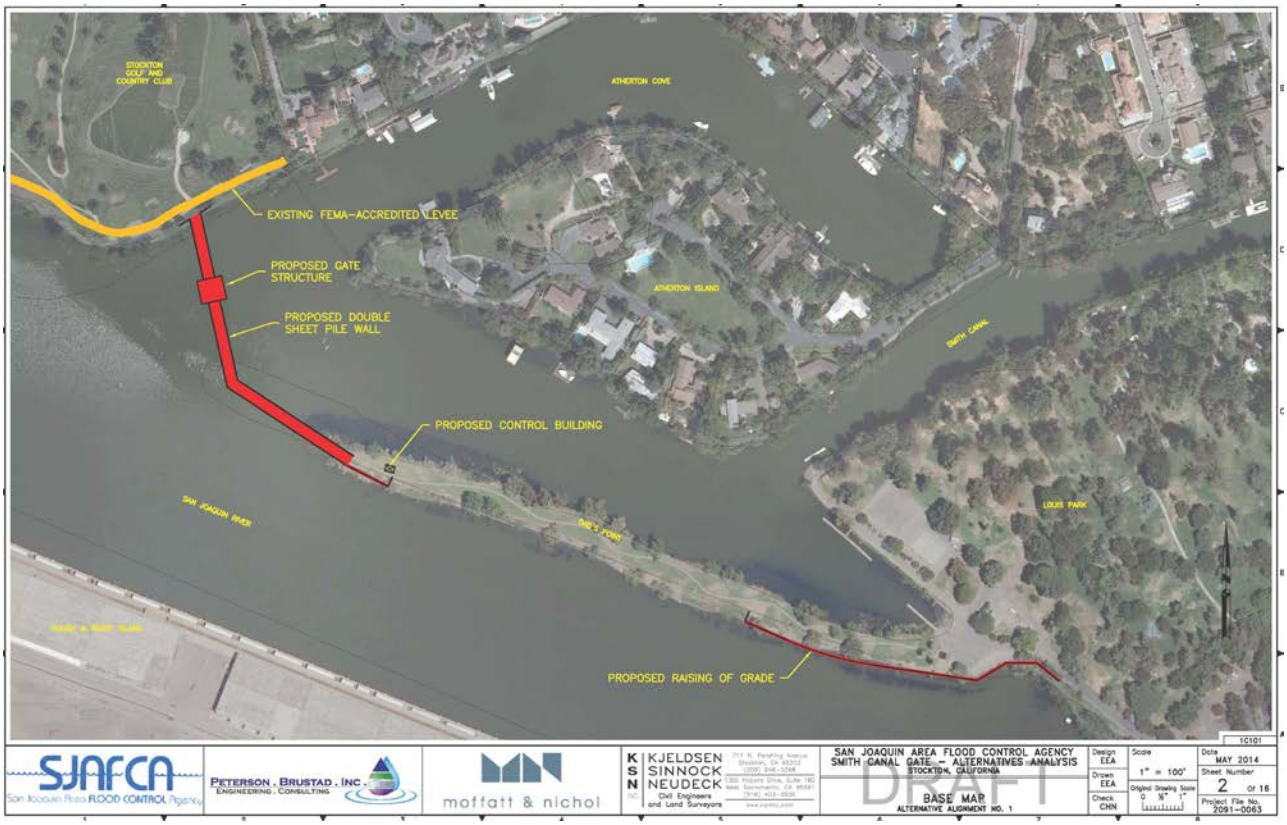


Figure 1-5: Alternative Alignment 1

The elevation of the gate opening is shown in Figure 1-6. The opening is 50-ft-wide with the sill located at elevation -6.0 ft NAVD88. The closure wall extends to elevation +14.9 ft NAVD88. The great diurnal tide range from Mean Lower Low Water (MLLW) to Mean Higher High Water (MHHW) is indicated in the figure by the two blue lines across the gate opening. The design water surface elevations (Peterson Brustad, Inc. [PBI] 2014a) on the San Joaquin River at Smith Canal are as follows:

- 100-yr WSE = +9.4 ft (NAVD88)
- 200-yr WSE = +9.5 ft (NAVD88)

The top of floodwall/gate elevation was determined as follows:

+ 9.5 ft (NAVD88) - 200-yr WSE
+ 3.0 ft for freeboard
+ 1.0 ft for hydraulic uncertainty
<u>+ 1.4 ft for sea level rise through 2050 (median projection)</u>
+14.9 ft (NAVD88) for top of wall/top of gate

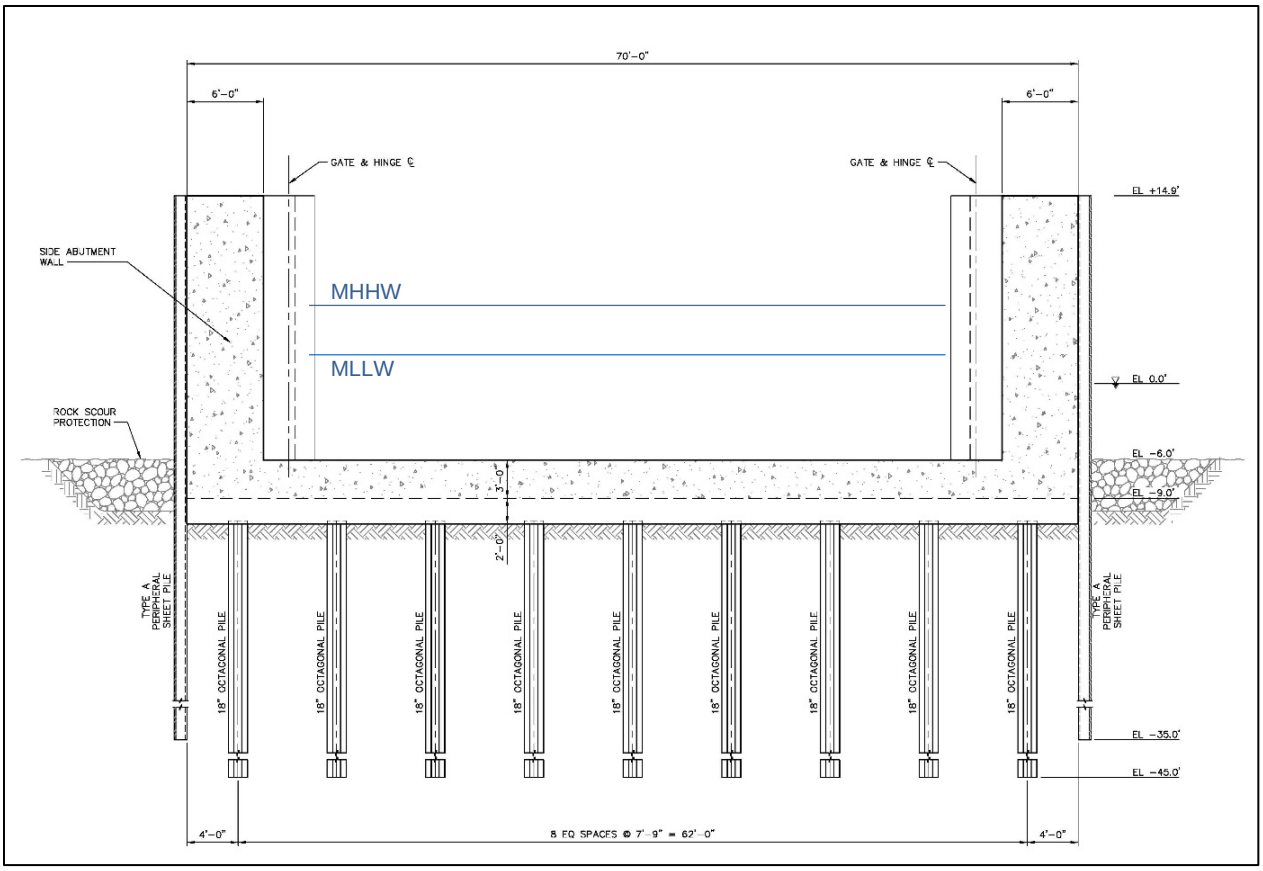


Figure 1-6: Gate Elevation Diagram

1.3.2 Alternative Alignment 2

Alternative Alignment 2 is shown in Figure 1-7. This alternative is based on a solution where the existing levee along the shore of Atherton Cove is improved to the level where it can meet the FEMA-required level of flood protection. The improvements would consist primarily of extending the existing levee and terrain to provide access for inspection required for FEMA accreditation. The levee improvements would start at the termination of the existing FEMA-accredited levee along the shore of the SGCC, and terminate at the shore of Smith Canal. Here, a floodwall with a 50-ft wide gate would be incorporated across Smith Canal in order to provide flood protection of the areas surrounding Smith Canal. The floodwall would consist of a double wall sheet-pile wall. The gate control building is proposed to be located a short distance within Louis Park, where an existing road/trail would provide access. The control building would need to be located at an elevation sufficient to provide an unobstructed view of Smith Canal upstream and downstream of the gate.

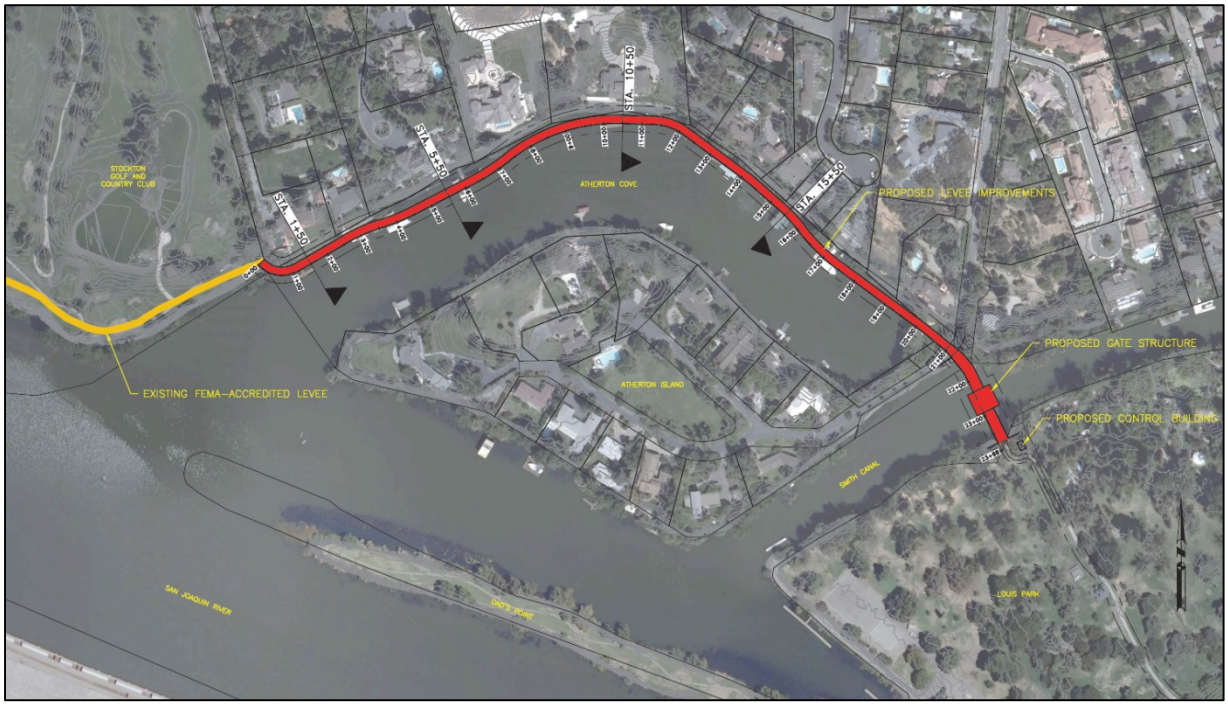


Figure 1-7: Alternative Alignment 2

1.3.3 Alternative Alignment 3

Alternative Alignment 3 is shown in Figure 1-8. This alternative is based on a solution where the amount of floodwall to be incorporated is minimized to the extent possible. This alternative incorporates a floodwall across the entrance to Atherton Cove between the western tip of Atherton Island and across to the SGCC, where the double sheet-pile floodwall would tie into the existing FEMA-accredited levee along the shore of the SGCC. A short distance southeast along the Shore of Atherton Island, a short section of double wall sheet-pile is proposed. This will provide access to the floodwall via the existing roads on Atherton Island. The gate control building would be located on the opposite shore at the corner of the SGCC, where a short road would be incorporated to enable access via the existing streets of the adjoining neighborhood. The control building would be located to provide an unobstructed view of Atherton Cove and the SDWSC in order to monitor vessel traffic on approach to and departure from the gate.

A second double sheet-pile floodwall and gate would be incorporated across the entrance to Smith Canal. Roads would be incorporated to enable access from Atherton Island and via Louis Park. The gate control building is proposed to be located at the western tip of Louis Park, at an elevation sufficient to provide an unobstructed view of Smith Canal upstream of the gate and along Dad's Point Levee in order to monitor vessels on approach to and departure from the gate.

While this solution minimizes the amount of floodwall (new structures) to be incorporated, it requires the incorporation of two gate structures, one at the entrance to Atherton Cove and another at the entrance to Smith Canal.

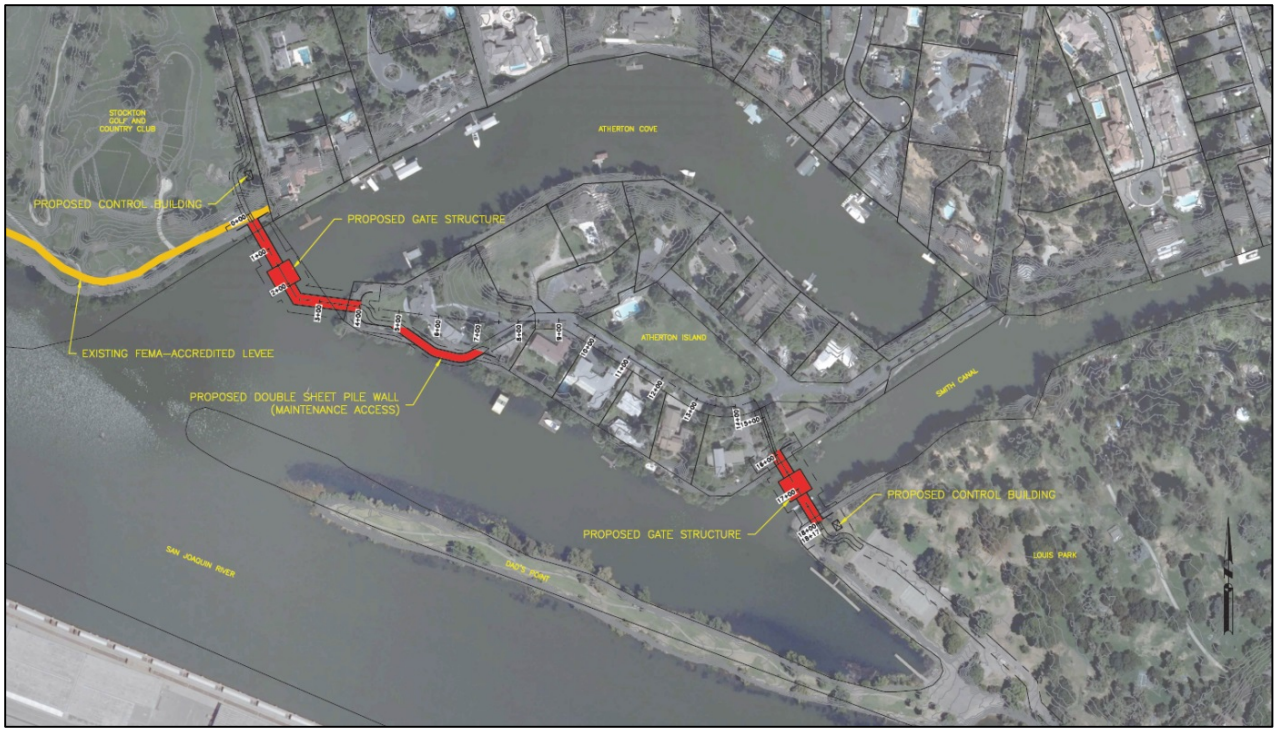


Figure 1-8: Alternative Alignment 3

1.4 WATER LEVELS AND TIDAL DATUMS

The river stage at Smith Canal is affected by ocean tides propagating into San Francisco Bay and up the San Joaquin River into the Delta. Tides in the Delta are mixed semidiurnal, having two high tides and two low tides of differing magnitude each (lunar day) tidal cycle. Table 1-1 summarizes the California Data Exchange (CDEC) stream gage stations within the region, (California Department of Water Resources [CDWR] 2014c). The locations of these two gages are illustrated in Figure 1-9. The nearest CDEC stream gage to Smith Canal is Rough and Ready Island (RRI), which is on the San Joaquin River approximately 3/4 of a mile north of the mouth of Smith Canal.

Table 1-1: Stream Gage Locations

Station ID	Station Name	Operator	Latitude	Longitude	Data Collection
RRI	ROUGH AND READY ISLAND	Cal DWR/DES	37.9630°N	121.3650°W	SATELLITE
SJG	SAN JOAQUIN RIVER AT GARWOOD BRIDGE	USGS	37.9350°N	121.3290°W	DATA XCHG-USGS



Figure 1-9: Locations of CDEC Stream Gages in Proximity to Smith Canal

Figure 1-10 shows the historical water level at RRI Gage. In March 2011, the river stage reached 8.2 ft NAVD88, which was a case of elevated river stage occurring during the wet year of 2011. It's interesting to note that the river stage reached an elevation of 8.0 ft NAVD88 in January 2008, nearly as high as the March 2011 peak, although this event was not specifically related to major runoff, but was more of an effect due to a series of higher tides.

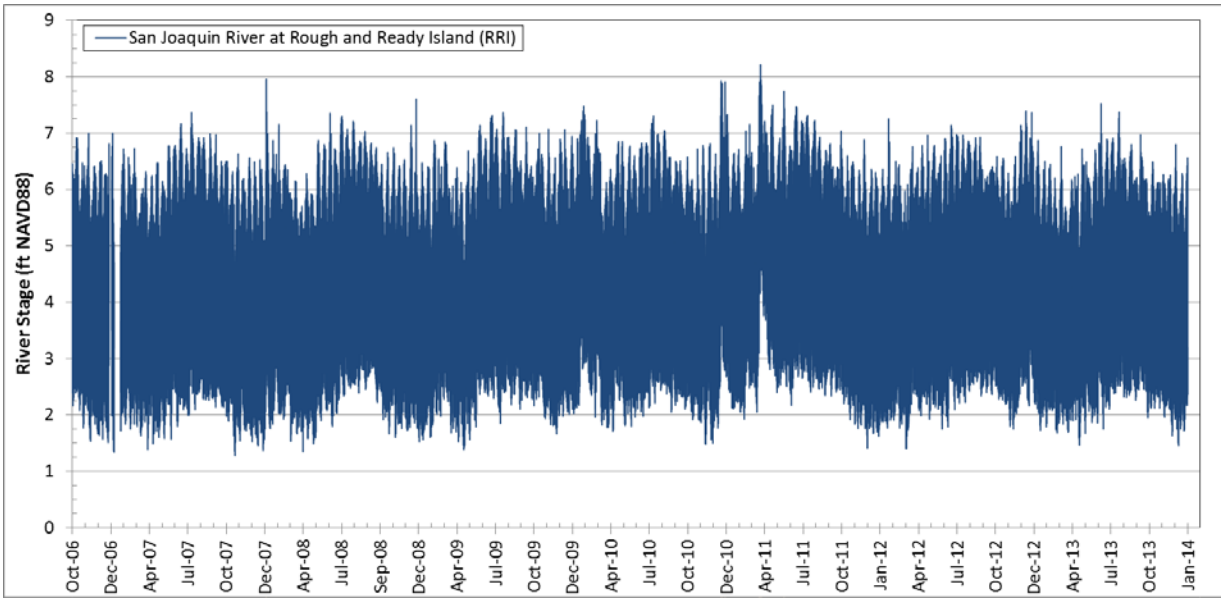


Figure 1-10: Historical River Stage of San Joaquin River at RRI Gage

Tide-range statistics for RRI Gage are summarized in Table 1-2. These statistics are based on gage data from the period of 10/1/2006 – 1/1/2014. Data before October 2006 was not used in the analysis since DWR transitioned to reporting all tide data collected in the Delta to the NAVD88 vertical datum on October 1, 2006.

Table 1-2: Tide elevations at CDEC gage RRI

Datum	Elevation (feet, NAVD88)
Highest Observed Water Level (3/23/2011)*	+8.21
Mean Higher High Water (MHHW)	+6.11
Mean High Water (MHW)	+5.64
Mean Tide Level (MTL)	+4.25
Mean Low Water (MLW)	+2.87
Mean Lower Low Water (MLLW)	+2.37
Lowest Observed Water Level (10/22/2007)*	+1.28
North American Vertical Datum of 1988 (NAVD88)	0.00

An example of the typical tidal variation (10/1/08 to 11/30/08) is shown in Figure 1-11 with the Table 1-2 tidal datums overlain. Note that MHHW is an average of the higher high tides and, therefore, does not reflect the peak (highest) tide levels; similarly MLLW is an average of the lower low tides and does not indicate the lowest tide levels.

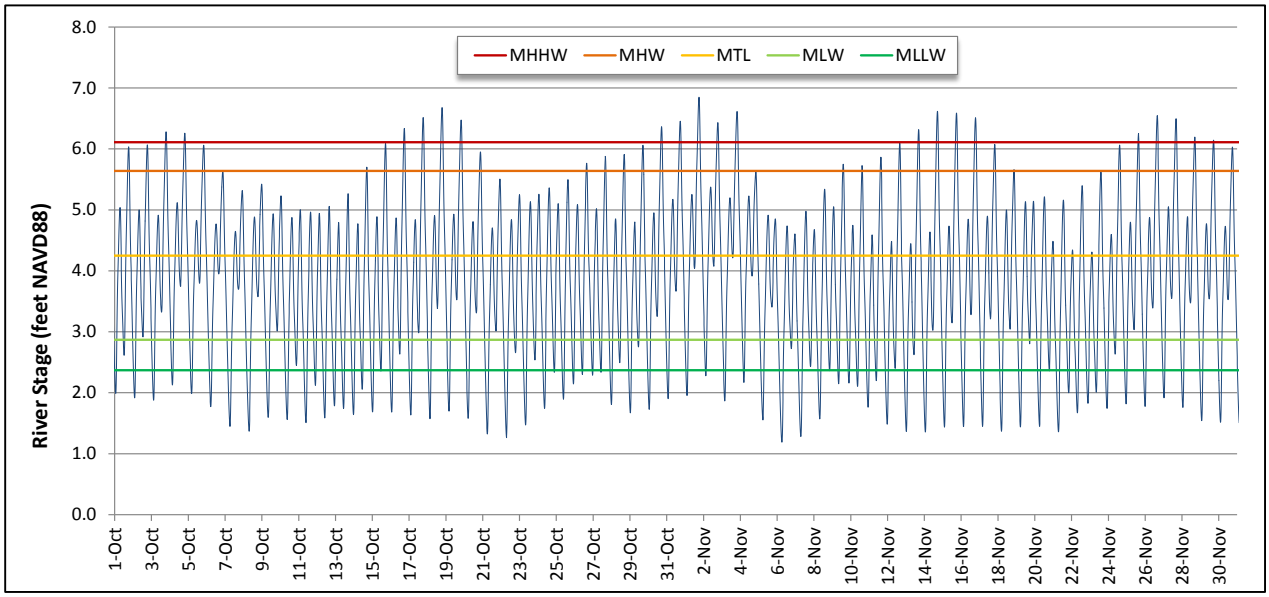


Figure 1-11: Example of Tidal Variations

1.5 RIVER FLOWS

Flow data obtained for numerical modeling purposes spans the time horizon from July 2005 through March 2012. This time frame was selected because tidal variations are known to be referenced accurately to NAVD88 datum, and the period contains wet, dry, and typical years of outflow. Figure 1-12 shows discharge data at RRI gage in San Joaquin River and the Calaveras River over the above time frame. It can be seen that typical outflow from the Calaveras is within ±1,200 cubic foot per second (cfs) and the average outflow is around 200 cfs. The typical outflow from the San Joaquin River is much larger having a typical discharge within approximately ±8,000 cfs. The negative discharges reflect daily flood tide conditions where water pushes up the San Joaquin and Calaveras. The higher positive discharges indicate periods of elevated outflow from the rivers, typically seen during months of November through April due to increased precipitation and snowmelt runoff from the mountains. Two pronounced cases of elevated discharges occurred from 12/2005 to 06/2006 and from 01/2011 to 09/2011 that are characteristics of wet years with above-normal precipitation and snow melt.

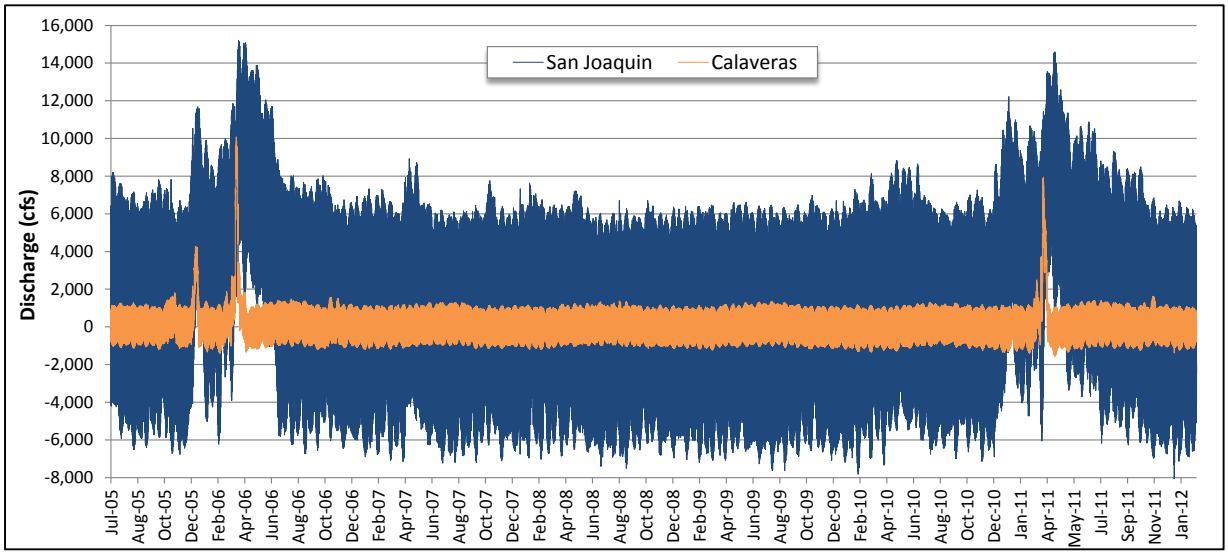


Figure 1-12: Comparison of Discharge from San Joaquin and Calaveras Rivers

2. MODEL SELECTION AND DESCRIPTION

The commercially available MIKE21 Flow Model Flexible Mesh (FM) modeling suite, developed by the Danish Hydraulic Institute (DHI) has been adopted to study tidally-driven water exchange within Smith Canal. MIKE21-FM is a modeling system based on a flexible mesh approach for applications within oceanographic, coastal, and estuarine environments. The model can use a wide range of forcing terms including water level variations, discharge, bottom friction, wind shear stresses, Coriolis force, barometric pressure gradients, and wave radiation stresses, among others. The following model components were used:

- Two-dimensional, depth-averaged Hydrodynamics (MIKE21-FM-HD) component to model current and tidal hydraulics throughout Smith Canal, using an unstructured mesh. The model output includes water levels and depth-averaged flow velocities, among other parameters, which can be extracted at any location of interest and/or summarized over the model domain. The results can be directly used to assess potential hydraulic impact.

- Two-dimensional, depth-averaged Transport Model (MIKE21-FM-TR) is linked to the MIKE21-FM-HD model and was used to perform advection/dispersion modeling and to evaluate dye tracer mixing and circulation efficiency.

MIKE21-FM-HD and MIKE21-FM-TR models provide details of how water is exchanged between Smith Canal and the SDWSC, where the flow is a combination of oceanic tide and runoff from the San Joaquin River. Tidal exchange plays an important role in water exchange and residence time, and flow patterns will have an effect on siltation and may also impact navigation. The focus of the present study is to replicate existing conditions and subsequently determine how incorporation of a closure structure with a gate will affect tidal exchange and flow patterns within Smith Canal and Atherton Cove.

3. MODELING APPROACH

Tidal exchange and flow patterns within Smith Canal and impacts to water quality and siltation associated with incorporation of a closure structure have been determined using the MIKE 21-FM models. The modeling approach and procedure for this study were:

1. Numerical model setup of the existing hydraulic system for model calibration and validation to determine numerical parameters and for establishing a baseline condition for assessing the potential impacts of proposed project alternatives.

2. Model calibration and validation of the MIKE21-FM-HD model for determining numerical model parameters such as roughness coefficients and eddy viscosity. The MIKE21-FM-HD model was first calibrated by matching model-predicted tidal elevations and flow discharges with those measured within the model domain at Rough and Ready Island (RRI) Gage and San Joaquin River (SJG Gage) for a period from November 19-24, 2008, then validated for a separate two-week period from January 1-15, 2009.

3. Model calibration of the MIKE21-FM-TR model for determining numerical modeling parameter of dispersion coefficient. The MIKE21-FM-TR model was calibrated against a dye tracer test (Litton 2004) performed in the Smith Canal during a rainfall event in February 2004.

4. Creating new models to incorporate the proposed flood control structures into the numerical model. Five different models (modeling scenarios) created include three alternatives and two gates, with variations of Alternative 1.

5. Performing hydrodynamic model runs of each of the five modeling scenarios for a 2-month period from June through July 2007, which is selected to represent large spring-neap tidal cycles for the velocity and sedimentation potential analysis. As the MIKE21-FM-TR model is driven by the MIKE21-FM-HD model and the residence time in Smith Canal is very long, a 2-month period was run for both HD and TR models. The results of the HD modeling runs include dry weather peak flood and ebb velocity to assess potential impacts, flow discharge, and tidal elevations.

6. Performing residence time analyses for each of the five modeling scenarios. The modeling results are residence time in Atherton Cove and Smith Canal.

7. Performing hydrodynamic model runs of each of the four Water Quality Improvement Options. As the MIKE21-FM-TR model is driven by the MIKE21-FM-HD. The results of the HD modeling runs include dry weather peak flood and ebb velocity to assess potential impacts, flow discharge, and tidal elevations.

8. Performing residence time analyses for each of the four Water Quality Improvement Options to assess effectiveness of these options. The modeling results are residence time in Atherton Cove and Smith Canal.

Numerical model runs performed are listed in

Table 3-1 for the hydrodynamic model and Table 3-2 for the transport model.

Table 3-1: Summary of Hydrodynamic Model Runs

Run No.	Alternative	Gate Width	Time Period	Purpose
1	Existing Condition	n/a	Nov 19-24, 2008	HD model calibration
2	Existing Condition	n/a	Jan 1-15, 2009	HD model validation
3	Existing Condition	n/a	Feb 2-14, 2004	TR model calibration
4	Existing Condition	n/a	June - July 2007	Alternative comparison
5	Alternative 1	50-ft	June - July 2007	Alternative comparison
6	Alternative 2	50-ft	June - July 2007	Alternative comparison
7	Alternative 3	50-ft	June - July 2007	Alternative comparison
8	Alternative 1	100-ft	June - July 2007	Gate width sensitivity
9	Alternative 1	200-ft	June - July 2007	Gate width sensitivity
10	Alternative 1, WQ Option1	50-ft	June 2007	WQ improvement
11	Alternative 1, WQ Option2	50-ft	June 2007	WQ improvement
12	Alternative 1, WQ Option3	50-ft	June 2007	WQ improvement
13	Alternative 1, WQ Option4	50-ft	June 2007	WQ improvement

Note: n/a = not applicable; WQ = Water quality

Table 3-2: Summary of Transport Model Runs

Run No.	Alternative	Gate Width	Time Period	Purpose
1	Existing Condition	n/a	Feb 2-14, 2004	TR model calibration
2	Existing Condition	n/a	June - July 2007	Alternative comparison
3	Alternative 1	50-ft	June - July 2007	Alternative comparison
4	Alternative 2	50-ft	June - July 2007	Alternative comparison
5	Alternative 3	50-ft	June - July 2007	Alternative comparison
6	Alternative 1	100-ft	June - July 2007	Gate width sensitivity
7	Alternative 1	200-ft	June - July 2007	Gate width sensitivity
8	Alternative 1, WQ Option1	50-ft	June 2007	WQ improvement
9	Alternative 1, WQ Option2	50-ft	June 2007	WQ improvement
10	Alternative 1, WQ Option3	50-ft	June 2007	WQ improvement
11	Alternative 1, WQ Option4	50-ft	June 2007	WQ improvement

Note: n/a = not applicable; WQ = Water quality

4. NUMERICAL MODEL SETUP

This section describes the MIKE21-FM numerical model setup including model domain, bathymetry used, resulting model mesh, as well as numerical models calibration and validation.

4.1 MODEL SETUP

4.1.1 Model Domain

The model domain includes Smith Canal, Atherton Cove, Burns Cutoff, 3 miles of the Calaveras River, SDWSC, and the surrounding parts of the City of Stockton. The hydrodynamic portion of the model is outlined in Figure 4-1, which captures Smith Canal, the adjacent levees, and the adjoining waterfront portions along the SDWSC. This model domain was carefully determined by considering the following factors:

- data availability (shown in Table 4-1; data gaps are not included) such as discharge and/or stage at model open boundaries;
- open boundaries that are set far enough away without incurring boundary effects to the study area (Smith Canal); and
- capturing the tidal prism of the modeling area to ensure accuracy of tidal currents in the study area.

Table 4-1: Hydraulic Data Inventory

Station	Longitude	Latitude	Ageny	Parameter	Interval	Data Type	Record Period
Rough and Ready Island (RRI)	121.365000°W	37.963000°N	CA Data Exchange Center (CDEC)	Stage	15 min	Measured	08/28/2000 - 10/07/2014
				Discharge	15 min	Measured	08/28/2000 - 10/07/2014
			CA Water Library (CAWL)	Stage	15 min	Measured	10/01/1982 - 10/01/2012
				Discharge	15 min	Measured	10/01/2006 - 09/05/2013
San Joaquin River At Garwood Bridge (SJG)	121.329000°W	37.935000°N	CDEC	Stage	15 min	Measured	08/27/2003 - 12/05/2013
				Discharge	15 min	Measured	08/27/2003 - 12/05/2013
			US Geological Service (USGS)	Stage	15 min	Measured	10/01/2007 - 10/18/2014
Stockton Fire Station	121.319000°W	37.999000°N	CDEC	Percipitation	Daily Average	Measured	10/01/1996 - 11/04/2014
Legion Park Pump Station	121.306939°W	37.967907°N	City of Stockton	Pump Outflow	Varies	Measured	02/01/2004 - 02/15/2004
RCAL009	Varies	Varies	State of California	Discharge	Daily Average	Synthetic	10/01/1989 - 05/19/2013

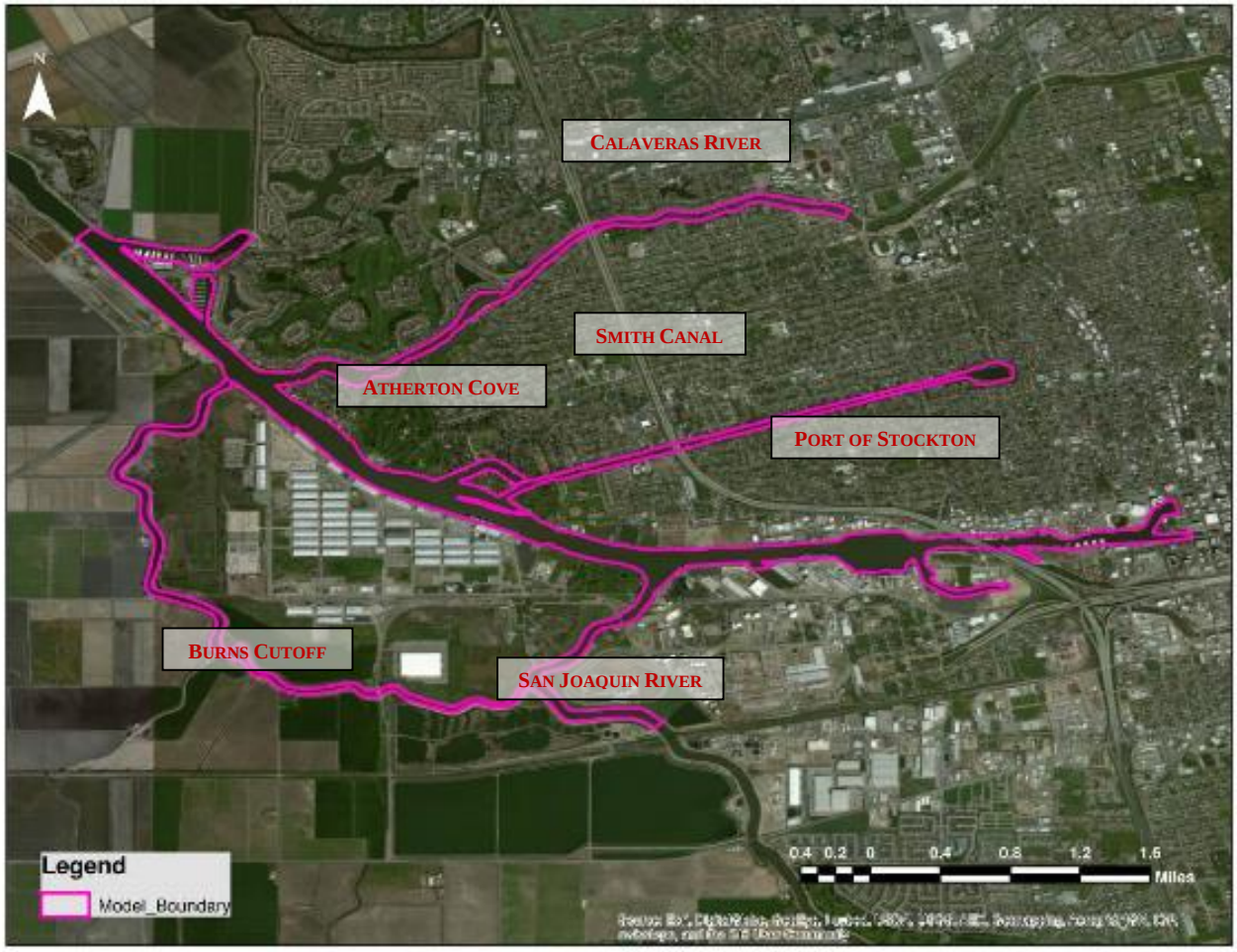


Figure 4-1: MIKE21-FM Model Domain

4.1.2 Model Bathymetry

The overall modeling domain was defined through model bathymetry. For the flexible mesh models used here, the model bathymetry was set up through a flexible mesh with triangular and rectangular elements, with a bed elevation defined at each element of the mesh. The digital elevation model (DEM) adopted for the hydraulic analysis has been developed based on 2014 bathymetric survey performed by Kjeldsen, Sinnock, Neudeck, Inc. (KSN) for this project, and topographic LiDAR data acquired by CDWR during flights of the Sacramento-San Joaquin Delta conducted in 2007. Bathymetric data for the San Joaquin River and SDWSC adopted for the digital elevation model reflects survey data acquired for CDWR's Delta Simulation Model II (DSM2) (CDWR 2014a). Figure 4-2 illustrates the CDWR's LiDAR topographic data in the vicinity of the Smith Canal.

The model bathymetry used NAVD88, and the horizontal coordinate system used in the model were Universal Transverse Mercator (UTM) Zone 10. All units in the MIKE21-FM models are in metric.



Figure 4-2: CDWR LiDAR Topographic Data in the Vicinity of the Smith Canal

4.1.3 Model Mesh

The model domain is represented with a number of elements, and the elements can be either triangular or rectangular. Figure 4-3 shows the model mesh for the entire model domain, which consists of 38,531 elements. Because the modeling area is quite large, individual elements are not visible. Figure 4-4 through Figure 4-7 show mesh details at Atherton Cove and Smith Canal as well as connections of SDWSC and Burns Cutoff.

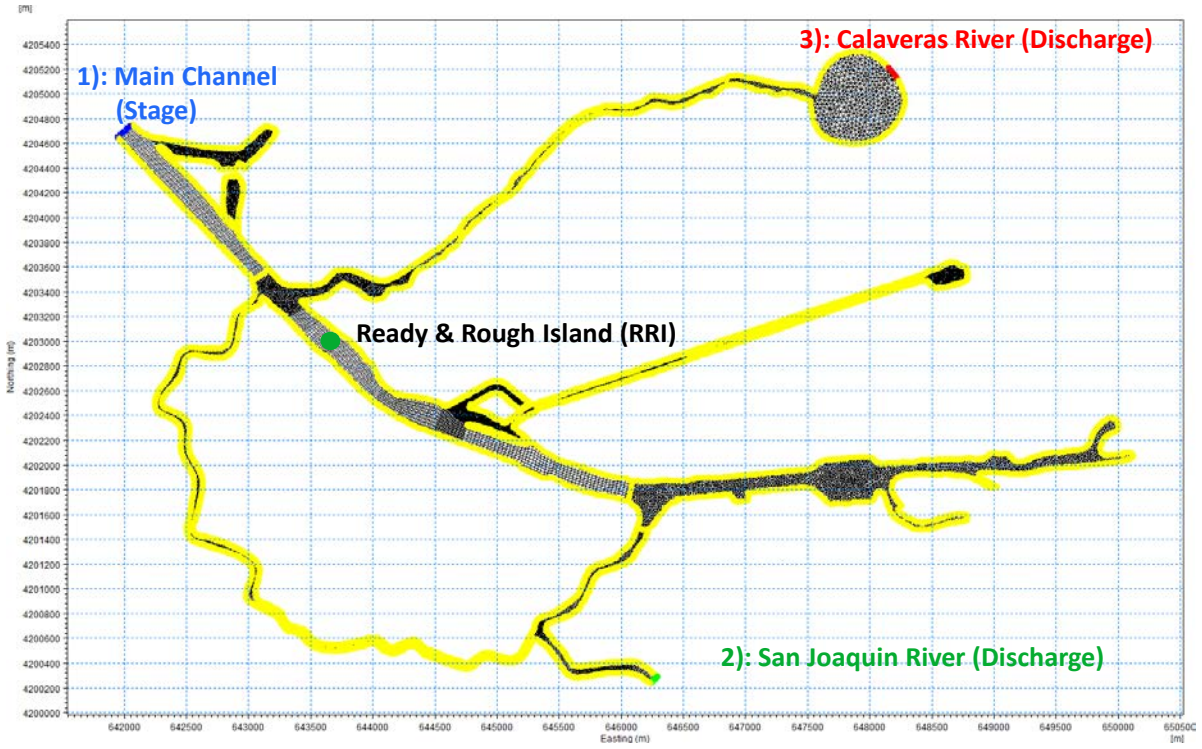


Figure 4-3: MIKE21-FM Mesh and Boundaries

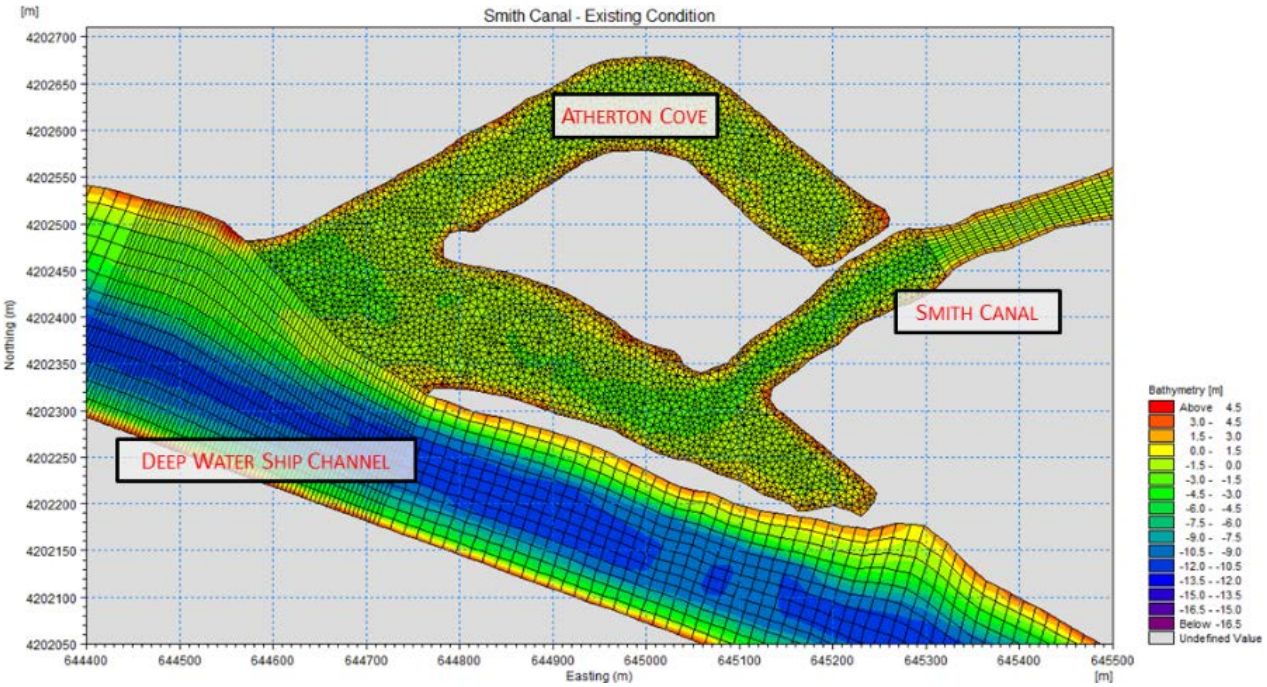


Figure 4-4: MIKE21-FM Mesh of Atherton Cove and Smith Canal

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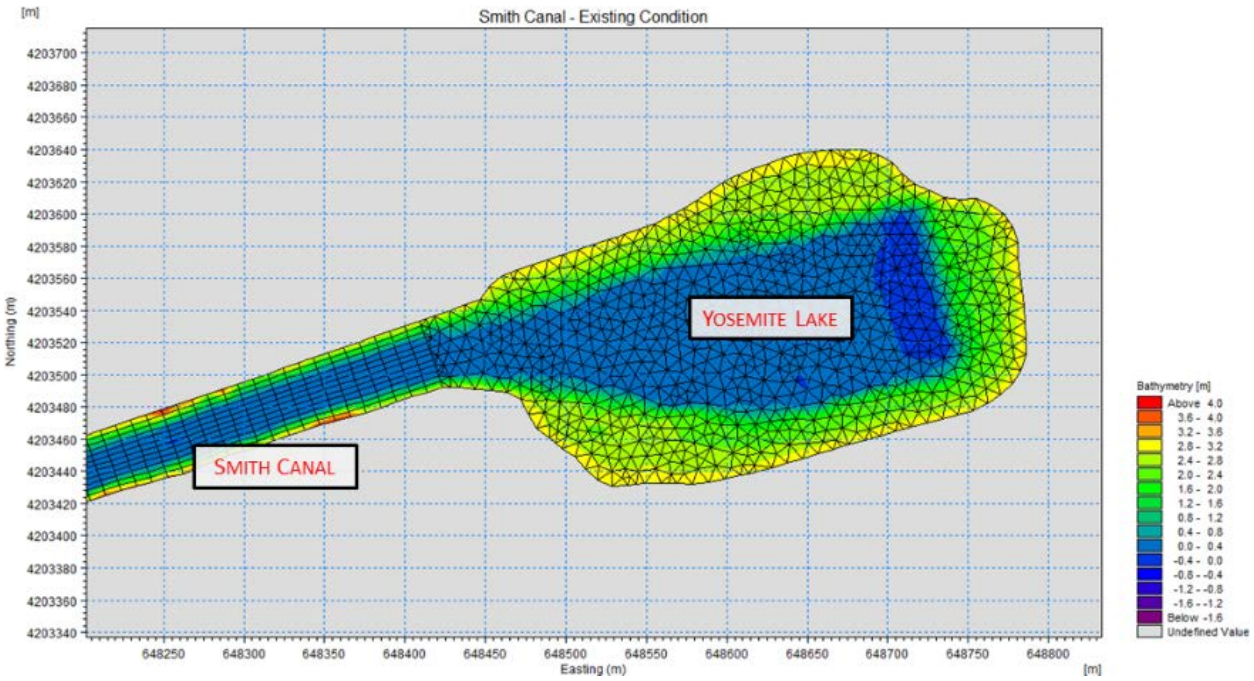


Figure 4-5: MIKE21-FM Mesh of Yosemite Lake

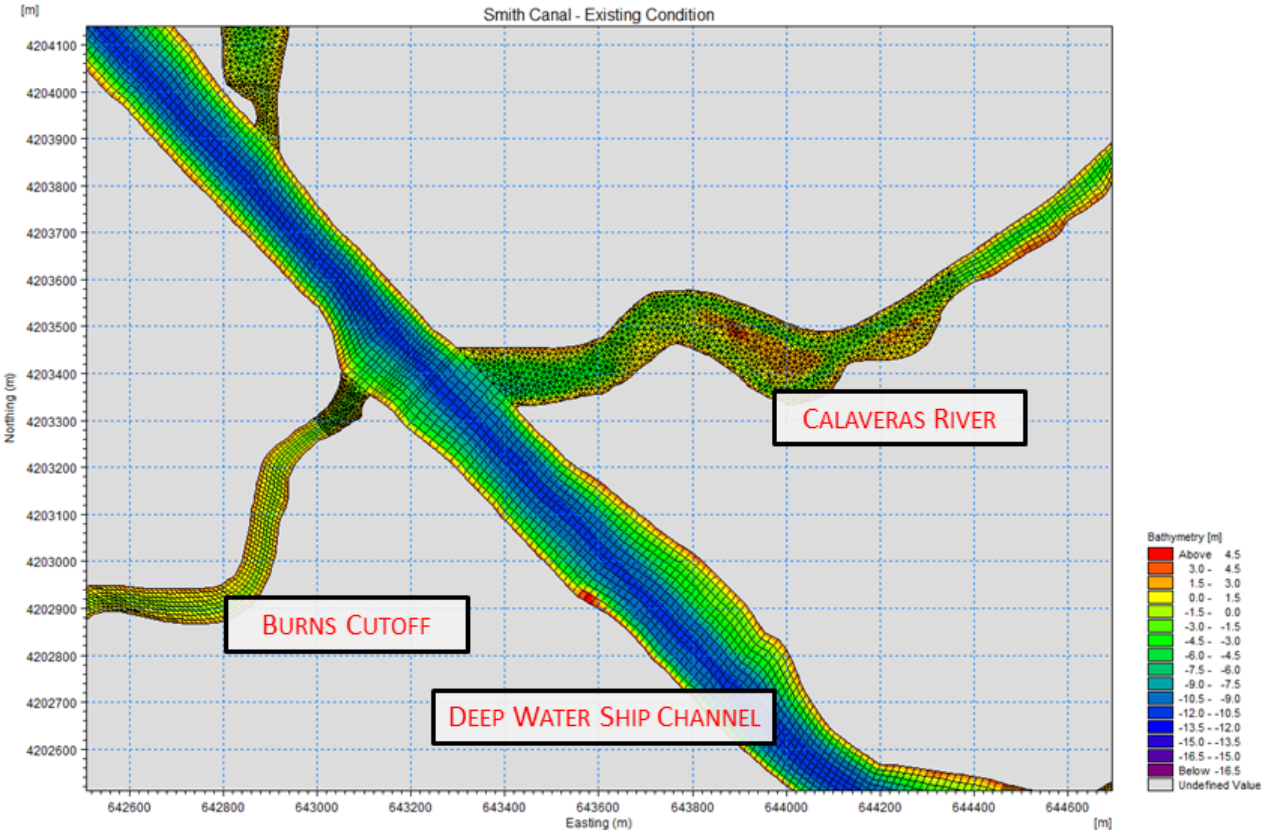


Figure 4-6: MIKE21-FM Mesh at Intersection of Burns Cutoff and Deep Water Ship Channel

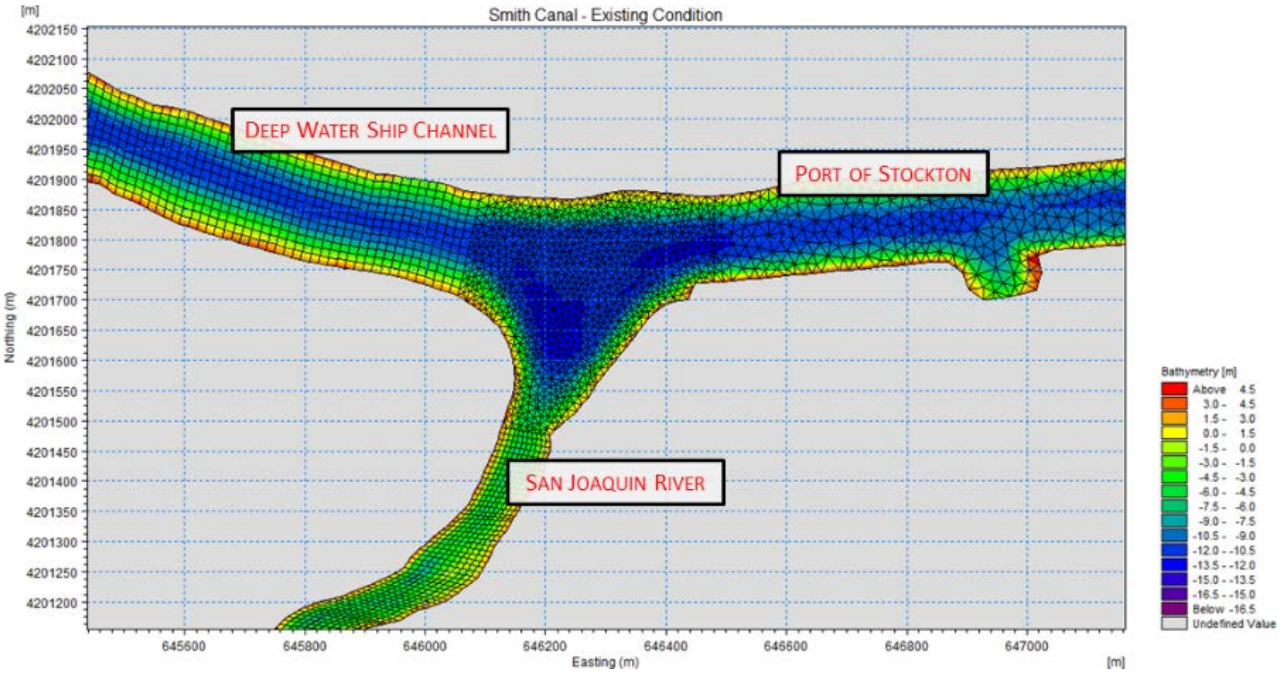


Figure 4-7: MIKE21-FM Mesh at Connection of San Joaquin River and Deep Water Ship Channel

4.2 HYDRODYNAMIC MODEL

4.2.1 Boundary Conditions

As shown in Figure 4-3, there are three open model boundaries:

1. Main Channel (SDWSC) – Measured instantaneous stage data (15-min interval) from RRI Gage, downloaded from California Water Library (CDWR 2014b), and California Data Exchange Center (CDWR 2014c), were applied at this open boundary. The RRI Gage is located between Nodes 20 and 21 in the DSM2 model shown in Figure 4-9. A comparison of DSM2 data provided by the State of California (Bay-Delta Office 2014) between Node 22 and average of Nodes 20 and 21 indicates that the stage difference between the two locations is less than 0.04 ft or 1%, as shown in the lower plot of Figure 4-8. Essentially, there is a negligible tidal muting between these two locations. Note that the DSM2 data are simulation results of the DMS2 model of the current condition.

2. San Joaquin River – Measured instantaneous discharges (15-min interval) at the Garwood Bridge of the San Joaquin River (SJG Gage) were applied at this open boundary. The data was downloaded from the United States Geological Service (USGS) web site (USGS 2014) and the California Data Exchange Center (CDWR 2014c) website.

3. Calaveras River - Daily average synthetic discharges provided by the State of California (Bay-Delta Office 2014) were applied in this boundary. In order to capture the full tidal prism of the Calaveras River without extending the model domain too far, a reservoir was added to capture the missing tidal prism of the river beyond the model boundary. The size of reservoir is determined based on estimation of the missing tidal prism.

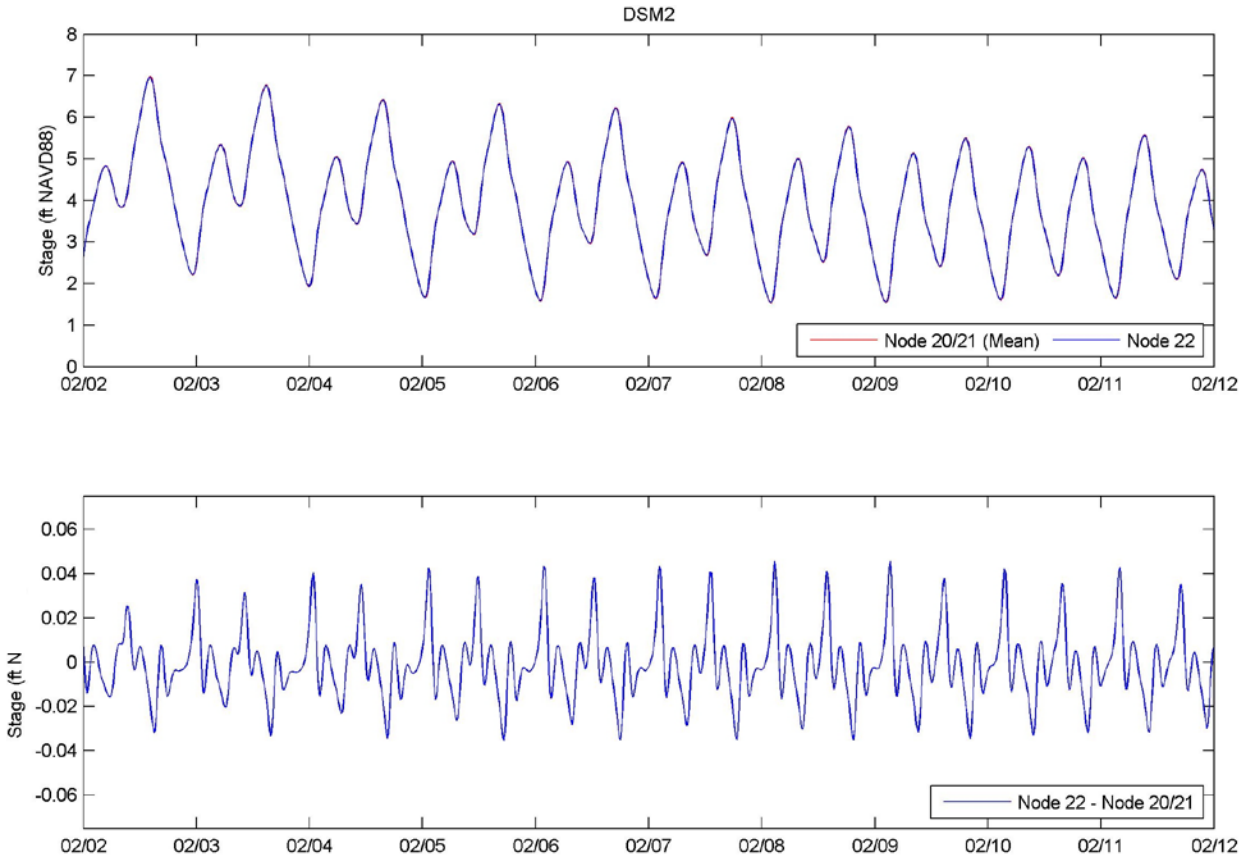


Figure 4-8: Stage Comparison between Node 22 and Average of Nodes 20 and 21

4.2.2 Model Calibration and Validation

The MIKE21-FM-HD was calibrated for a period in November 2008 and validated for a period in January 2009. These two time periods were selected because:

- measured stage and discharge data at both RRI and SJG Gages were available to compare model output against; and
- this is a dry period so discharge data from pump stations within the Smith Canal are not required.

The RRI and SJG Gage locations are shown in Figure 4-9 as green dots. Ideally, the model should have been calibrated to stage and flow data collected within Atherton Cove or Smith Canal, but there are no data available.

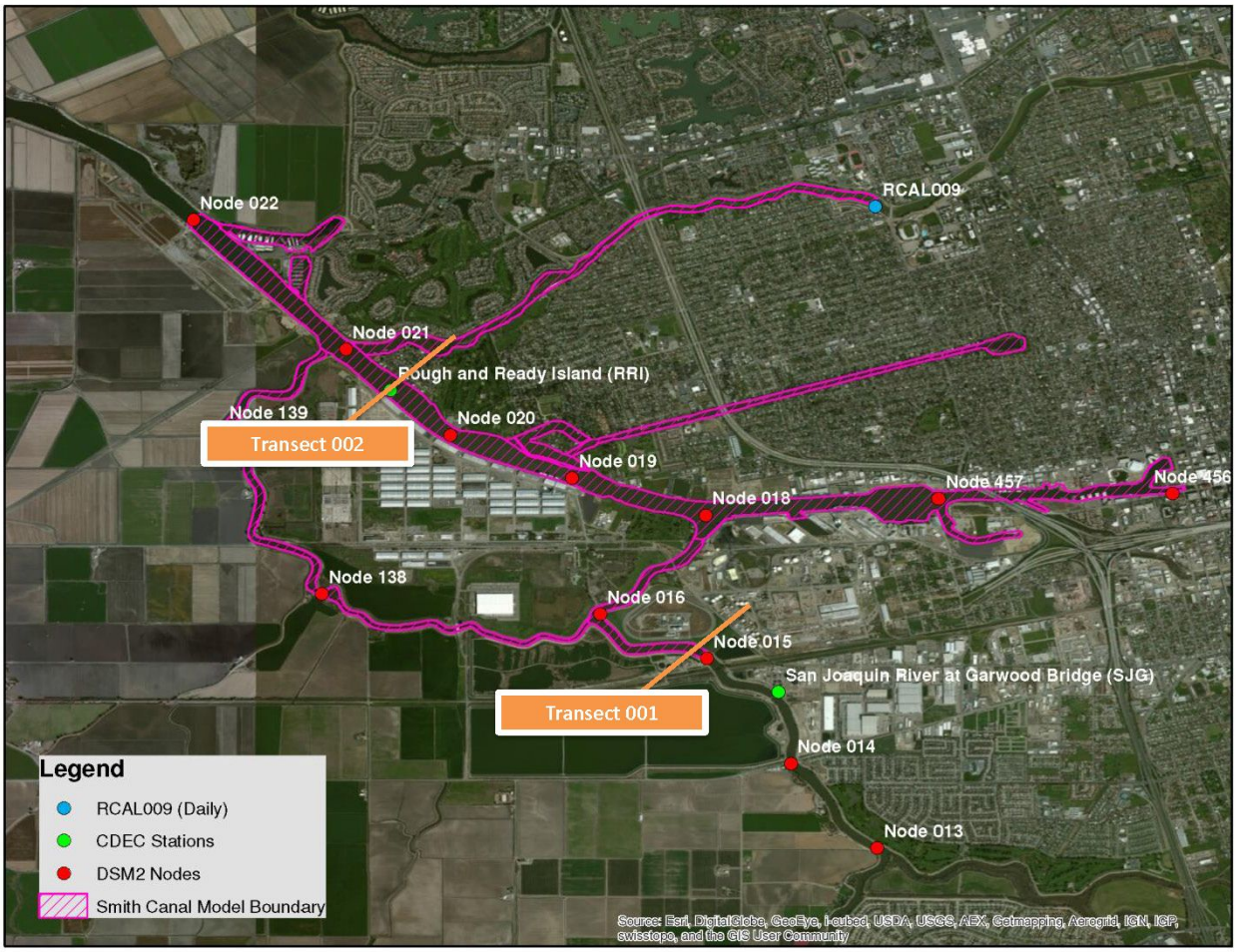


Figure 4-9: Gage and Transect Locations of HD Calibration

The calibration coefficients of the MIKE21-FM-HD model are roughness coefficient and eddy viscosity. The roughness coefficients are the primary calibration parameter in the calibration process, which involves matching the model stage and discharge with those measured at Transect 002 (RRI Gage), which is shown in Figure 4-9. Comparison of the model-predicted stage and discharge at Transect 001 (see Figure 4-9) with those measured at the SJG Gage was also made. Although the SJG Gage is not exactly located at Transect 001, there are no tributaries between the modeled location and gauge location, so the stage and discharge should be very similar between these two locations.

The horizontal eddy viscosity was based on the Smagorinsky formulation, with a constant Smagorinsky coefficient value selected for the entire model domain. The recommended value for the Smagorinsky coefficient ranges from 0.25 to 1.0, while the default value in the MIKE21-FM-HD model is 0.28. A sensitivity analysis (M&N 2014) was performed for the eddy viscosity coefficient and the results indicate the default value of 0.28 used in the last phase of modeling for the project is reasonable and is continuously being used in this phase of study.

Manning's *M* bed roughness was used as the primary parameter for refining the hydrodynamic model during the hydrodynamic calibration process. A constant roughness value was used for the entire modeling domain. The best match was found with a Manning's *M* value of 60, which corresponds to a Manning's *n* value of 0.0167. Model calibration results are presented in the following section.

4.2.2.1 Model Calibration Results

A period from November 19-24, 2008 was selected as the hydrodynamic model calibration period. Comparison of model-predicted stage and discharge data were compared with those measured at RRI Gage during the model calibration process while varying the roughness coefficient. The best match was achieved with a roughness coefficient *M* value of 60. Figure 4-10 and Figure 4-11 show the model calibration results at Transect 001, and Figure 4-12 and Figure 4-13 show the model calibration results at Transect 002. These figures only show three days of data, as the first two days of the model warm-up period are excluded. The DSM2 results are also included in the time series plot for information.

Two statistical parameters: the R^2 correlation coefficient and normalized root mean square error (NRMSE) were used to assess model calibration and validation. The R^2 correlation is a measure of the linear correlation (dependence) between two variables. These two variables are measured data and model-predicted data in this case. The R^2 correlation provides a measure of how well measured data are replicated by the model. A value of 1 means two variables are perfectly replicated. A value of 0 implies there is no correlation between the two variables. The root-mean-square error (RMSE) is also a frequently used measure of the differences between values predicted by a model and the values actually observed. Basically, the RMSE represents the sample standard deviation of the differences between predicted values and observed values. RMSE is a good measure of accuracy. The NRMSE is the RMSE divided by the range of observed values of a variable being predicted. The value is often expressed as a percentage and called the relative error, where lower values indicate less residual variance.

The result comparison indicates:

- At Transect 001 (SJG Gage), the model-predicted discharge matches the measurement better than that at Transection 002. Good discharge comparison was expected since the imposed discharge boundary condition is close to this transect. The stage comparison indicates that the model-predicted stage is slightly (1 to 2 in.) higher than those measured. The excellent agreement of the model with measured stage at this transect is very encouraging since stage was not an imposed boundary condition at the SJR boundary, and the imposed stage boundary condition of the Main Channel is at the other end of the model domain.

- At Transect 002 (RRI Gage), the model-predicted tidal phase and range (stage) match almost perfectly with those measured. Good model agreement with measured stage at this transect is expected since a stage boundary condition was imposed near this transect. The model-predicted discharge matches the measurement quite well with the exception of the brief peak flow spikes and wiggles shown in the measured data. The cause for this could be fourfold: (1) accuracy of the measurements; (2) limitations in the modeling of wetting/drying processes; (3) bathymetry accuracy of the SDWSC; and (4) measurement accuracy of the discharge as discharges measured at RRI Gage have always had accuracy issues, based on personal conversation with Russ Brown at ICF International. Metadata for measured stage and discharge is not available on websites of the CDWR and USGS. Regardless of the causes of the peak flow wiggles and the inability of the model to capture them, the computed flows agree well with measured. The primary differences in the discharge scatter plot of Figure 4-13 are due to the peak flow oscillations in the measured data. These differences should not affect the accuracy of project alternative assessment and comparison as all alternatives, including the existing conditions, will be affected equally.

Comparison with the DSM2 results indicates the MIKE21-FM-HD model performed better than the DSM2 model in both tidal range and phase. The DSM2 model tends to over-predict the tidal

range more so than MIKE21-FM-HD model and has a phase shift issue. The statistic error analyses, shown in Table 4-2, indicate that the correlation coefficient is nearly 1 for both stage and discharge; hence, the model-predicted variables well replicated the measurements. The NRMSE are also very low. The relatively large NRMSE value of discharge at Transect 002 may be the result of spikes in the discharge measurements.

Table 4-2: Statistic Error Analyses for Hydrodynamic Model Calibration

Variable	Transect	R^2 correlation coefficient	NRMSE (%)
Stage	001	0.996	1.8
	002	0.999	0.7
Discharge	001	0.9996	6.8
	002	0.923	30.7

Overall, the MIKE21-FM-HD model predicted very satisfactory results for the purpose of project alternative evaluation and potential impact analyses.

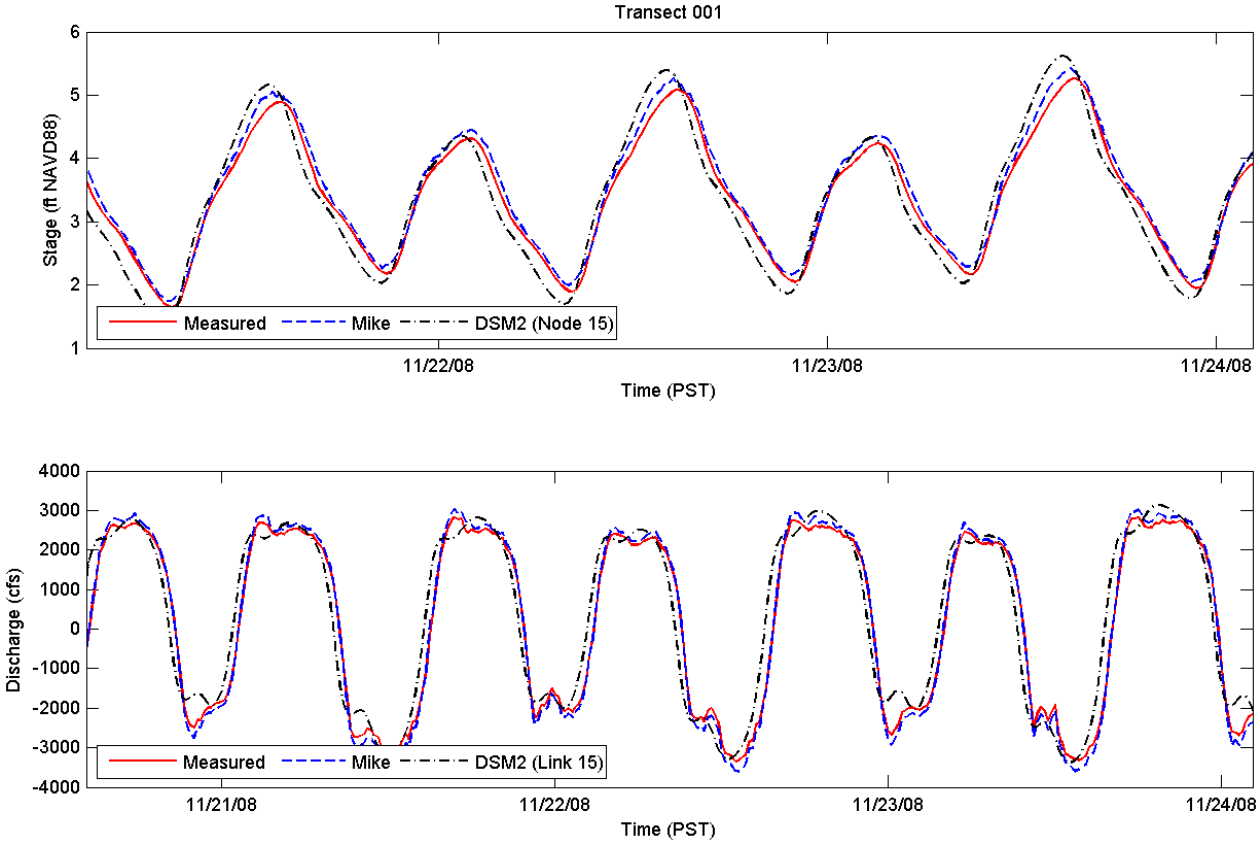


Figure 4-10: HD Model Calibration Time Series Plots at Transect 001 (SJG Gage)

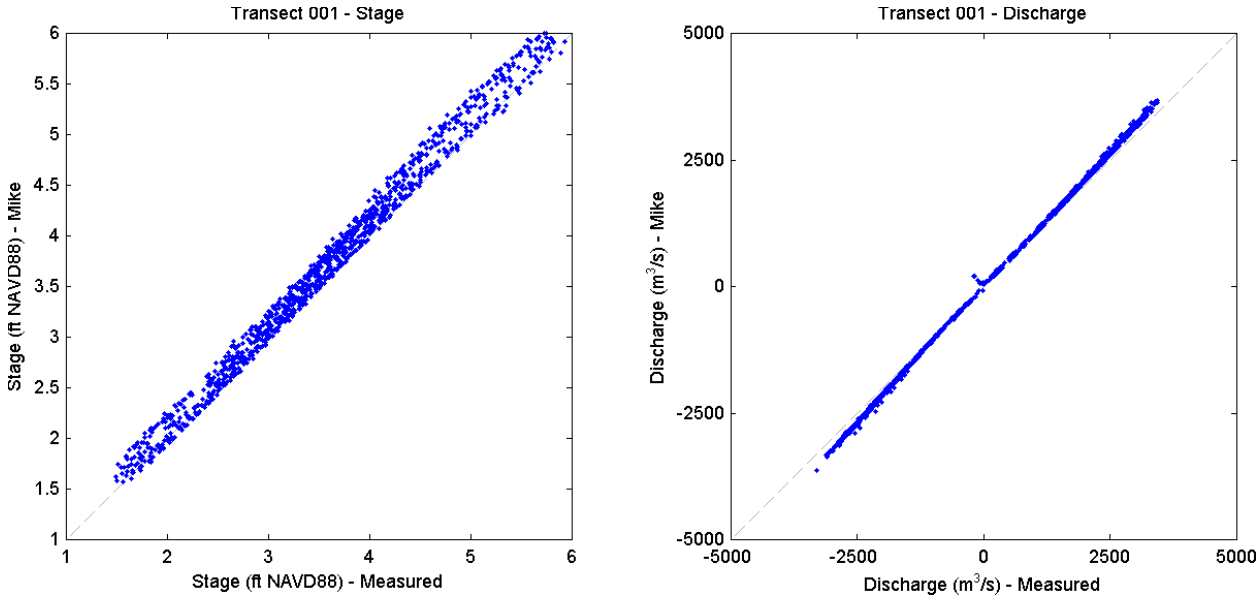


Figure 4-11: HD Model Calibration Scatter Plots at Transect 001 (SJG Gage)

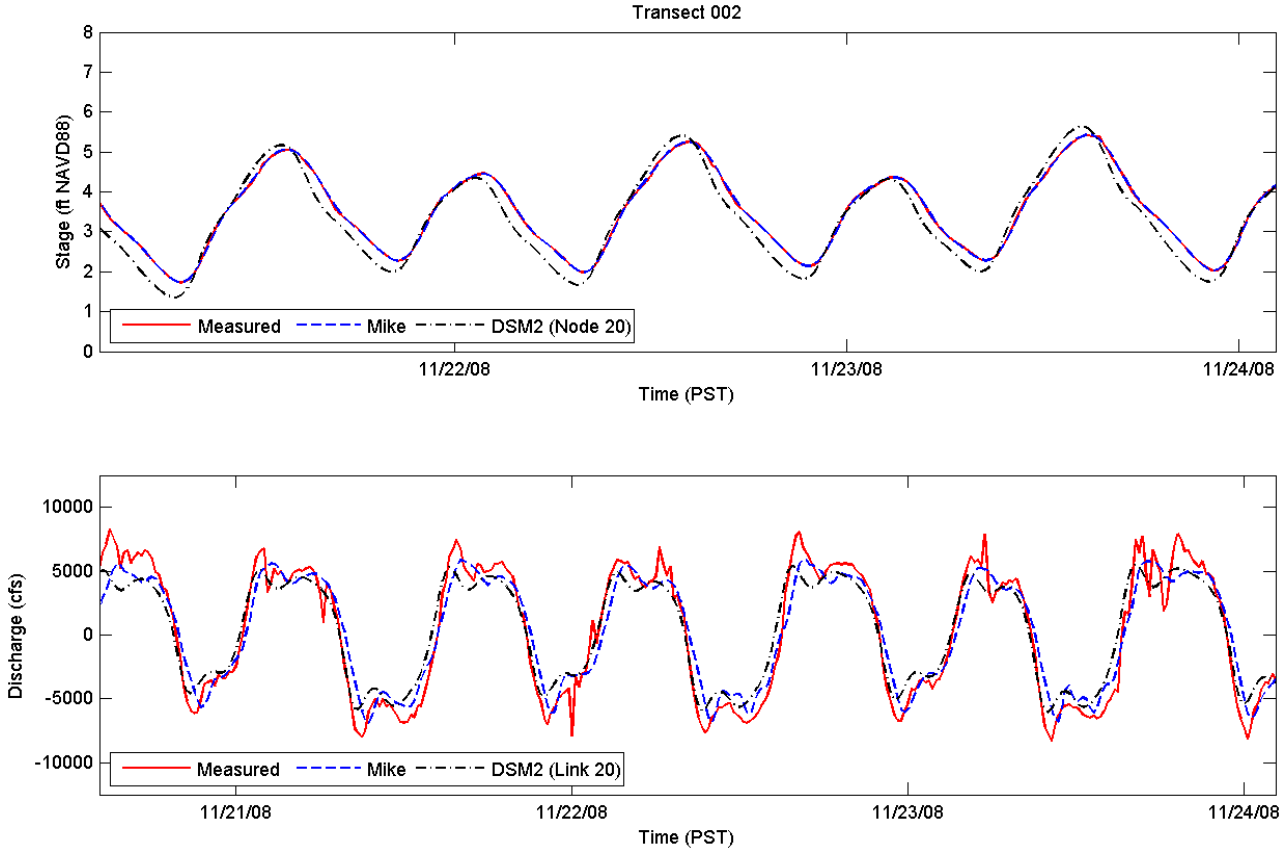


Figure 4-12: HD Model Calibration Time Series Plots at Transect 002 (RRI Gage)

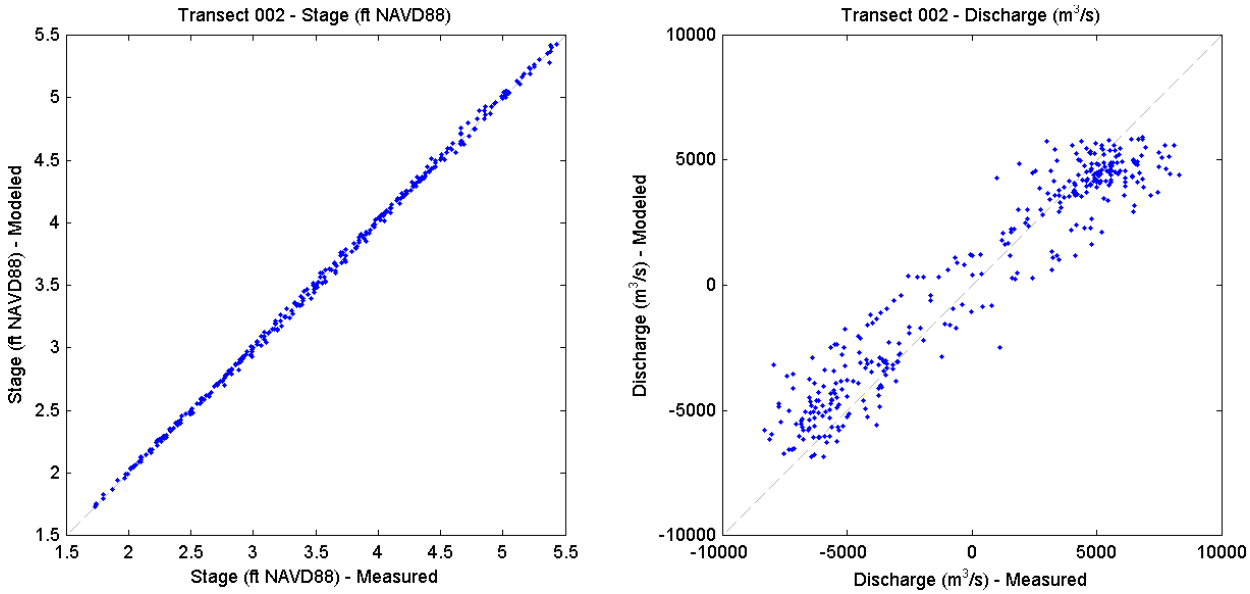


Figure 4-13: HD Model Calibration Scatter Plots at Transect 002 (RRI Gage)

4.2.2.2 Model Validation Results

A separate 2-week period from January 1-15, 2009, which is also a dry weather period, was selected for MIKE21-FM-HD model validation. The purpose of the validation was to test the model with another input data set while using the calibrated roughness coefficients and eddy viscosity. The modeling results from January 3-14, 2009, excluding the first two days of model warm-up, are shown in Figure 4-14 and Figure 4-15 for Transect 001 and Figure 4-16 and Figure 4-17 for Transect 002. The results are consistent with findings from the model calibration.

- At Transect 001 (SJG Gage), the model-predicted discharge agrees very closely with measured data in terms of both phase and magnitude. The model-predicted tidal elevation and phase also match measurements very closely. The model-predicted tidal elevation is perched 1 to 2 in. higher than the measurements.

- At Transect 002 (RRI Gage), the model-predicted tidal range and phase match almost perfectly with those measured. The model-predicted discharge matches with the measurement quite well in terms of both phase and general magnitude. The model did not predict the brief peak-flow spikes shown in the measured data the same as those shown in the calibration comparison. It is noted that both measurement and model-computed results have limitations, and perfect model-measurement agreement for discharge is rarely, if ever, achieved in hydrodynamic modeling. The discharges measured at RRI Gage have always had accuracy issues based on personal conversation with Russ Brown at ICF International. Dr. Brown is the author of the dye studies performed in Smith Canal (Jones & Stokes 2005) The statistic error analyses for the model validation, shown in Table 4-3, indicate that the correlation coefficient similar to that of the model calibration is nearly 1 for both stage and discharge; hence, the model-predicted variables well replicated the measurements. The NRMSE are also very low. The relatively large NRMSE value in discharge at Transect 002 is the result of spikes in the discharge measurements, which should not affect the relative comparison between alternatives and those with the existing conditions.

Table 4-3: Statistic Error Analyses for Hydrodynamic Model Validation

Variable	Transect	R^2 correlation coefficient	NRMSE (%)
Stage	001	0.991	3.1
	002	0.999	0.8
Discharge	001	0.999	6.8
	002	0.958	28.7

Overall, the model performed very satisfactorily for the validation period. The hydrodynamic model is considered well calibrated and validated for use in assessing potential impacts of the proposed project.

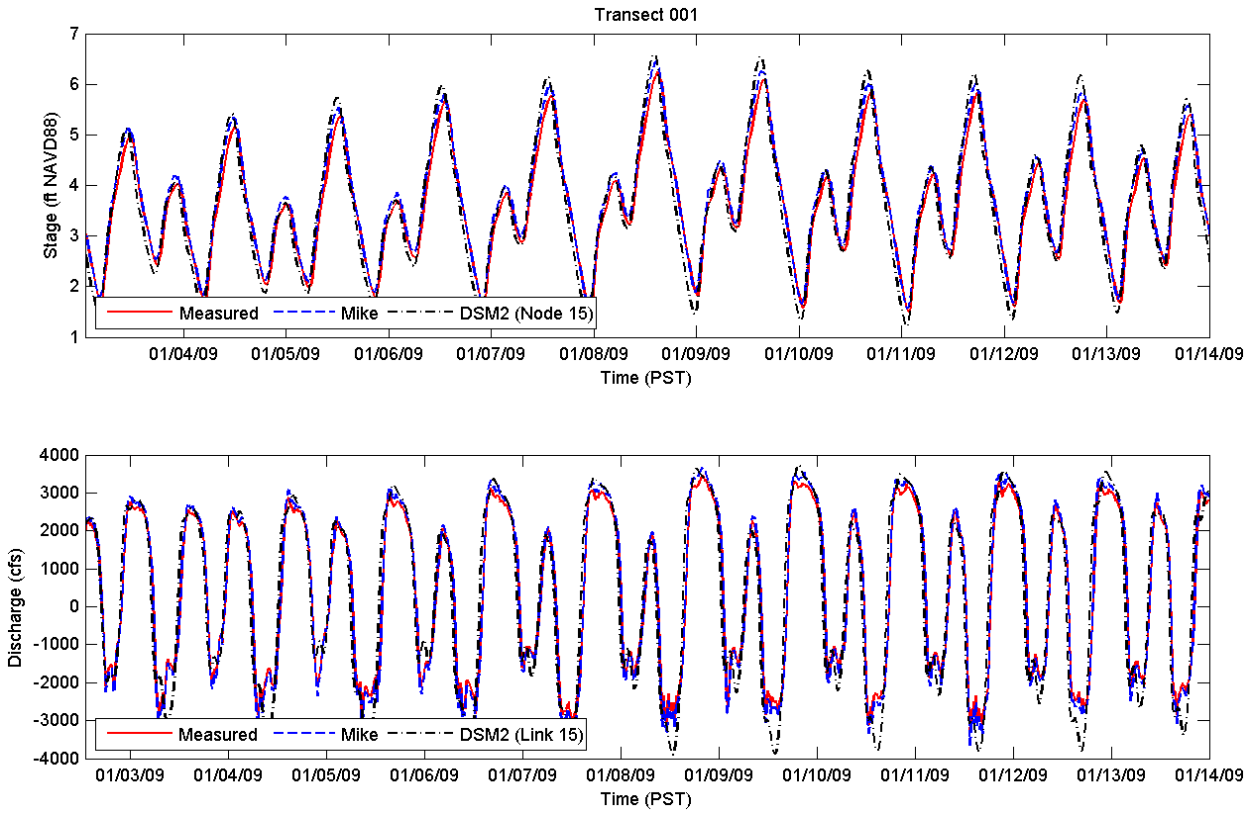


Figure 4-14: HD Model Validation Time Series Plots at Transect 001 (SJG Gage)

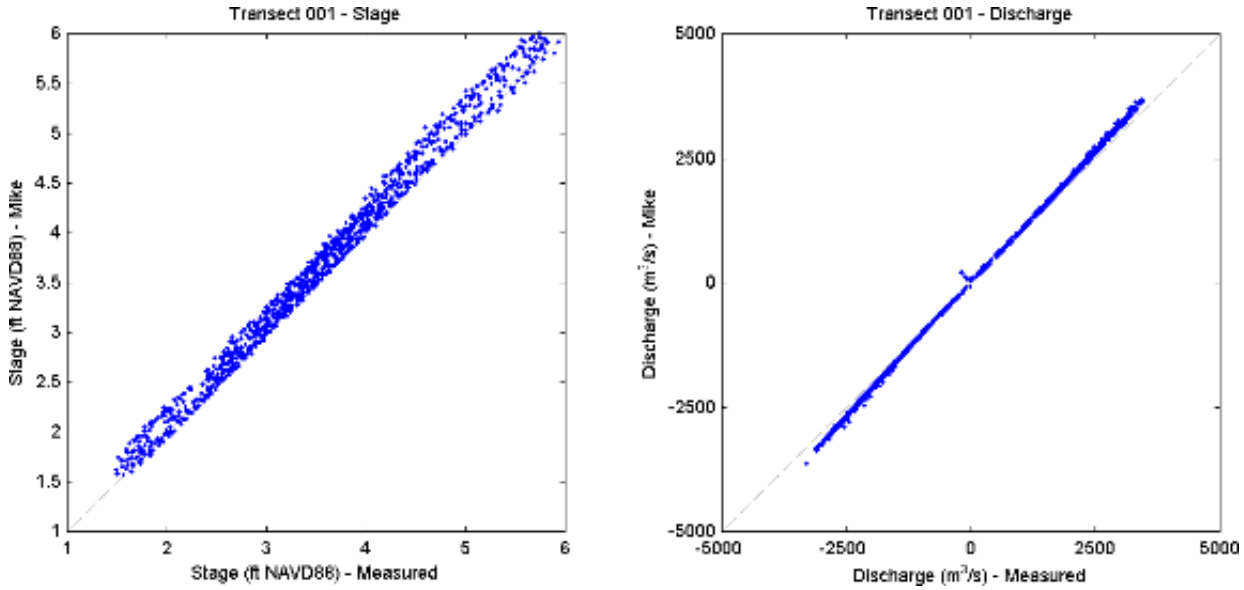


Figure 4-15: HD Model Validation Scatter Plots at Transect 001 (SJG Gage)

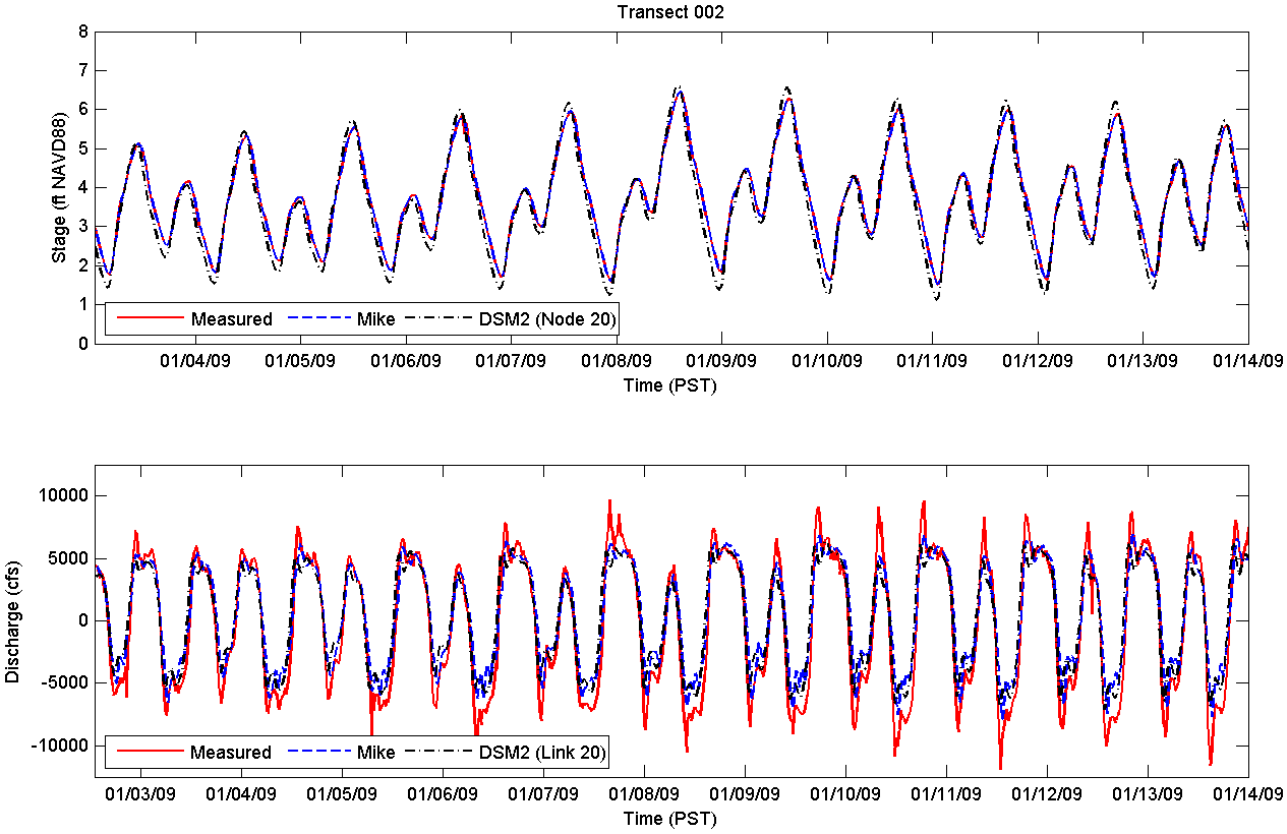


Figure 4-16: HD Model Validation Time Series Plots at Transect 002 (RRI Gage)

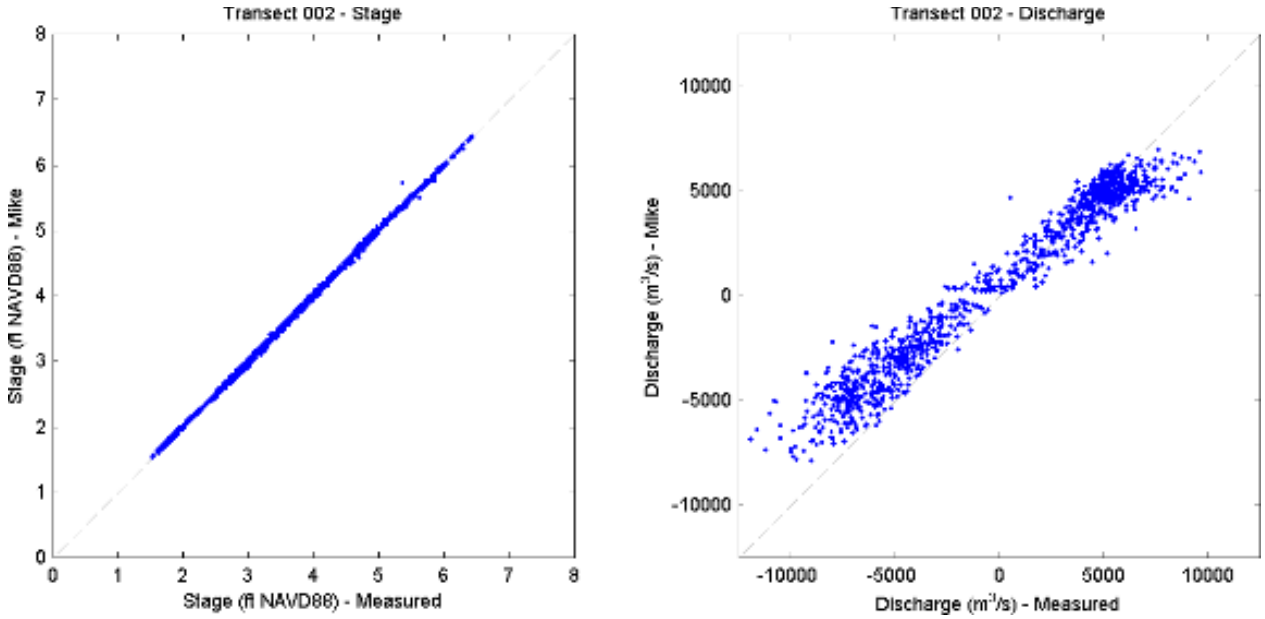


Figure 4-17: HD Model Validation Scatter Plots at Transect 002 (RRI Gage)

4.3 TRANSPORT MODEL

Transport Module (MIKE21-FM-TR) simulates the spreading and fate of dissolved or suspended substances under the influence of advective and dispersive fluid transport processes. The transport modeling is useful as it directly simulates the pollutant transport as comparing to hydrodynamic modeling, which calculates the tidal variation and velocity. The initial conditions are the spatial distribution of the component concentration throughout the computational domain at the beginning of the simulation. The resulting transport of the conservative materials is based on the flow conditions provided by the hydrodynamic calculations (MIKE21-FM-HD).

4.3.1 Transport Model Calibration

The MIKE21-FM-TR model was calibrated against a dye tracer test (Litton 2004) performed during a rainfall event in February 2004. In the study, the dye tracer was injected directly into the effluent from the Legion Park Pump Station, which discharges into Yosemite Lake located at the upstream end of the Smith Canal. The Smith Canal watershed consists of 13 subareas; Yosemite Lake is the largest and most upstream subarea. These subareas are shown in Figure 4-18 and their drainage surface areas are listed in Table 4-4. Urban runoff affected the transport of dye tracer in the Smith Canal during the dye-tracer study; therefore, the estimated urban runoff during the rainfall event was incorporated into the model as a point-source runoff. Pump outflows of the Legion Park Pump Station during the dye tracer test (see Figure 4-19) was provided by the City of Stockton via ICF International. Pump data for the other outflows was requested from the City of Stockton but no data was available from any of the remaining 12 pump stations. Therefore, to account for the additional flow into Smith Canal, the outflows from the Legion Park Pump Station was increased by a factor of 2 based on drainage areas of the additional subareas relative to the Legion Park (Yosemite Lake) Pump Station subarea. The precipitation data shown in Figure 4-19 are recorded at Stockton Fire Station No. 4. The latitude and longitude of the station are 38º 00' and 121º 19', respectively.

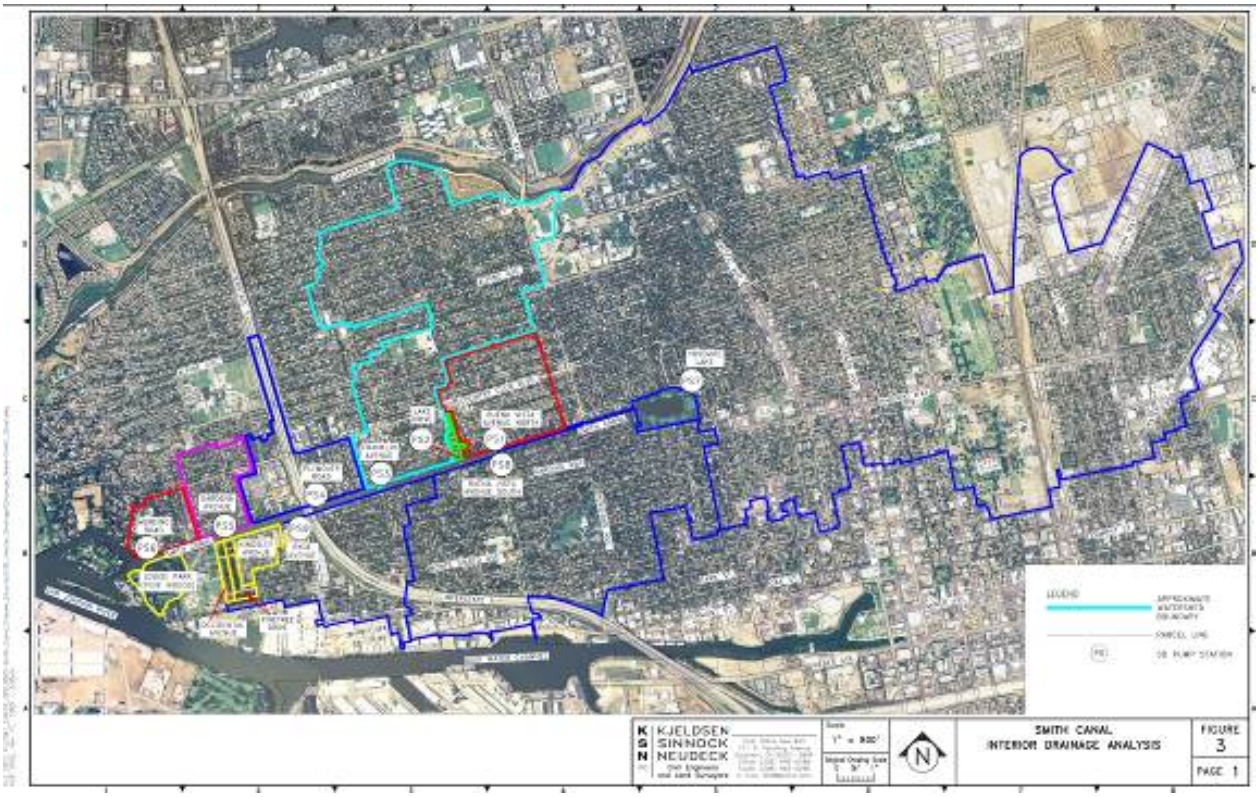


Figure 4-18: Smith Canal Pump-Outfall Locations and Drainage Subareas (Conrad 2010)

Table 4-4: Smith Canal Drainage Subarea Surface Area (Conrad 2010)

Drainage Subarea	Drainage Subarea Name	Drainage Subarea Area (Ac)
1	Buena Vista North	122
2	Lake Dr.	4
3	Franklin Ave.	425
4	Plymouth Rd.	90
5	Gardena PS	55
6	Moreing Rd.	36
7	Yosemite Lake	1936
8	Buena Vista South	477
9	Ryde Ave.	167
10	Kingsley Ave.	18
11	Pinetree Dr.	8
12	Occidental Ave.	6
13	Louis Park	21

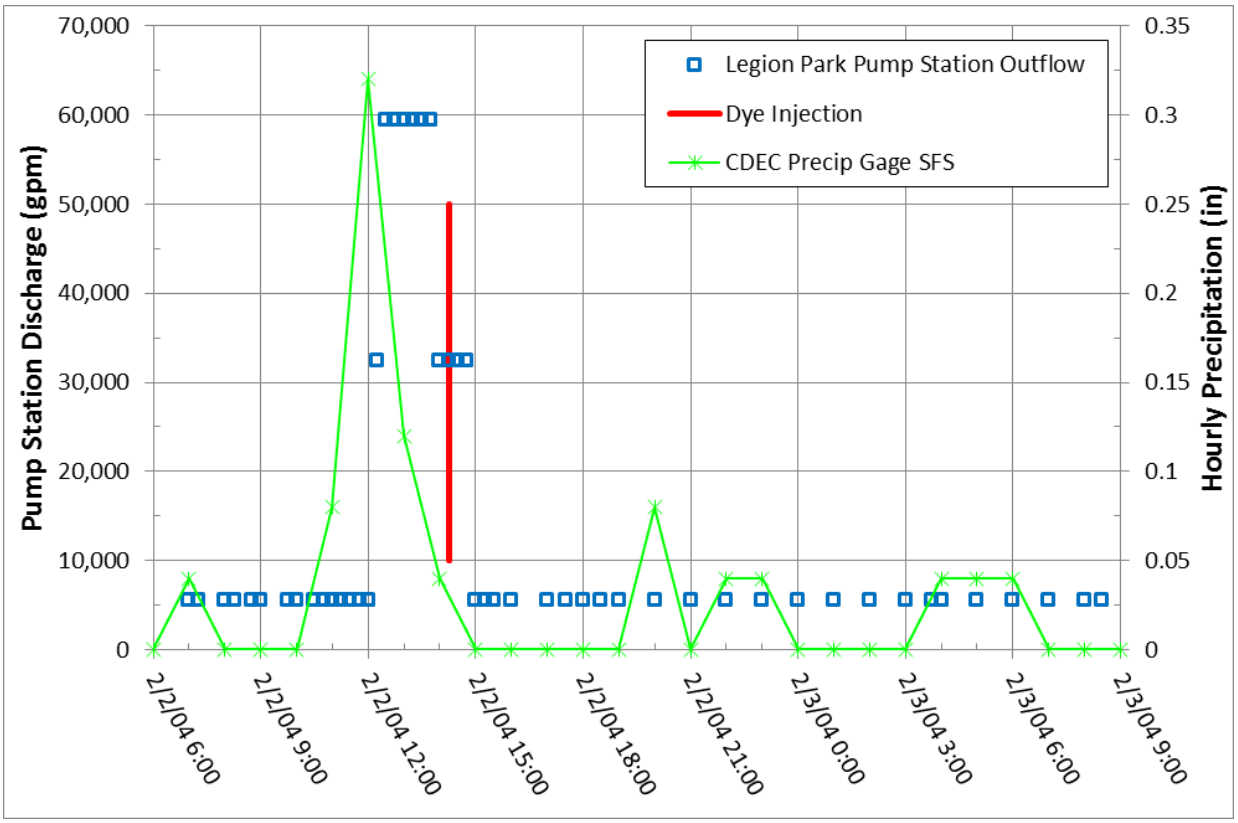


Figure 4-19: Legion Park Pump-Station Outflow (Litton 2004) and Precipitation Data at Stockton Fire Station for February 2004 Wet-Weather Event

The concentration of dye added to the transport model was based on information presented in the dye tracer study (Litton 2004). The dye tracer study details a mass of 912-g of Rhodamine that was added to the pump-station effluent over a period of 30 minutes, during which the pump-rate from the station was 30,500-gpm. Therefore, based on the documented mass of Rhodamine and pump rate, a dye concentration of 250 µg/L was used in the model. This dye was added as a point source for a 30-minute period from the Yosemite Lake Pump Station.

The calibration parameter of the transport model is the horizontal dispersion coefficient, which is required for the dispersion term in the transport equation. A constant value was applied for the entire model domain. The calibration process involved matching the model-predicted dye tracer concentration profiles with those presented in the dye tracer study by Litton (2004).

4.3.2 Calibration Results

The discharge for the MIKE21-FM-TR model calibration period in February 2004 was compared between model-predicted and those measured at SJG gage. The discharge data for RRI gage were not compared due to the lack of data consistency. The stage for the MIKE21-FM-TR model calibration period in February 2004 was also compared between model-predicted and those measured at RRI gage. The stage data for SJG gage was not available for comparison. The model-predicted data closely matched the measured data, results are shown in Figure 4-20 and Figure 4-21 for SJG and RRI gages, respectively.

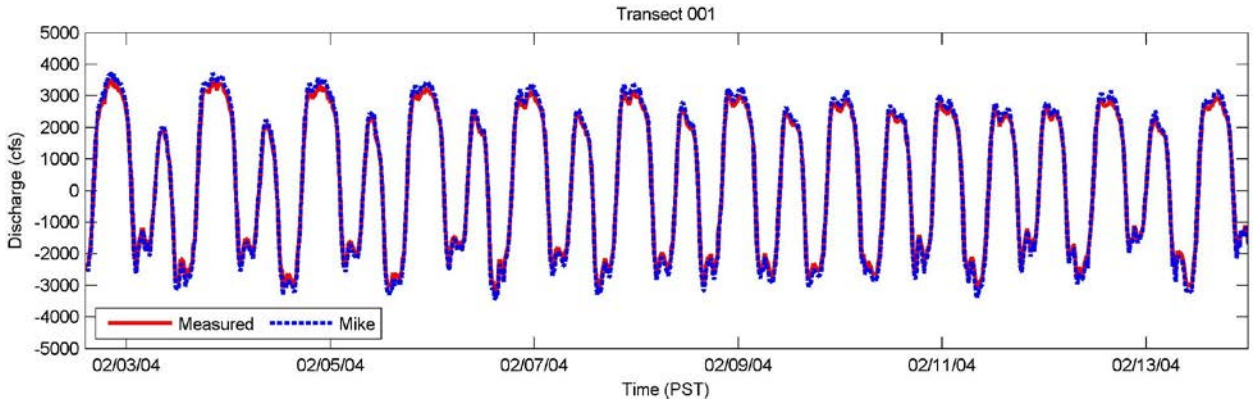


Figure 4-20: Comparison of Discharge at SJG Gage during the Dye Tracer Study

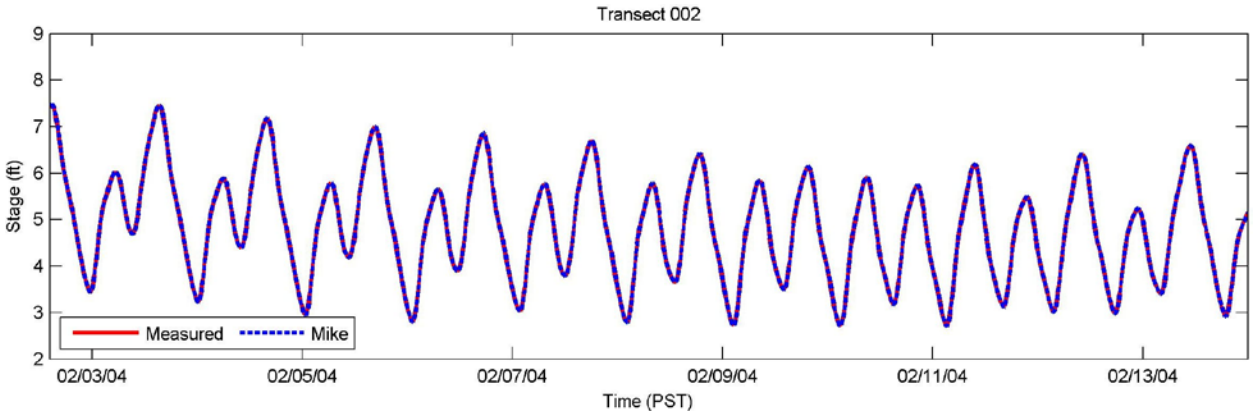


Figure 4-21: Comparison of Stage at RRI Gage during the Dye Tracer Study

A range of dispersion coefficients from 0.1 to 53.8 ft^2/s (0.01 to 5 m^2/s) was tested. The best match was achieved with a dispersion coefficient of 12.9 ft^2/s (1.2 m^2/s). The final dye tracer calibration results are illustrated in Figure 4-22. The results indicate:

- the model-predicted peak dye concentrations agree reasonably well with monitored peak concentrations for all five monitoring dates; and
- the model-predicted dye concentration profiles also match reasonably well with the measurements for all five monitoring dates. The best match occurs over the February 13, 2004 measurements.

Overall, the MIKE21-FM-TR model predicted acceptable dye concentration results. The model is considered to be acceptable for the purpose of alternative comparison and evaluation of the proposed project.

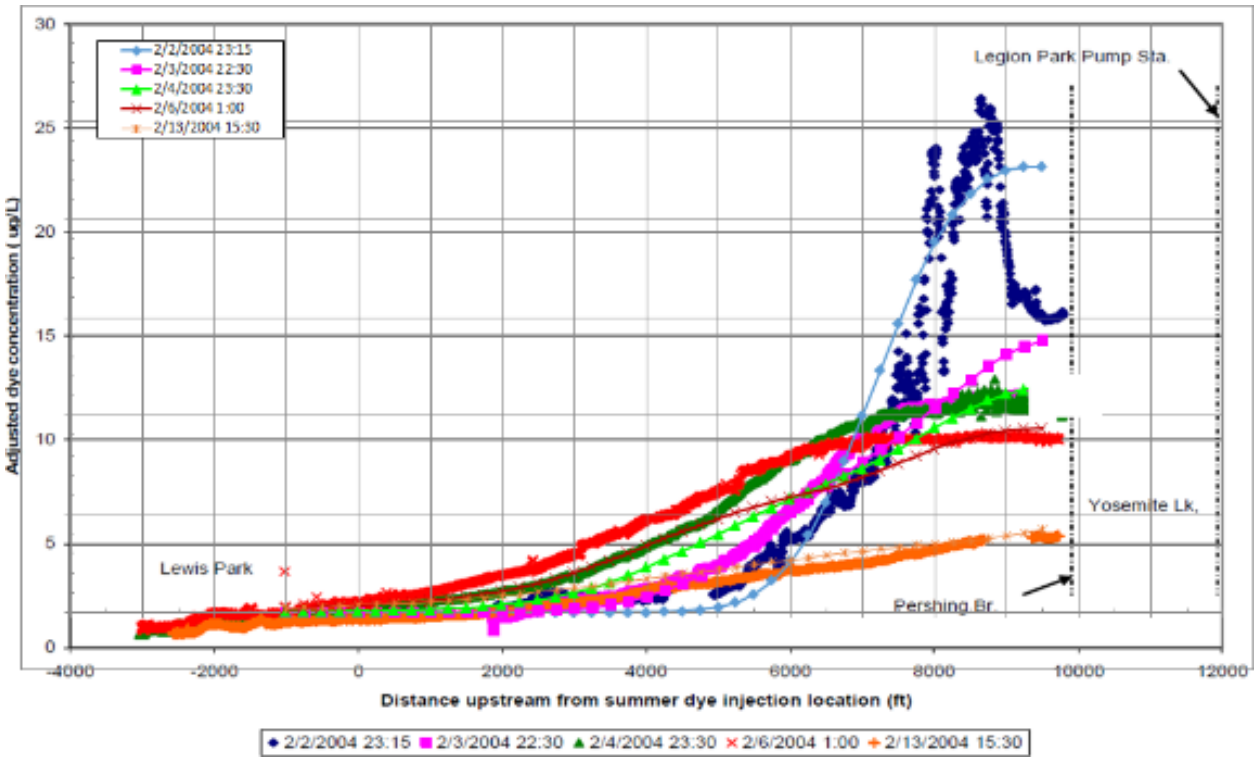


Figure 4-22: Comparison of Dye Concentrations Predicted by MIKE21-FM-TR Model versus Those Measured in the Dye-Tracer Study (Litton 2004)

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.

5. ANALYSES OF VELOCITY AND SEDIMENTATION POTENTIAL

A two-month period from June through July 2007 was selected for the velocity and sedimentation potential analysis for the following reasons:

- It is a dry summer period, therefore eliminating the need for inflow data from the Smith Canal pump stations, which are often not available;
- It (June through July) has larger than average spring tides, which is advantageous for assessing tidal muting in the study area; and
- It has measured data for model boundary input.

In addition to the existing condition, five proposed alternative scenarios were modeled. These five scenarios include the three proposed Alternative Alignments discussed in Section 1.3 and two additional gate widths of Alternative 1. Five numerical models were created by editing meshes within Atherton Cove and Smith Canal to incorporate the proposed closure alignment structures into the baseline existing condition model. Outside of this area, the model mesh remained unchanged from the existing condition. Sample model meshes within Atherton Cove and Smith Canal are presented in Appendix A.

5.1 HYDRODYNAMIC MODELING RESULTS IN SMITH CANAL

In order to assess impacts on tidal exchange and circulation in Atherton Cove and Smith Canal, two transects, one within Atherton Cove and one within Smith Canal, were selected and shown in Figure 5-1. Modeling results of stage and discharge were extracted as changes in stage and discharge are indications of tidal exchange and circulation changes. The stage is defined as the average surface elevation across transect. The discharge is the total flow rate through the cross-section where transects are located. The discharge is defined as positive if the water is flowing into Smith Canal/Atherton Cove or negative if it is flowing out. In other words, the flood tide discharge is positive and ebb tide discharge is negative.

The stage and discharge under each proposed alignment scenario were compared to those under the existing conditions. Similar to the methods used in model calibration and validation, the correlation and NRMSE, defined in Section 4.2.2, were calculated for each comparison.

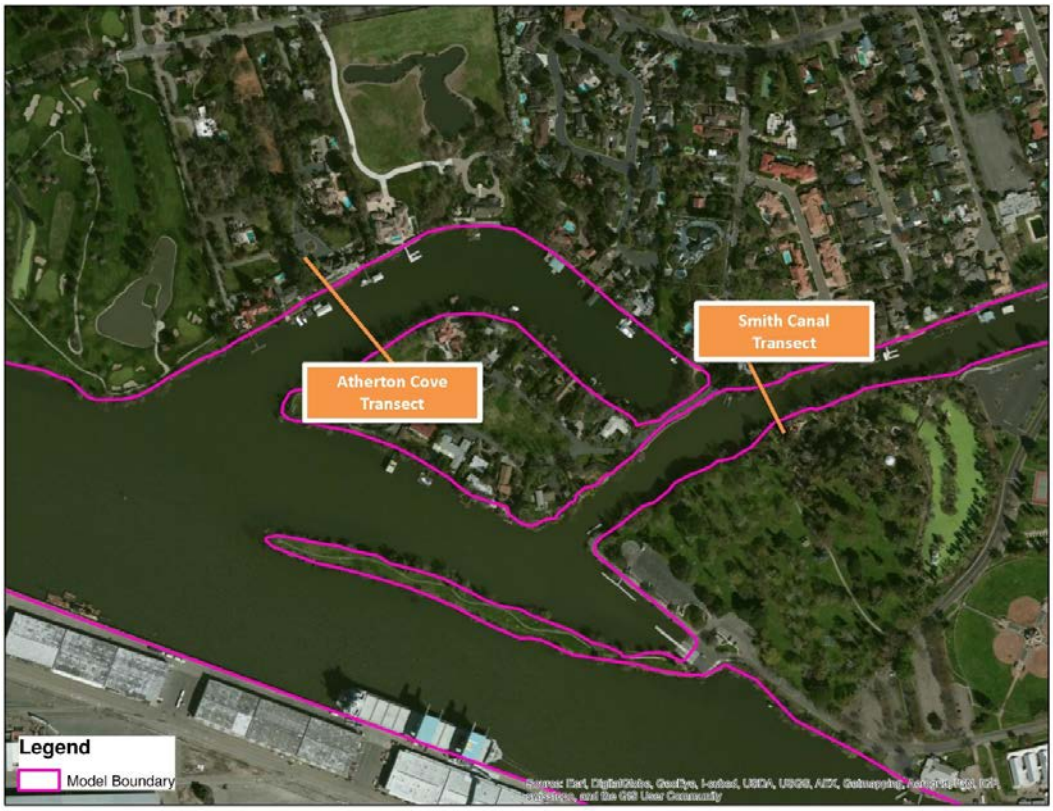


Figure 5-1: Location of Transects for Comparison of Hydrodynamic Results.

5.1.1 Alignments Comparison

At the Smith Canal Transect, the comparison of stage and discharge are shown in Figure 5-2 and Figure 5-3. The time series plots show that stage and discharge under the proposed alternatives overlap those under the existing condition. The scatter plots in Figure 5-3 also show a great match between existing and proposed alternative project conditions. The statistical analysis of the comparison is summarized in Table 5-1. These results indicate:

- For the stage comparison, the R^2 correlation coefficients are nearly equal to 1, indicating perfect matches and NRMS difference is less than 1%. Therefore, there is very little change in stage from the existing condition for all alignments.
- For the discharge comparison, the R^2 correlation coefficients are nearly equal to 1 and the NRMS difference is less than 5%. The largest difference in discharge is Alignment 1 and the smallest is Alignment 2. Therefore, there is a very small amount of change to discharge for all alignments when comparing to existing conditions.

Table 5-1: Statistic Analyses for Smith Canal

Variable	Alternative	R^2 Correlation Coefficient	NRMS Difference (%)
Stage	1	1.000	0.35%
	2	1.000	0.04%
	3	1.000	0.05%
Discharge	1	0.993	3.81%
	2	1.000	0.91%
	3	0.999	1.04%

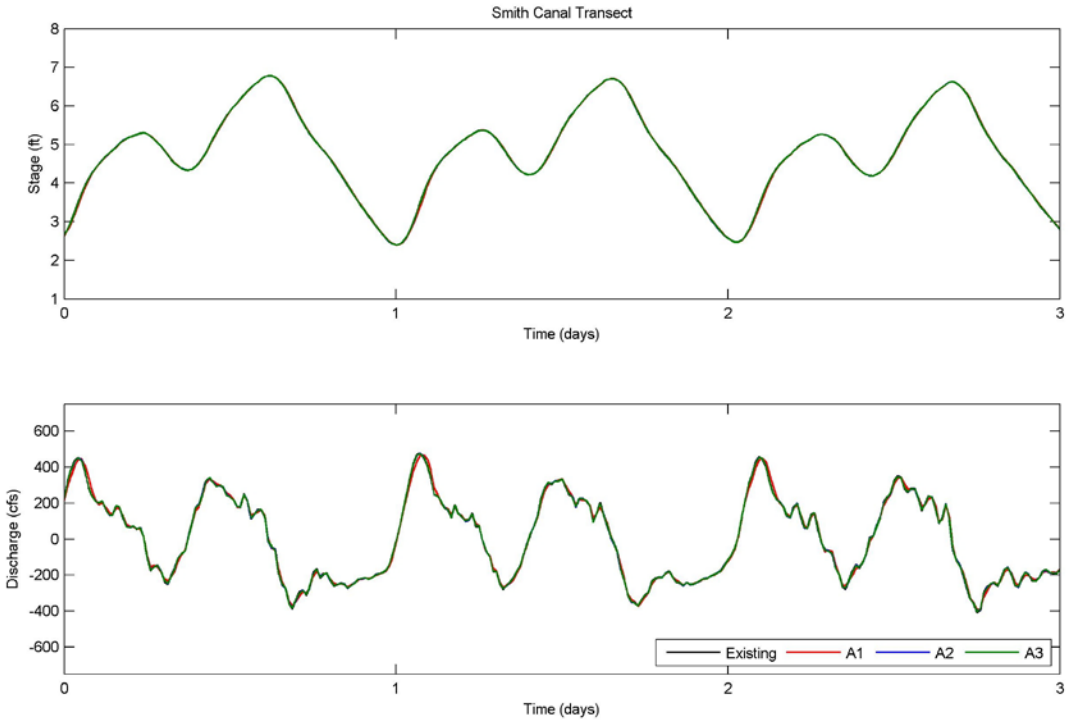


Figure 5-2: Sample Time Series of Stage (Top) and Discharge (Bottom) for Smith Canal

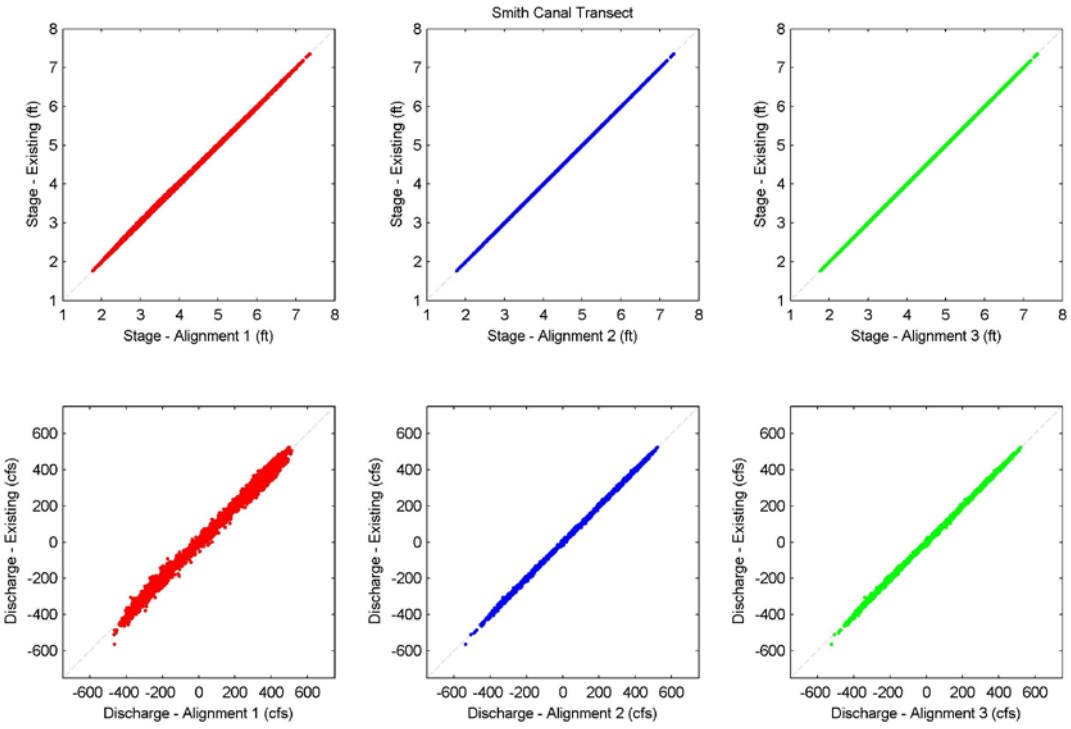


Figure 5-3: Stage (Top) and Discharge (Bottom) Correlation between Existing and Alterative Alignments for Smith Canal

At the Atherton Cove Transect, the comparison of stage and discharge are shown in Figure 5-4 and Figure 5-5. The time series plots show that stage under the proposed alternatives overlap those under the existing conditions. The scatter plots in Figure 5-5 also show a great match between existing and proposed alternative project conditions. The statistical analysis of the comparison is summarized in Table 5-2. These results indicate:

- For the stage comparison, the R^2 correlation coefficients are nearly equal to 1, indicating perfect matches and NRMS difference is less than 1%. Therefore, there is very little change in stage for all three alignments when comparing to the existing conditions.
- For the discharge comparison, there are slight changes from the existing conditions for all three alignments, especially for Alternative Alignment 2. For Alternative Alignment 2, the discharge is slightly lower than that under the existing conditions as the floodwall may have slightly reduced the tidal prism. For Alternative Alignment 1, the slight increase in peak discharge is a result of the narrow gate creating a jet flow toward Atherton Cove, which slightly alters the flow distribution between Atherton Cove and Smith Canal. But, the overall change in discharge is very small, as shown in Figure 5-4 and statistical analyses.

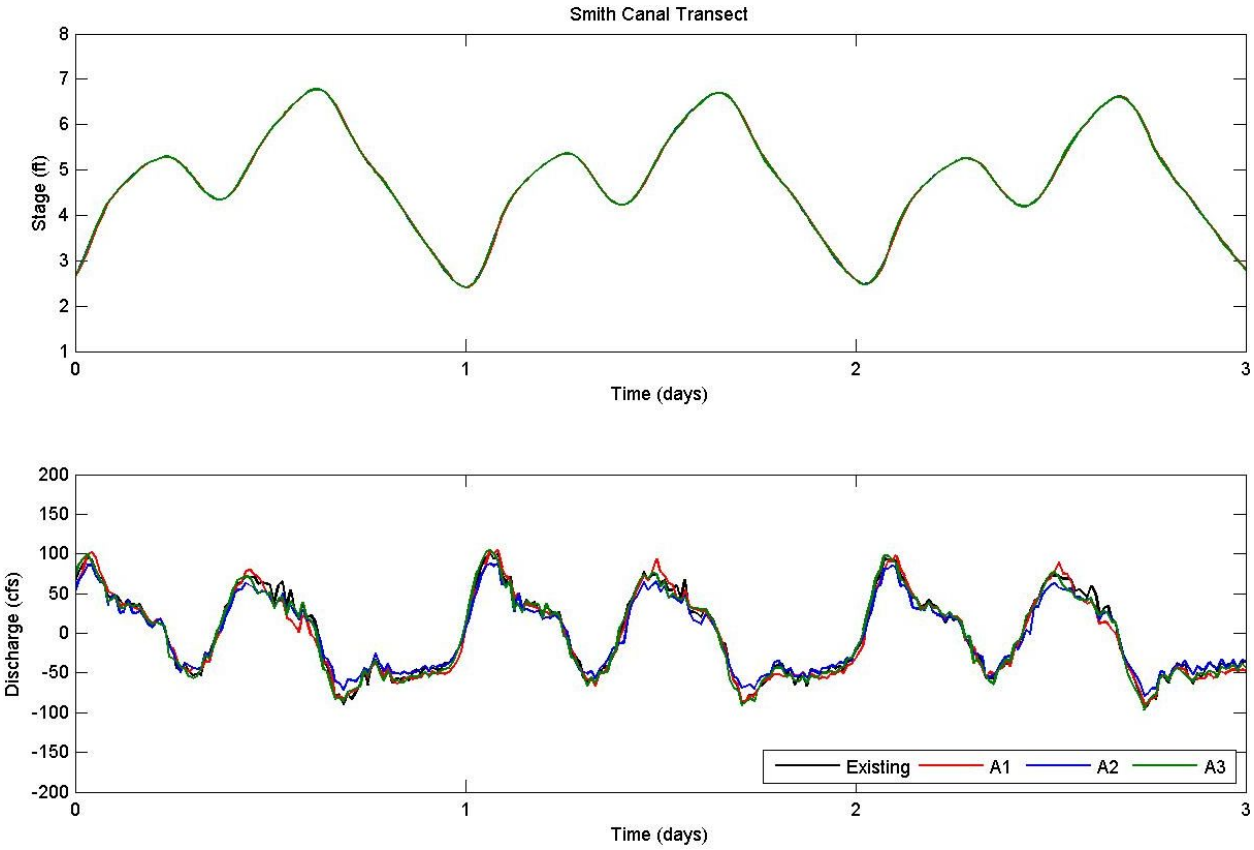


Figure 5-4: Sample Time Series of Stage (Top) and Discharge (Bottom) for Atherton Cove

Table 5-2: Statistic Analyses for Atherton Cove

Variable	Gate Width	R^2 Correlation Coefficient	NRMS Difference (%)
Stage	1	1.000	0.34%
	2	1.000	0.01%
	3	1.000	0.03%
Discharge	1	0.975	7.67%
	2	0.988	7.73%
	3	0.983	6.40%

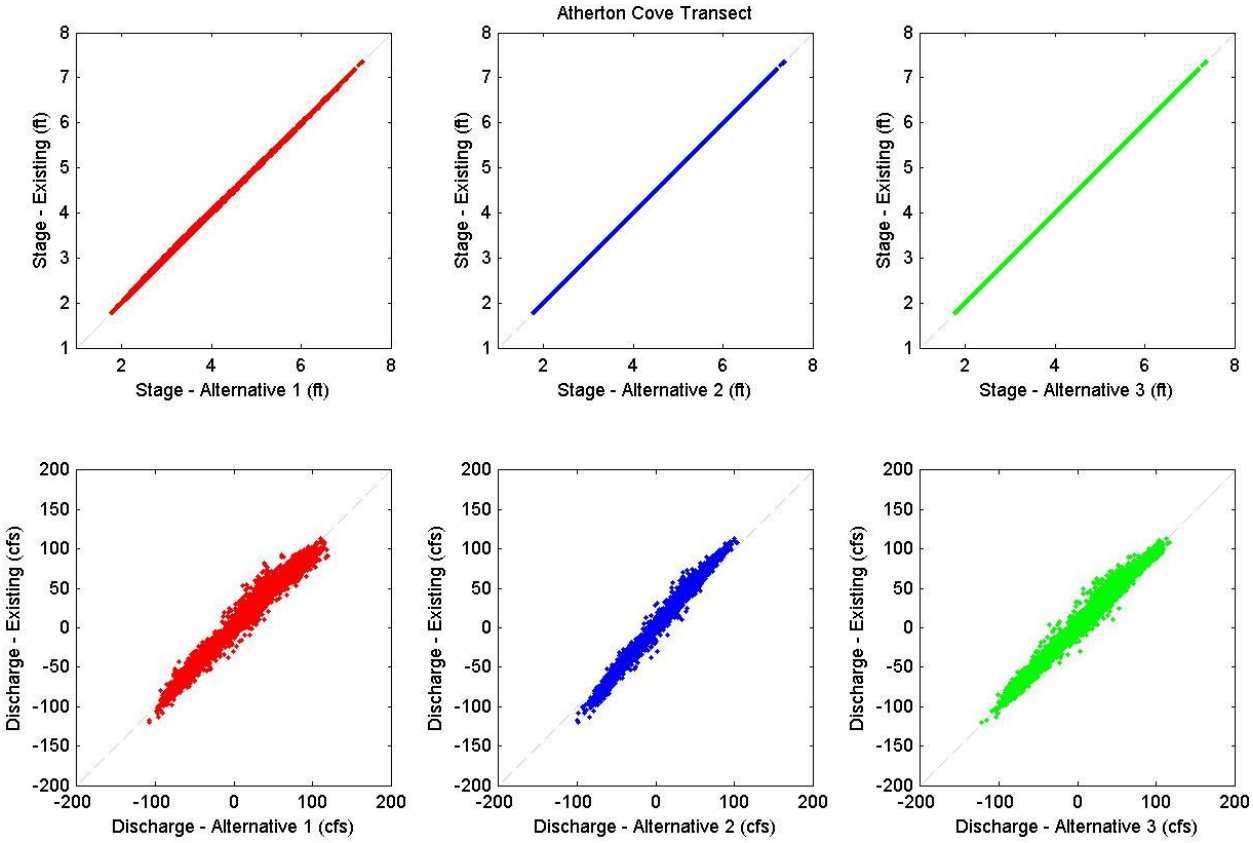


Figure 5-5: Stage (Top) and Discharge (Bottom) Correlation between Existing and Alterative Alignments for Atherton Cove

5.1.2 Alignment 1 Gate Width Sensitivity

To test gate width sensitivity, three gate widths of 50-ft, 100-ft, and 200-ft were modeled for Alternative Alignment 1. The resulting stage and discharge at the two transects shown in Figure 5-1 are compared between different gate width and existing conditions.

For the Smith Canal Transect, the comparison of stage and discharge between three gate widths and existing conditions are shown in Figure 5-6 and Figure 5-7. The statistical analysis of the comparison is summarized in Table 5-3. The comparison indicates:

- For stage comparison, the R^2 correlation coefficients are nearly equal to 1, indicating perfect matches and the NRMS difference is less than 1%. There is very little change in stage between the three gate widths.

- For discharge comparison, the R^2 correlation coefficients are nearly equal to 1, indicating perfect matches and the NRMS difference decreases with increased gate width but is less than 4% for all cases. Therefore, there is a small amount of change in discharge between different gate widths. For this location, the largest difference is the 50-ft gate and the smallest is the 200-ft gate.

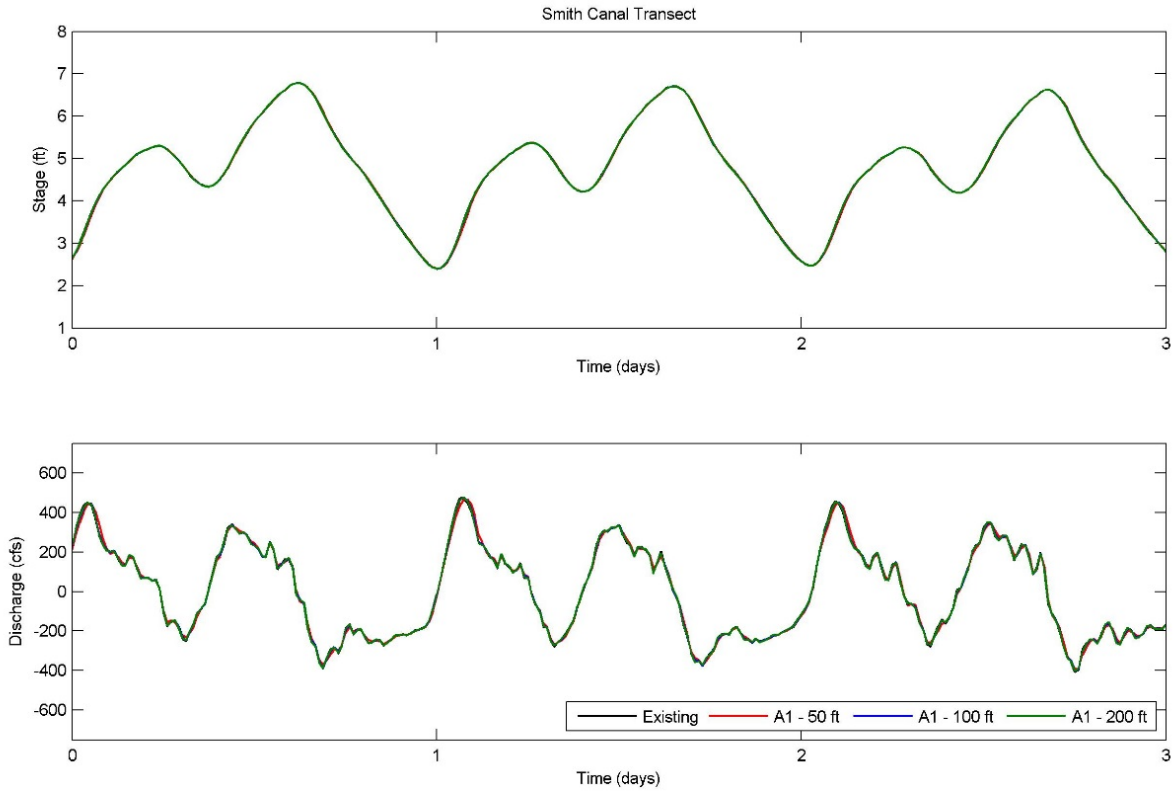


Figure 5-6: Sample Time Series of Stage (Top) and Discharge (Bottom) for Smith Canal

Table 5-3: Statistic Analyses for Smith Canal

Variable	Gate Width	R^2 Correlation Coefficient	NRMS Difference (%)
Stage	50 ft	1.000	0.35%
	100 ft	1.000	0.09%
	200 ft	1.000	0.03%
Discharge	50 ft	0.993	3.81%
	100 ft	0.999	1.39%
	200 ft	1.000	0.96%

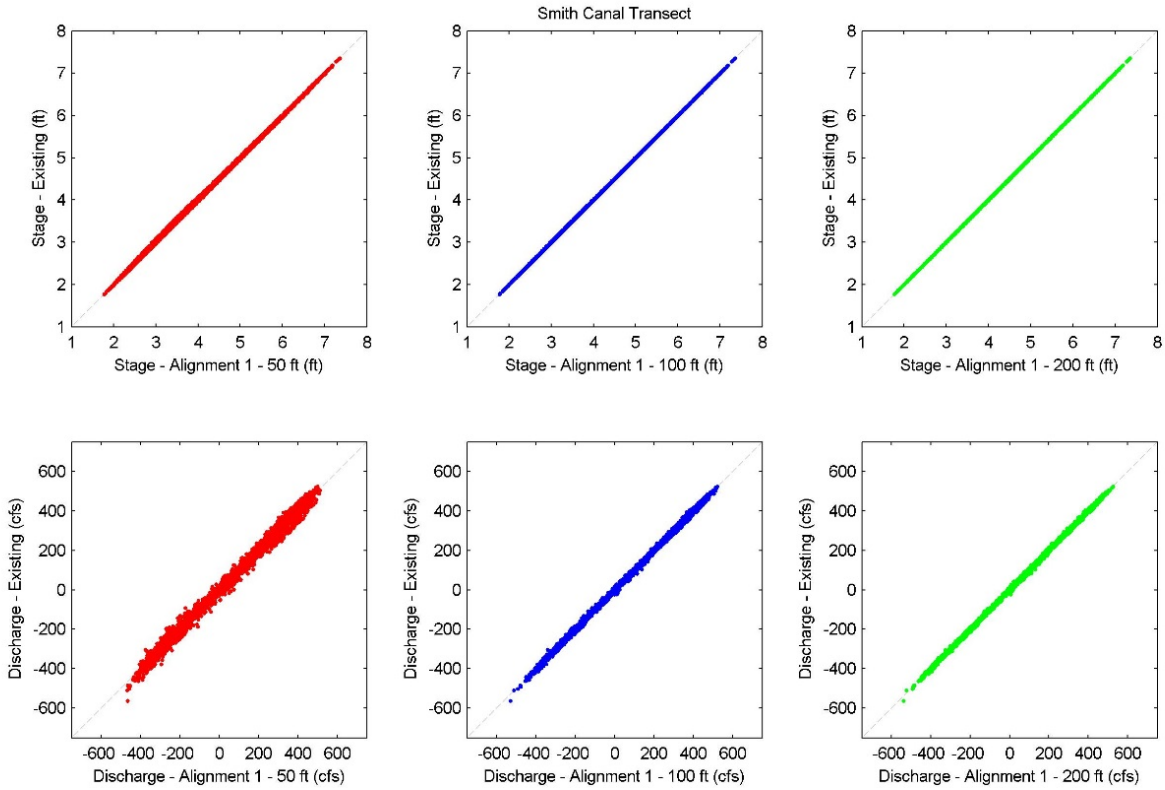


Figure 5-7: Stage (Top) and Discharge (Bottom) Correlation between Existing and Three Gate Widths of Alignment 1 for Smith Canal

For the Atherton Cove Transect, the comparison plots of stage and discharge are shown in Figure 5-8 and Figure 5-9. The statistical analysis of comparison is summarized in Table 5-4. The comparison indicates:

- For the stage comparison, there is very little change in stage between all gate widths. The R^2 correlation coefficients are nearly equal to 1 and the NRMS difference is less than 1%.
- For discharge comparison, there is also very little change in discharge between the three gate widths at this location. The R^2 correlation coefficients are nearly equal to 1 and the NRMS difference is less than 8%.

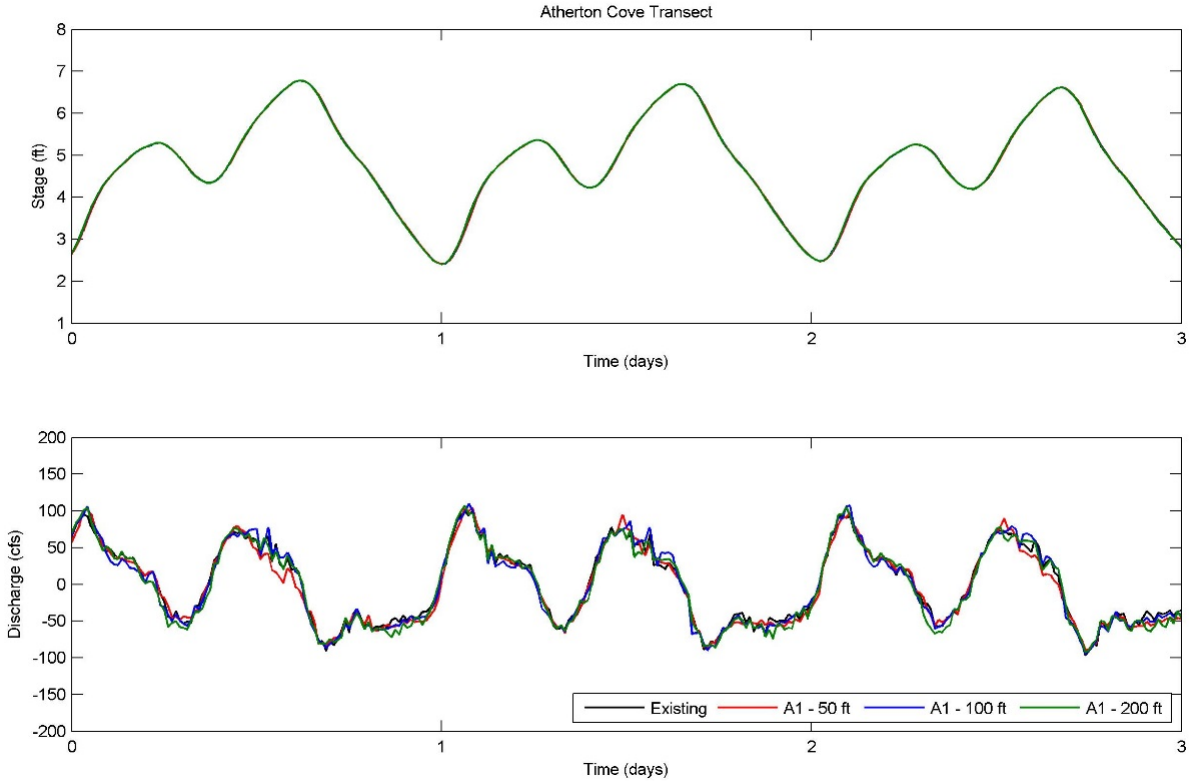


Figure 5-8: Sample Time Series from Smith Canal Sensitivity Study of Stage (Top) and Discharge (Bottom) for Atherton Cove

Table 5-4: Statistic Analyses for Atherton Cove

Variable	Gate Width	R^2 Correlation Coefficient	NRMS Difference (%)
Stage	50	1.000	0.34%
	100	1.000	0.08%
	200	1.000	0.02%
Discharge	50	0.975	7.67%
	100	0.982	6.62%
	200	0.979	7.51%

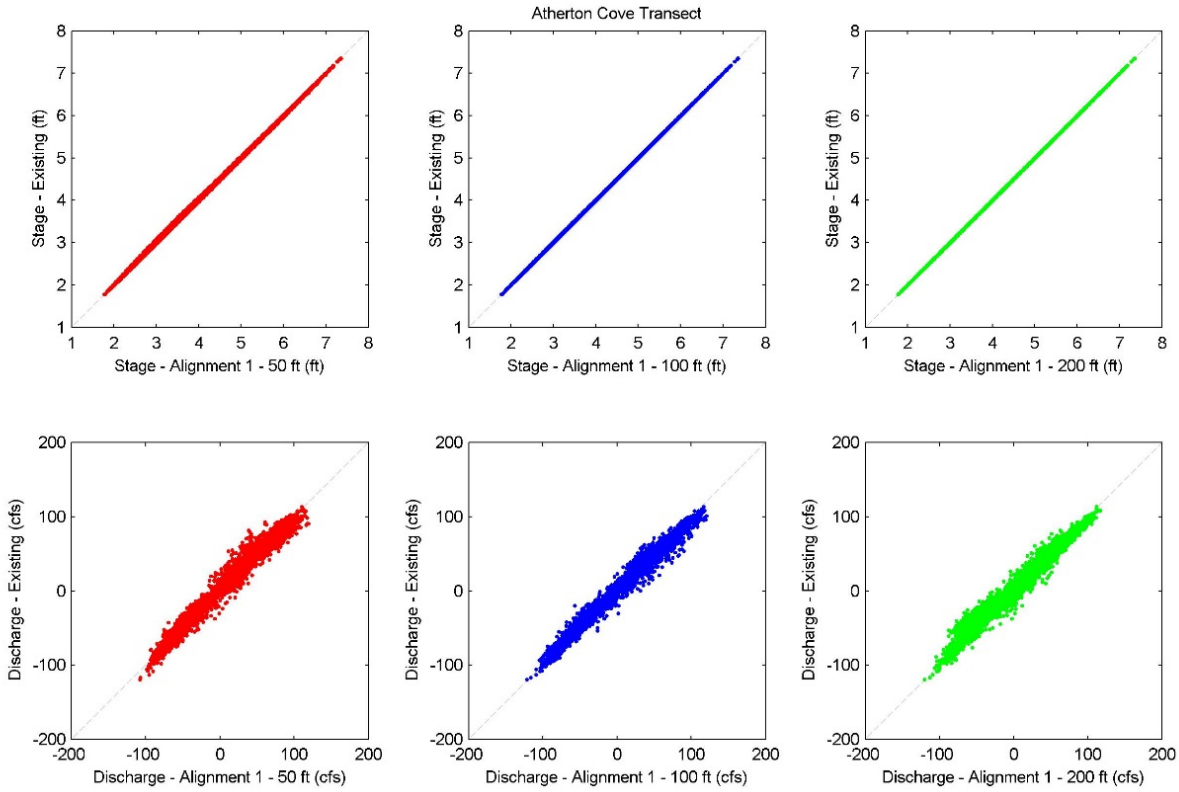


Figure 5-9: Stage (Top) and Discharge (Bottom) Correlation between Existing and Three Gate Widths of Alignment 1 for Atherton Cove

5.2 VELOCITY RESULTS AT PROPOSED GATE

This section summarizes modeling results of tidal velocity through the proposed gates. The maximum tidal velocity through the gate under the proposed project condition and that at the same location under the existing conditions are summarized in Table 5-5. Figure 5-10 through Figure 5-13 show velocity time series during the spring tidal condition. The spring tide occurs twice a month, approximately at the full and new moon when the difference between high and low tide is greatest. The results indicate the flood tidal velocity is generally higher than that of the ebb tidal velocity.

- For Alignment 1, the peak tidal velocity is 2.4 fps with a 50-ft gate, 1.3 fps with a 100-ft gate and 0.54 fps with a 200-ft gate compared to existing velocity of 0.2 fps at the same section location. The velocity decreases with increase in the gate width.

- For Alignment 2, the peak tidal velocity is 1.1 fps at the gate in Smith Canal compared to the existing conditions of 0.53 fps. The peak velocity is lower than that under Alignment 1 as the tidal prism through the Alignment 2 gate is smaller than that through the Alignment 1 gate.

- For Alignment 3, the peak tidal velocity increases from 0.89 fps to 1.2 fps for the gate in Smith Canal, and from 0.2 fps to 0.6 fps for the gate in Atherton Cove. The velocity at the Smith Canal gate is higher than that under Alignment 2 as the tidal prism is slighter larger for Alignment 3.

- 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

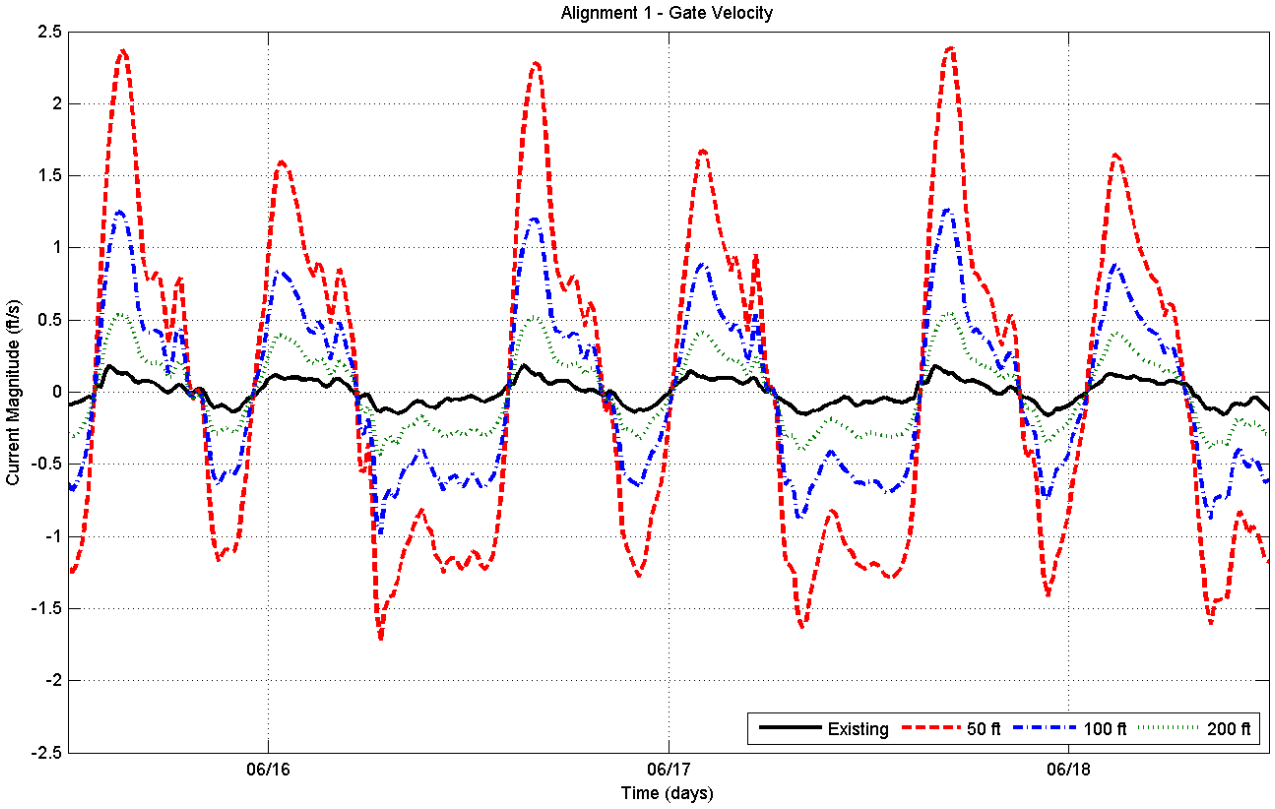


Figure 5-10: Velocity at Gate of Alignment 1

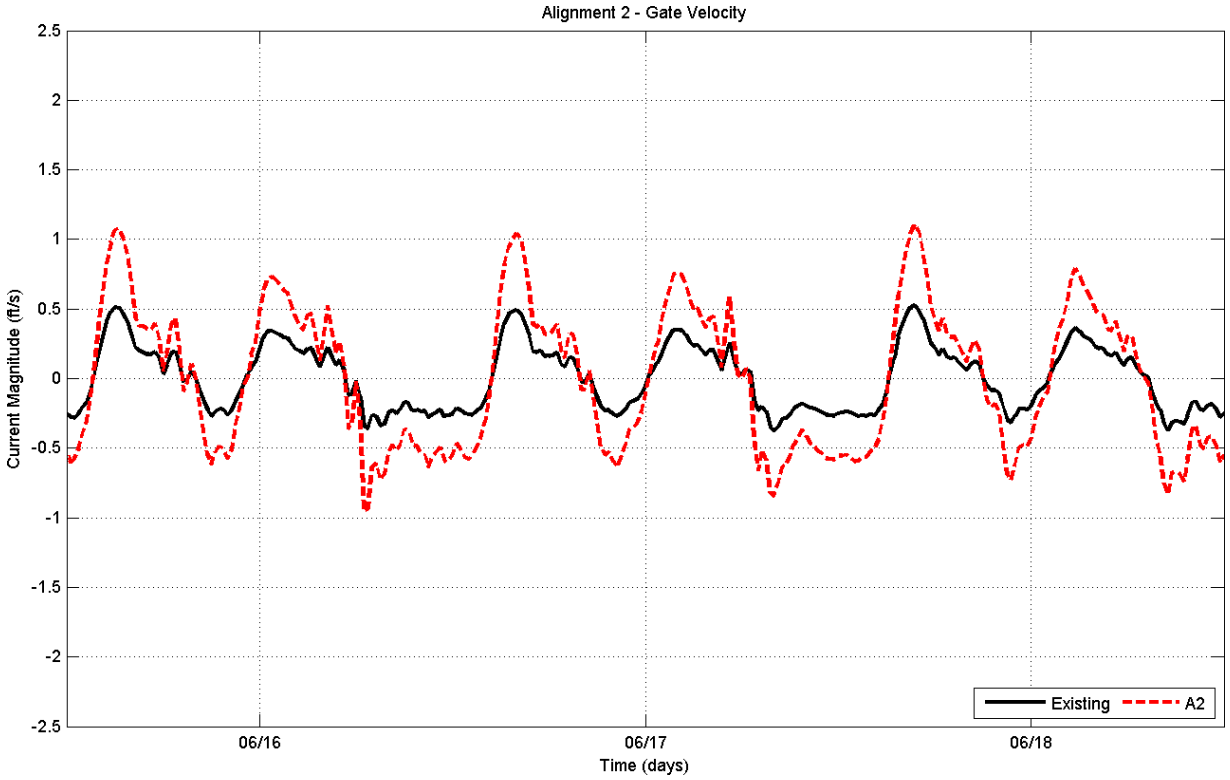


Figure 5-11: Velocity at Gate of Alignment 2

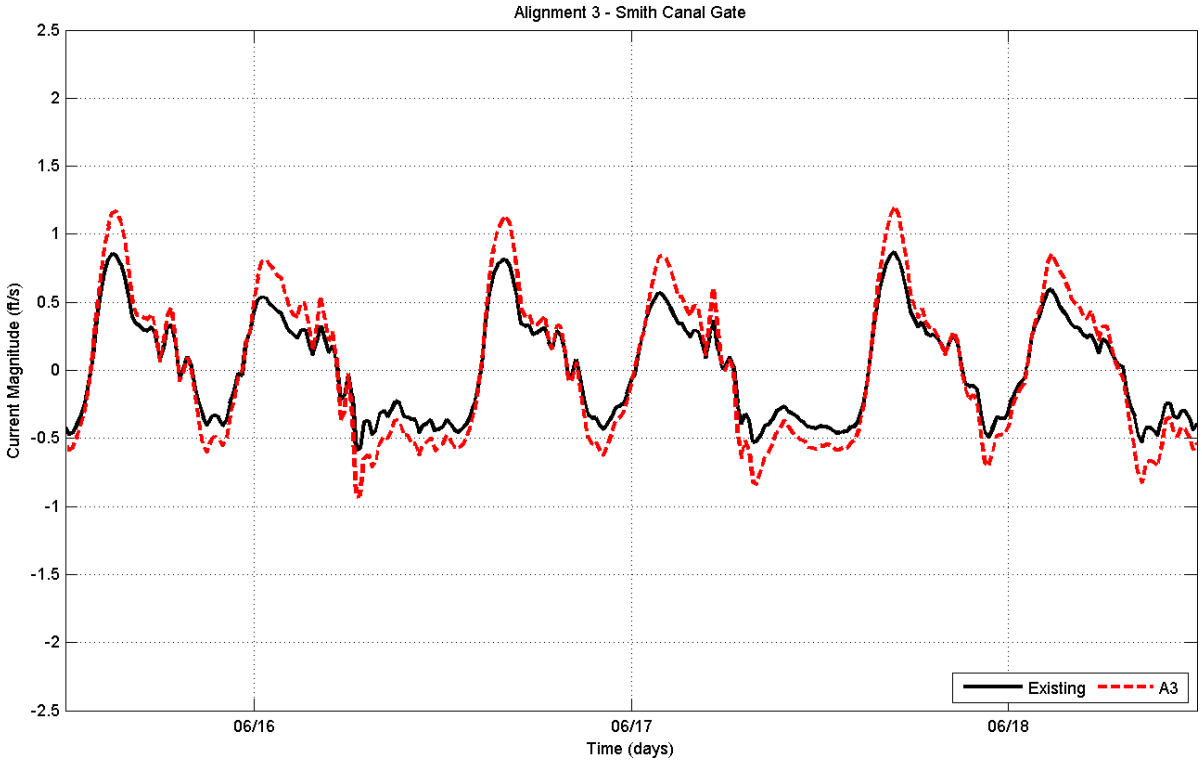


Figure 5-12: Velocity at Gate on Smith Canal of Alignment 3

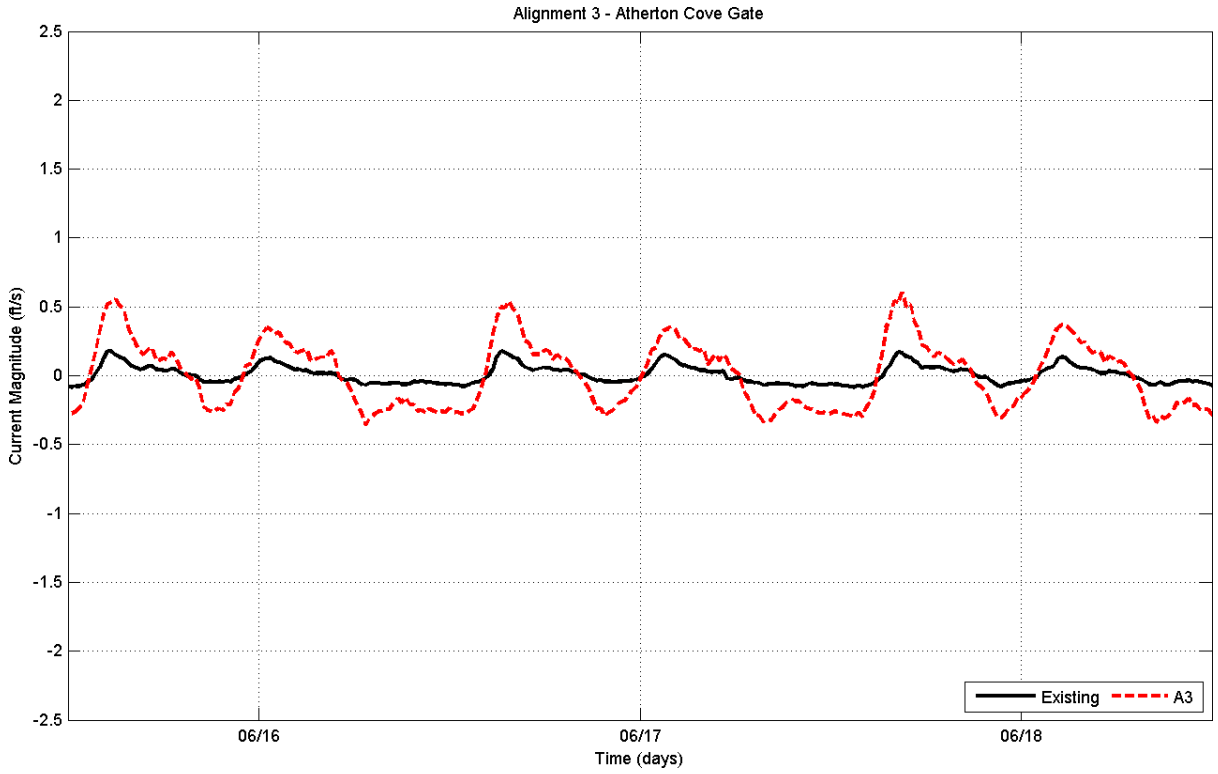


Figure 5-13: Velocity at Gate on Atherton Cove of Alignment 3

Ocean tides change daily and follow a semi-diurnal pattern in California. The semi-diurnal range varies in a two-week cycle. Approximately twice a month, around new moon and full moon when the Sun, Moon, and Earth form a line, the tidal force due to the sun reinforces that due to the Moon. The tide's range is then at its maximum, called the spring tide. When the Moon is at first quarter or third quarter, the sun and Moon are separated by 90° when viewed from the Earth, and the solar tidal force partially cancels the Moon's. At these points in the lunar cycle, the tide's range is at its minimum, called the neap tide. Table 5-5 summarizes the spring tide maximum velocity through proposed tidal gate and velocity varies over time, as shown in Figure 5-10 through Figure 5-13. Therefore, statistical exceedance analyses of current speeds are performed based on two spring and neap tidal cycles and results are summarized in Table 5-6. The results indicate that the current speed through the 50-ft gate of Alignment 1 would exceed 2.0 fps for 2.7% of the time and 1.5 fps for about 10% of the time. For the 100-ft gate of Alignment 1, the current speed would exceed 1.0 fps for 3.7% of the time. Figure 5-14 through Figure 5-17 show exceedance curves of current speed through the gate.

Table 5-6: Current Speed Exceedance Percentages

Current Speed (ft/s)	Alignment 1			Alignment 2	Alignment 3	
	50 ft	100 ft	200 ft		Smith Canal	Atherton Cove
1.0	44.0%	3.7%	0.0%	0.9%	2.4%	0.0%
1.5	10.2%	0.0%	0.0%	0.0%	0.0%	0.0%
2.0	2.7%	0.0%	0.0%	0.0%	0.0%	0.0%
2.5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

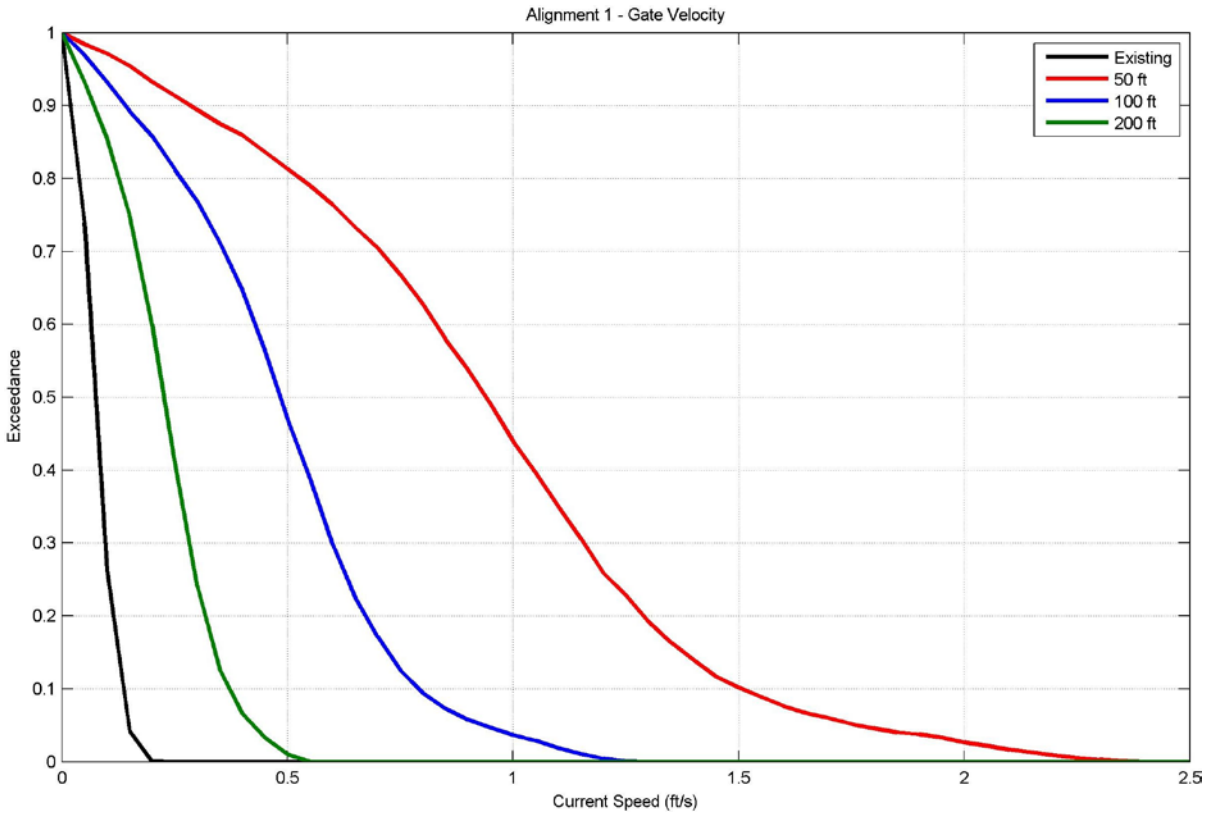


Figure 5-14: Current Speed Exceedance Curves at Gate of Alignment 1

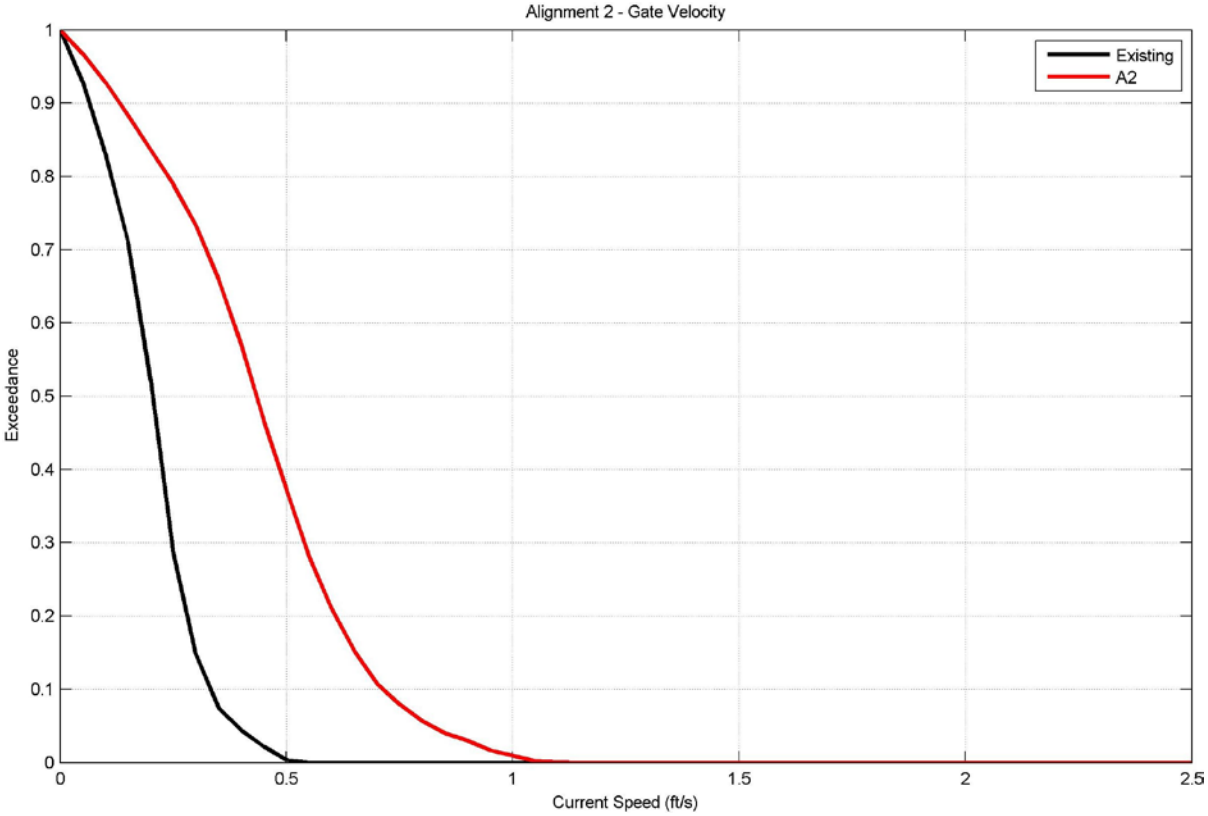


Figure 5-15: Current Speed Exceedance Curve at Gate of Alignment 2

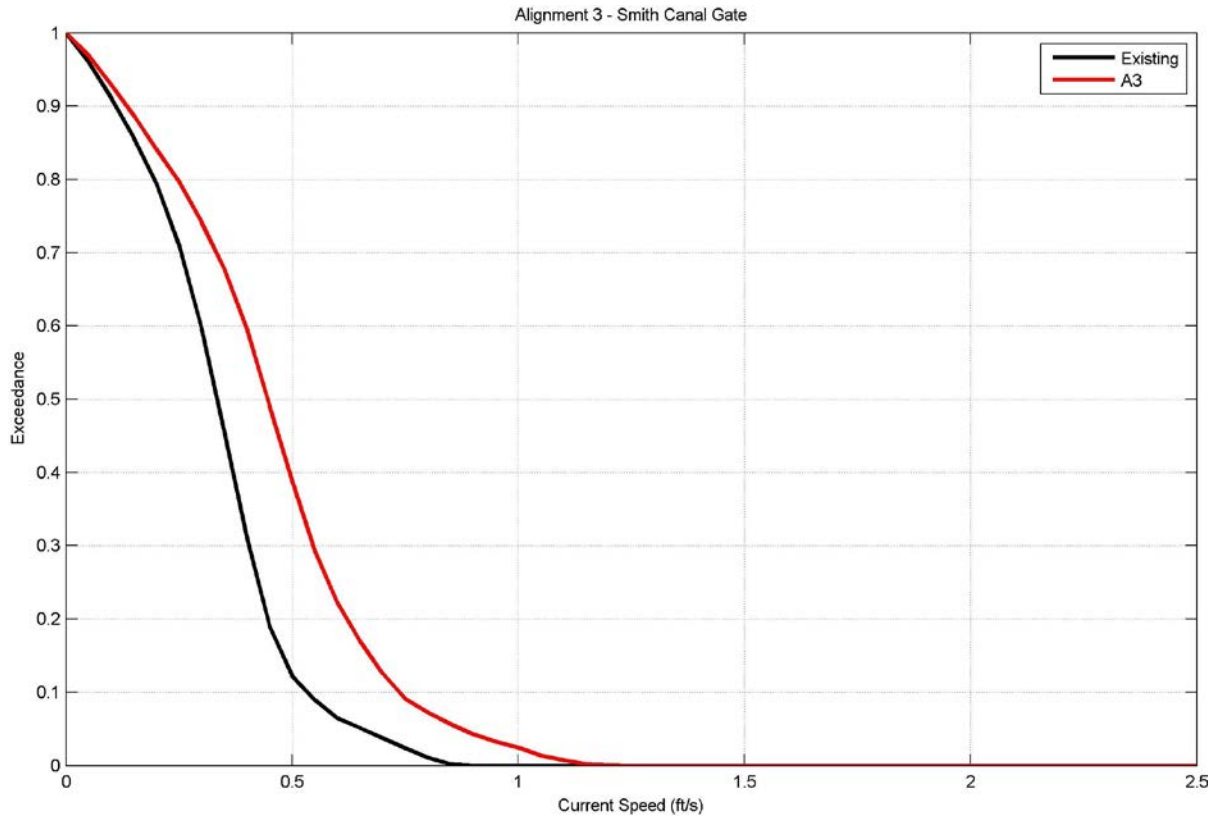


Figure 5-16: Current Speed Exceedance Curve at Gate on Smith Canal of Alignment 3

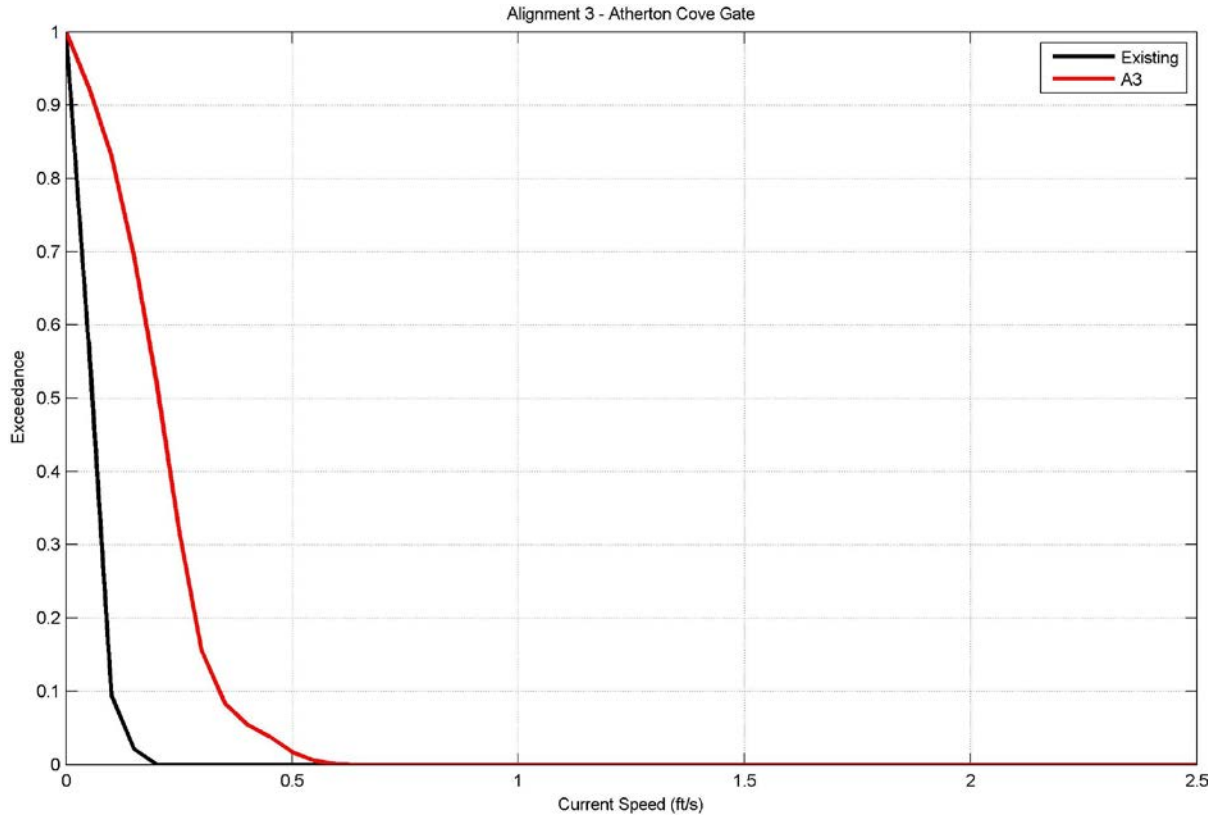


Figure 5-17: Current Speed Exceedance Curve at Gate on Atherton Cove of Alignment 3

5.3 VELOCITY PATTERN AND ANALYSES OF SEDIMENTATION POTENTIAL

To evaluate the sedimentation and erosion potential for each of the Alternative Alignments, the flow field output from the numerical model was used as a proxy. The maximum spring tide cycle (or tidal day) was first determined, and then the time stamp of both peak ebb and flood flow fields was determined for each Alternative modeled. The selected spring tide peak ebb and flood flow fields for each of the proposed alignments were compared against those of the existing conditions. The alternative peak ebb and flood velocity fields were transformed onto a common grid and subtracted by those under the existing conditions to show changes in velocity spatial distribution. For each Alignment, peak flood velocity distribution, peak ebb velocity distribution, and changes in velocity are compared and plotted. The mobilization velocity for sand sized material is 0.6 fps; therefore, the local scour may occur if the velocity exceeds 0.6 fps. On the other hand, if the current velocity drops to below 0.15 fps, the sediment in the water column may settle down.

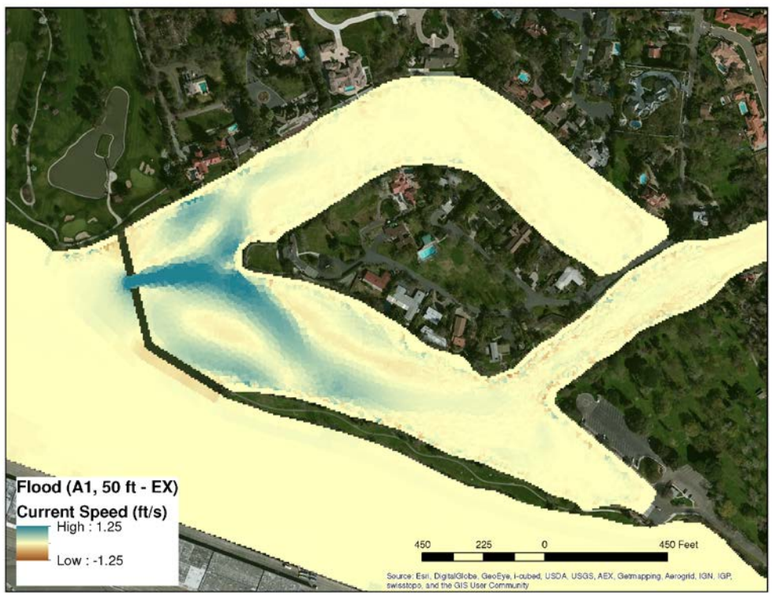
5.3.1 Alignments Comparison

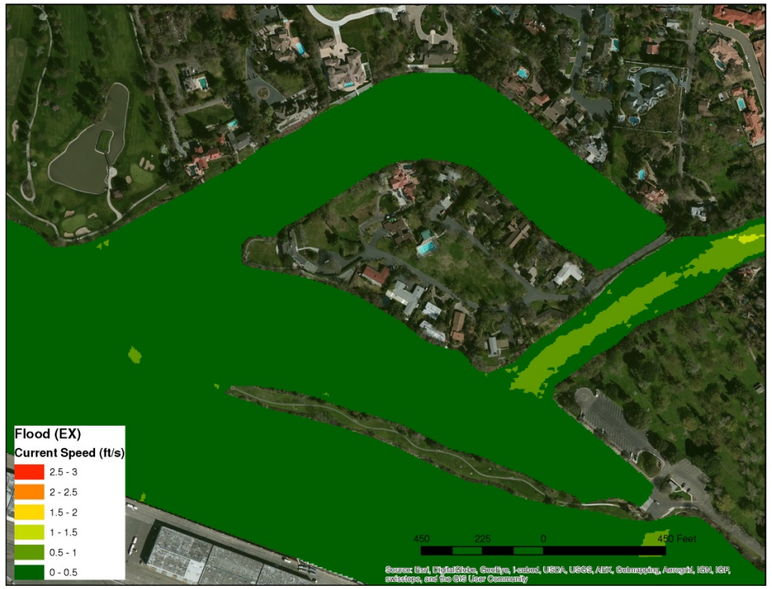
The spring tide peak ebb and flood velocity of each proposed alignment are subtracted by the corresponding peak ebb and flood velocity under the existing conditions, and the resulting difference in velocity is shown in Figure 5-18, and Figure 5-21 for Alignment 1, Figure 5-22 and Figure 5-23 for Alignment 2, and Figure 5-24 and Figure 5-25 for Alignment 3. Figure 5-19 and Figure 5-20 are velocity vector plots for Alignment 1 with a 50-ft gate. The velocity patterns are similar for 100-ft and 200-ft gates of Alignment 1, but the eddies are weaker.

Alignment 1 during the flood tide:

- Velocity: there is an increase in the flow velocity in the vicinity of the gate structure (on the order of 2.0 fps at the peak). On the flood tide, the gate creates a localized counter-clockwise eddy in Atherton Cove entrance and a clockwise eddy in Smith Canal, as shown in Figure 5-19, which promotes the localized circulation. However, the jet flow resulting from the gate also increases velocity at the west corner of Atherton Island.
- Sedimentation: The flood flow may result in a flood shoal at the entrance to Smith Canal near Dad's End and near the north shore. Sedimentation is also expected on both sides of the north floodwall away from the gate. No sedimentation change is expected in areas away from the proposed structure.
- Impacts to SDWSC: No hydraulic impacts are expected from the proposed project to the SDWSC.

ALIGNMENT 1 (50 FT GATE) - EXISTING





EXISTING



ALIGNMENT 1 (50 FT GATE)

Figure 5-18: Existing and Alignment 1 (50 ft Gate) Flood Tide Velocity Difference

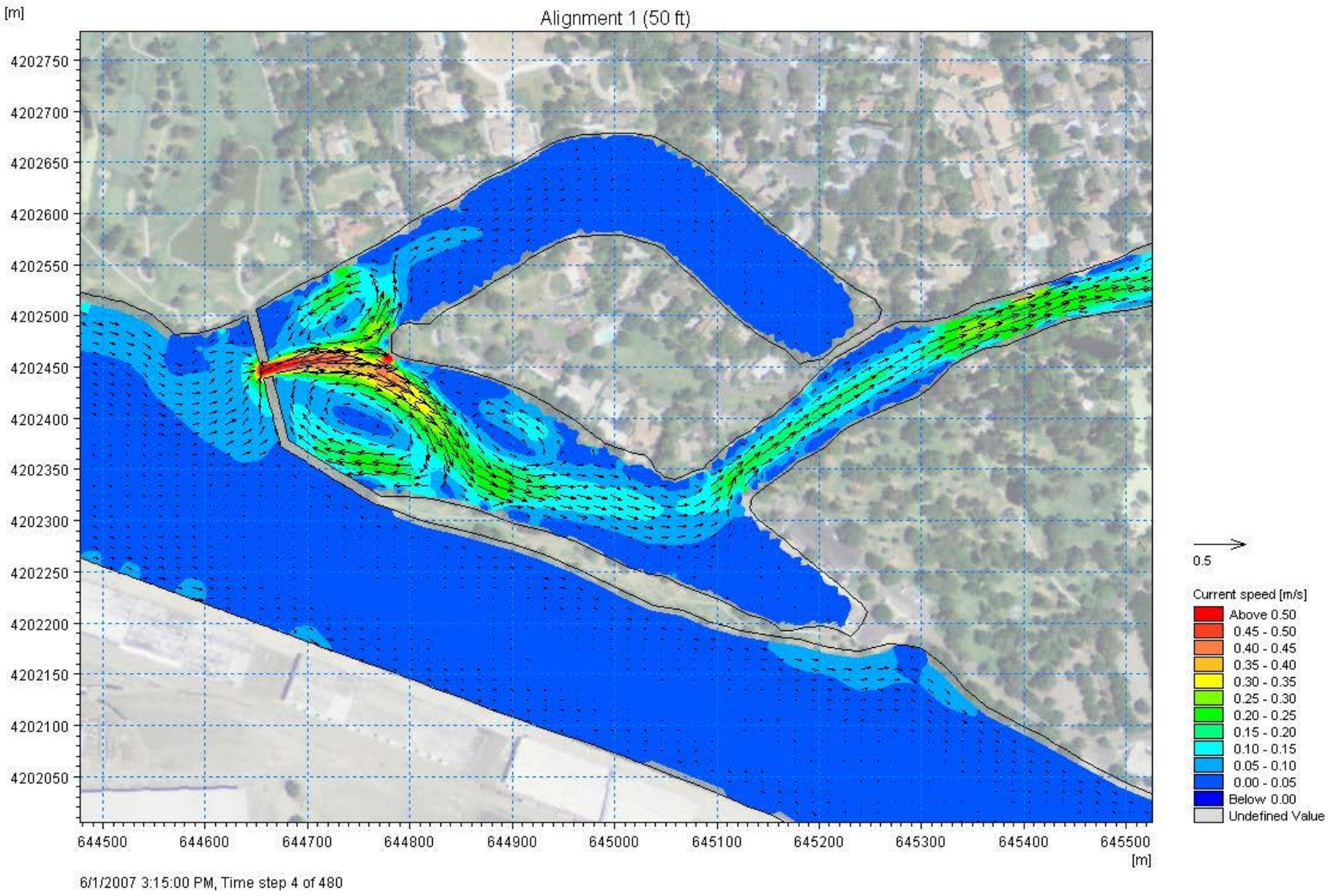


Figure 5-19: Alignment 1-50 ft Gate Velocity Vector Plot during Flood Tide

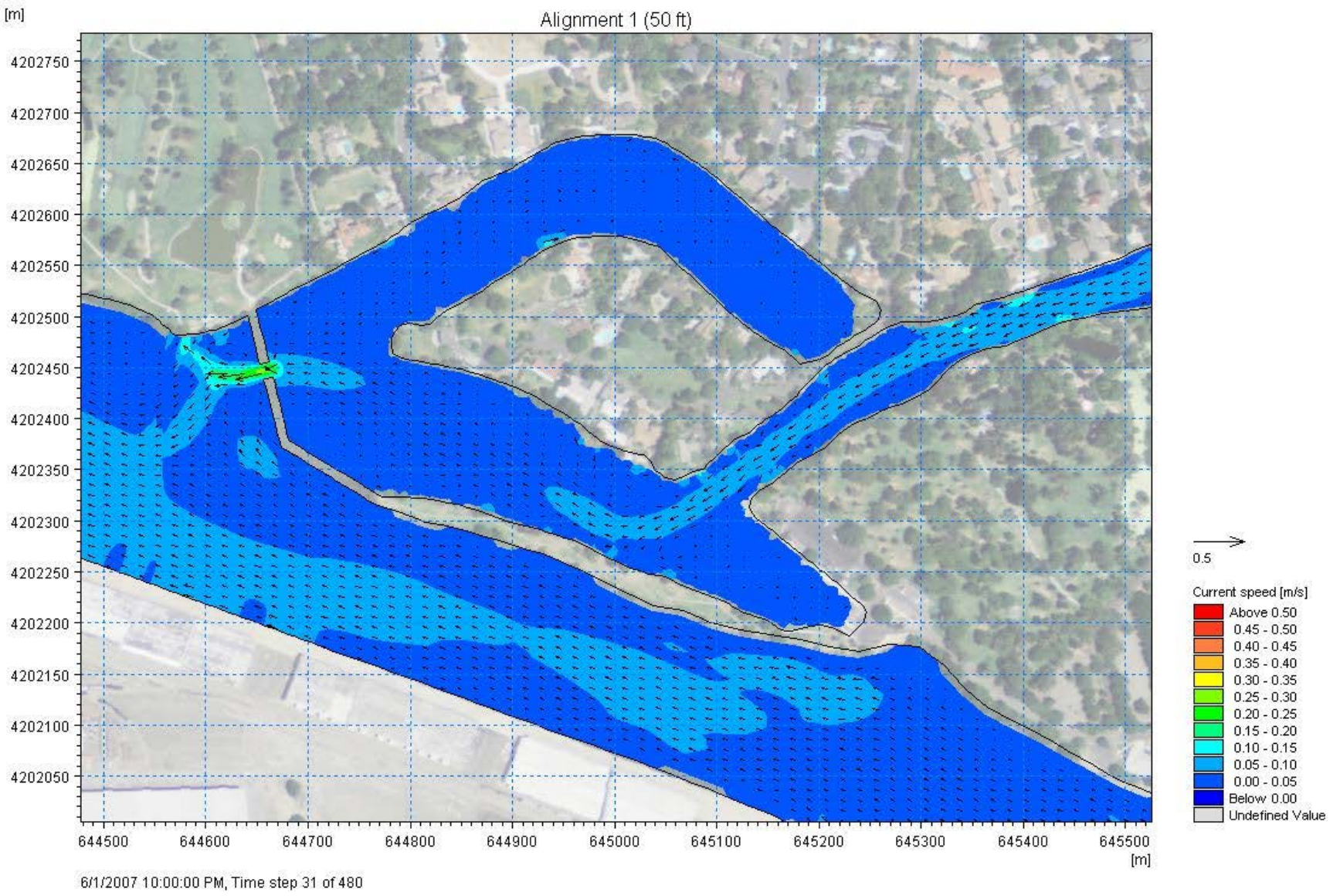
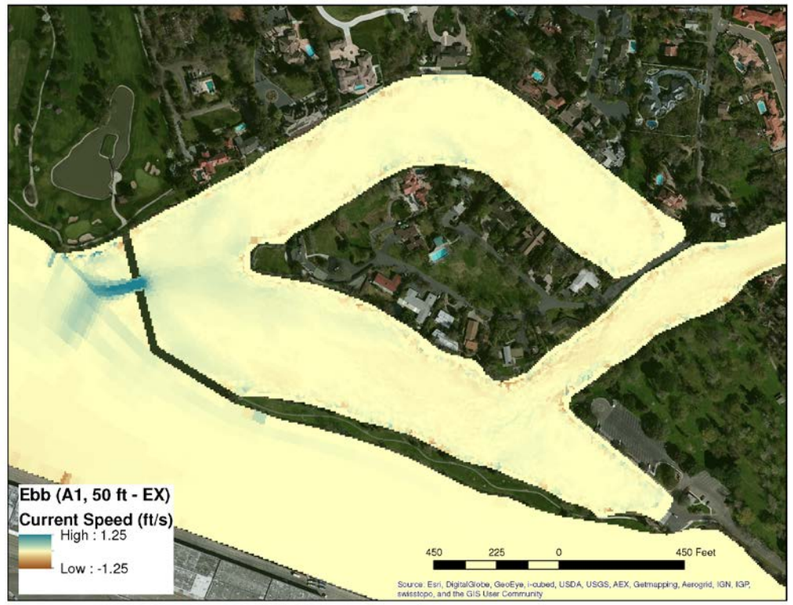


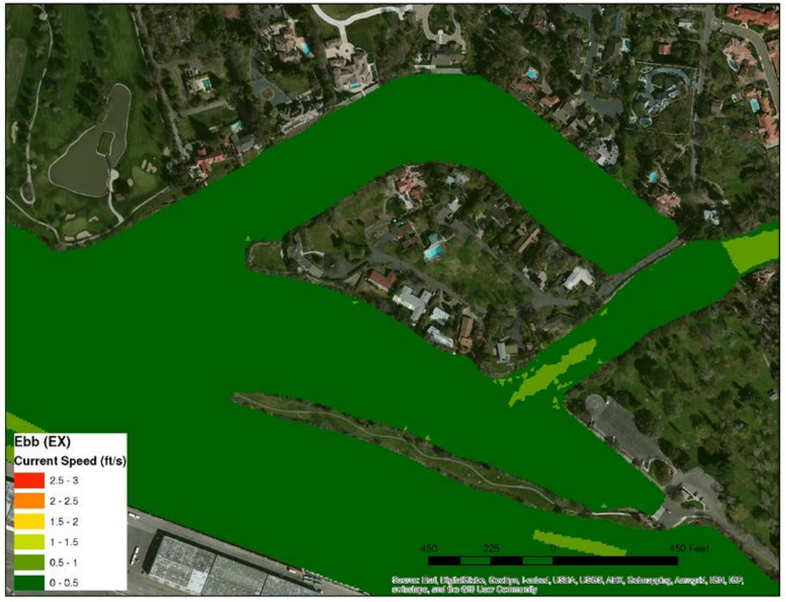
Figure 5-20: Alignment 1-50 ft Gate Velocity Vector Plot during Flood Tide

Alignment 1 during the ebb tide:

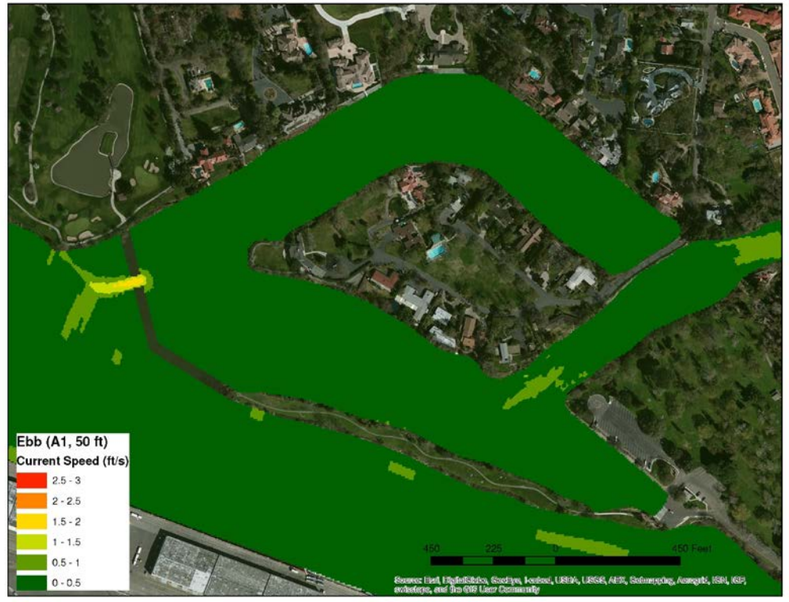
- Velocity: The velocity increase through the gate structure is not as significant as that during the flood tide (on the order of 1 fps at the peak), and it is much more localized around the gate structure. Away from the structure, the velocity pattern and magnitude largely remains unchanged.

ALIGNMENT 1 (50 FT GATE) - EXISTING





EXISTING



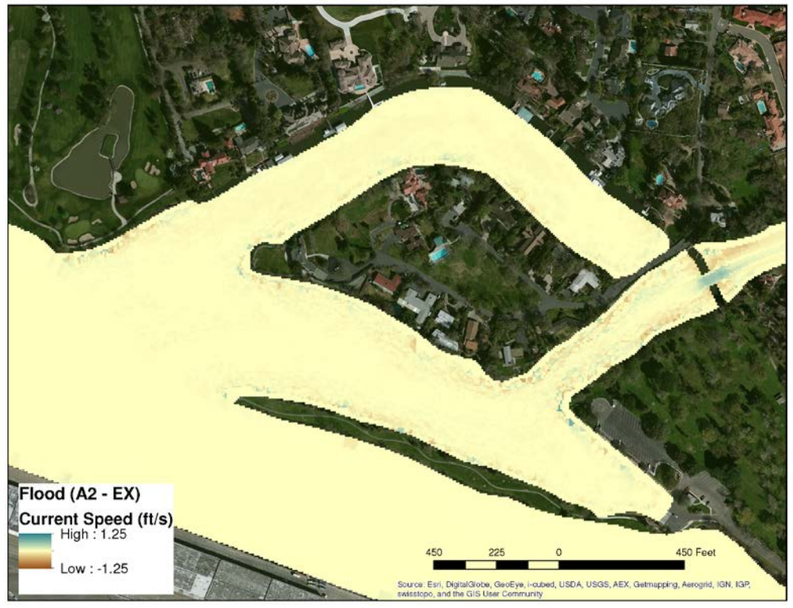
ALIGNMENT 1 (50 FT GATE)

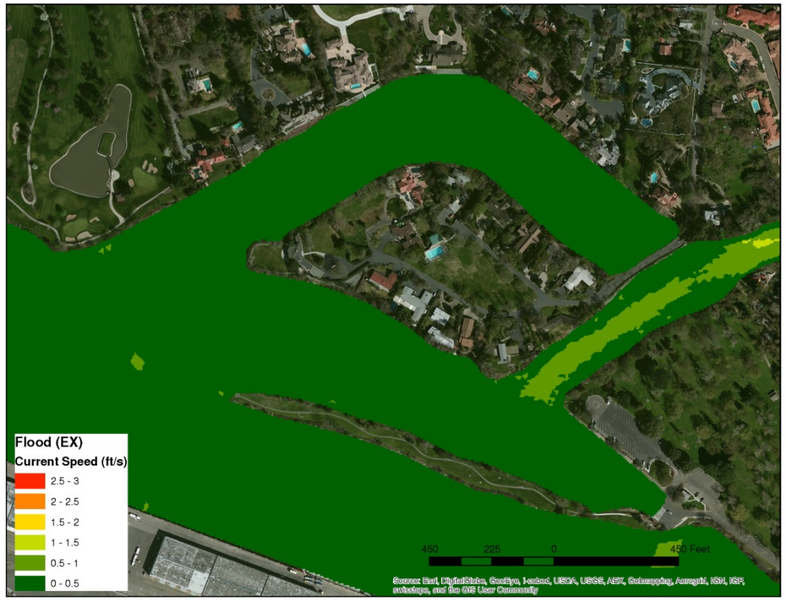
Figure 5-21: Existing and Alignment 1 (50 ft Gate) Ebb Tide Velocity Difference

Alignment 2 during the flood tide:

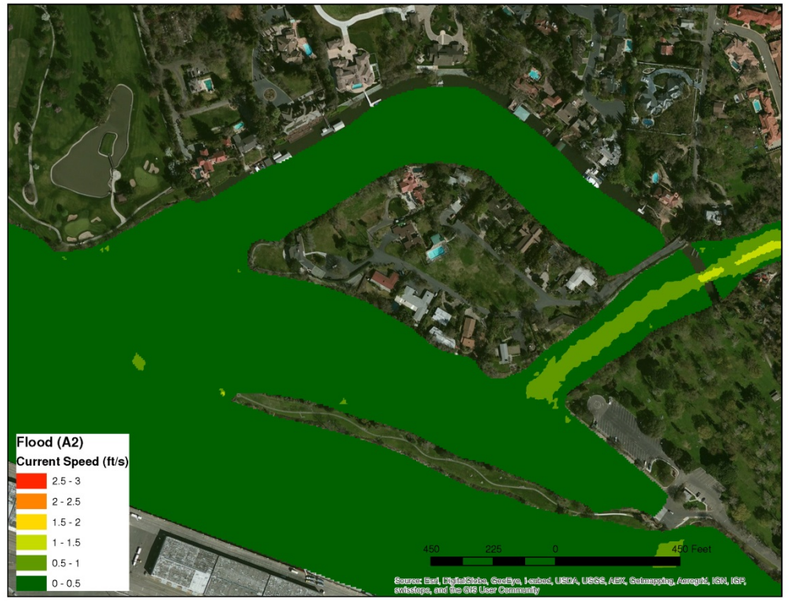
- Velocity: Sheet pile wall within Atherton Cove and the gate structure within Smith Canal does not significantly change the hydrodynamics. Locally around the gate structure, there is an increase in the flow velocity on both ebb and flood tides, but this effect is largely in the middle of the canal and decreases with increase in distance from the gate.
- Sedimentation: The scour potential is largely located in the middle of the canal adjacent to the gate structure. At the gate section, potential aggradation along the shore is expected on both sides of the gate away from the center of the gate opening.

ALIGNMENT 2 - EXISTING





EXISTING



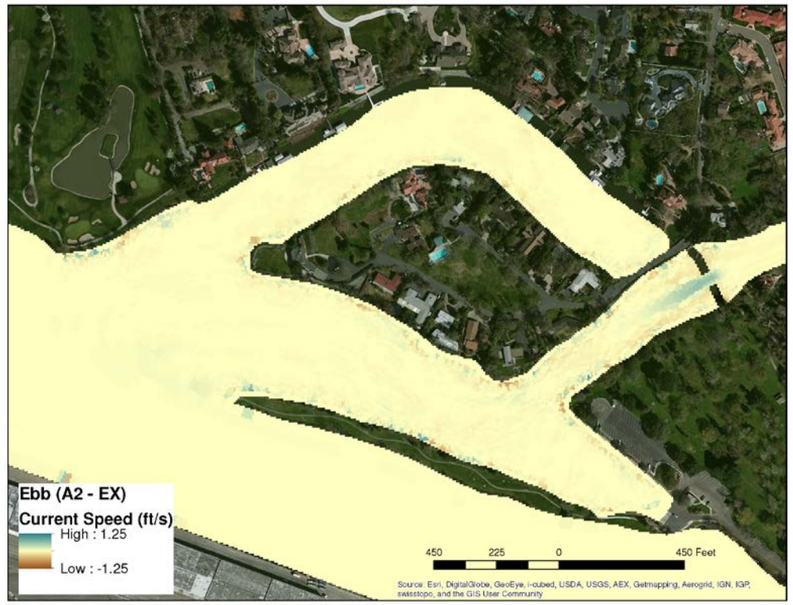
ALIGNMENT 2

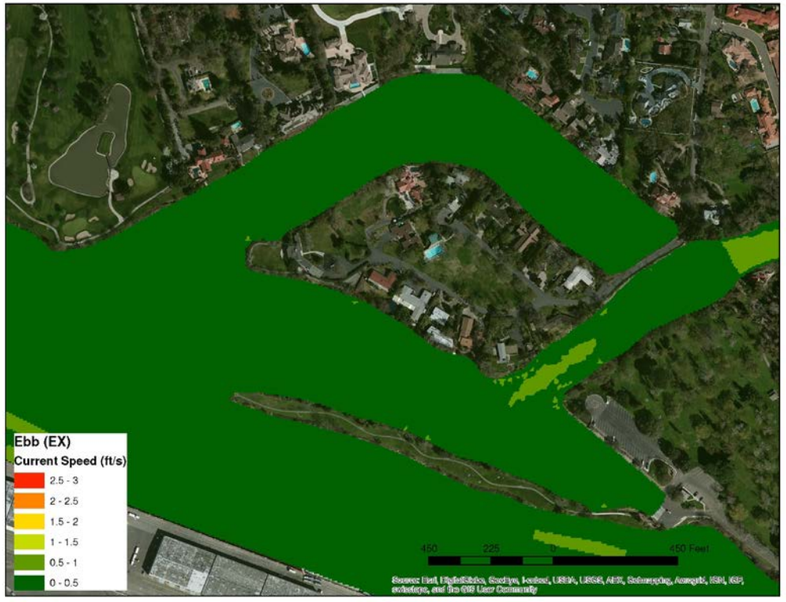
Figure 5-22: Existing and Alignment 2 Flood Tide Velocity Difference

Alignment 2 during the ebb tide:

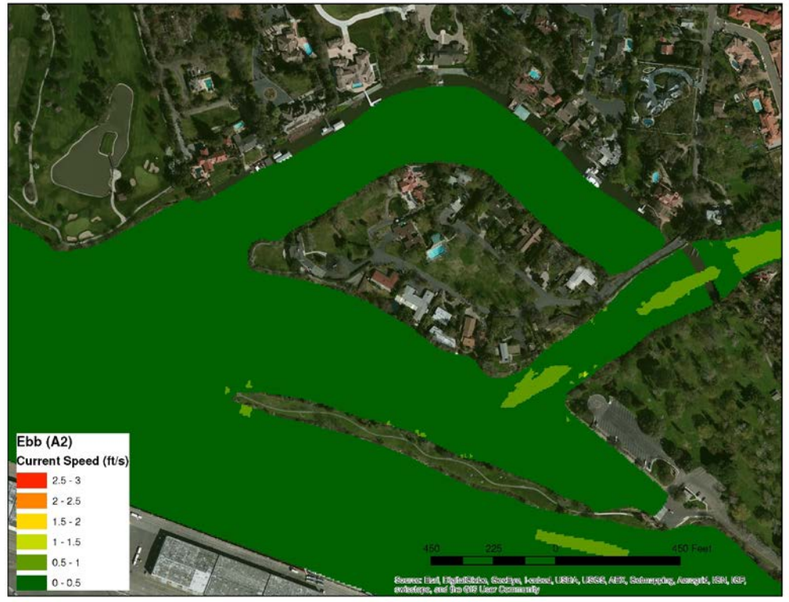
- Velocity: The velocity increase through the gate structure is not as significant as that during the flood tide (on the order of 0.5 fps at the peak), and it is much more localized around the gate structure. Away from the structure, the velocity pattern and magnitude largely remains unchanged.

ALIGNMENT 2 - EXISTING





EXISTING



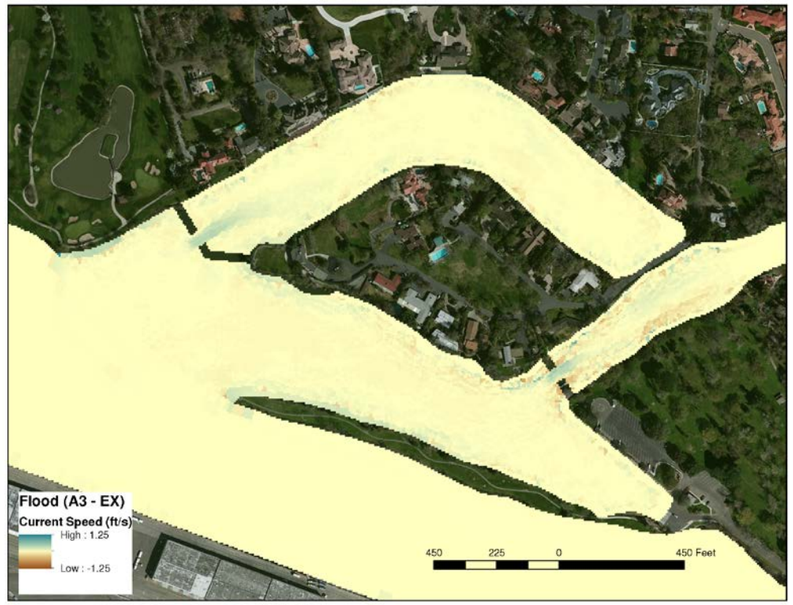
ALIGNMENT 2

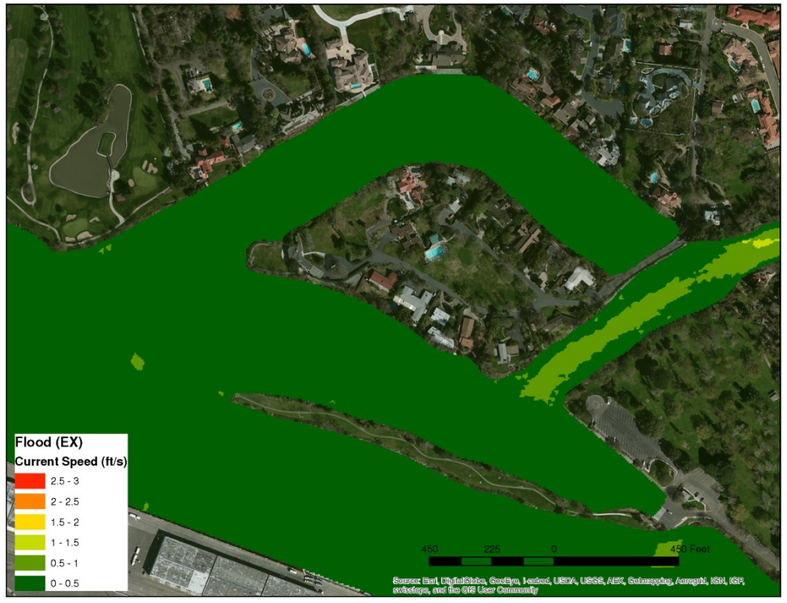
Figure 5-23: Existing and Alignment 2 Ebb Tide Velocity Difference

Alignment 3 during the flood tide:

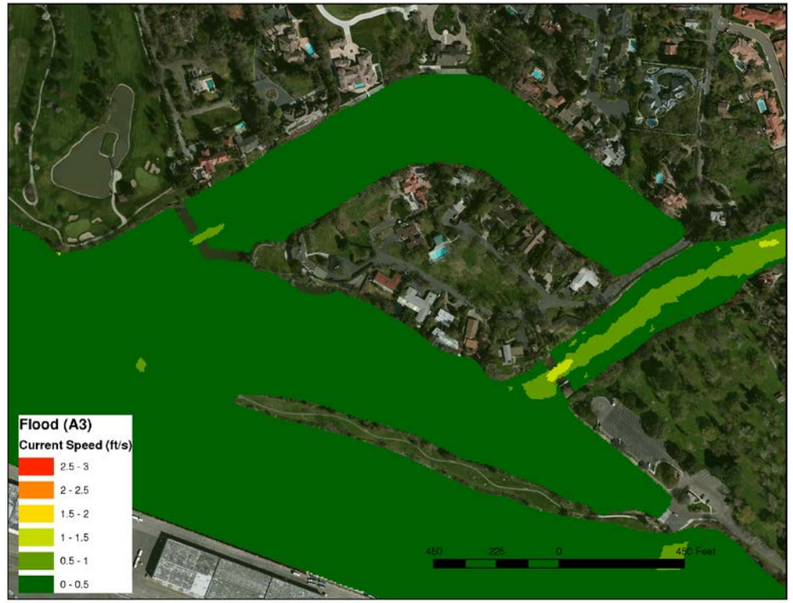
- Velocity: the velocity change is much more localized around the two gates, and the velocity increase is relatively small, less than 0.5 fps at both gates.
- Sedimentation: The scour potential is largely located in the middle of the canal adjacent to the gate structures. The potential erosion hot spots are along the center of the channel near the two gates. At the gate section, potential aggradation along the shore is expected on both sides of the floodwall away from the center of the gate opening.

ALIGNMENT 3 - EXISTING





EXISTING



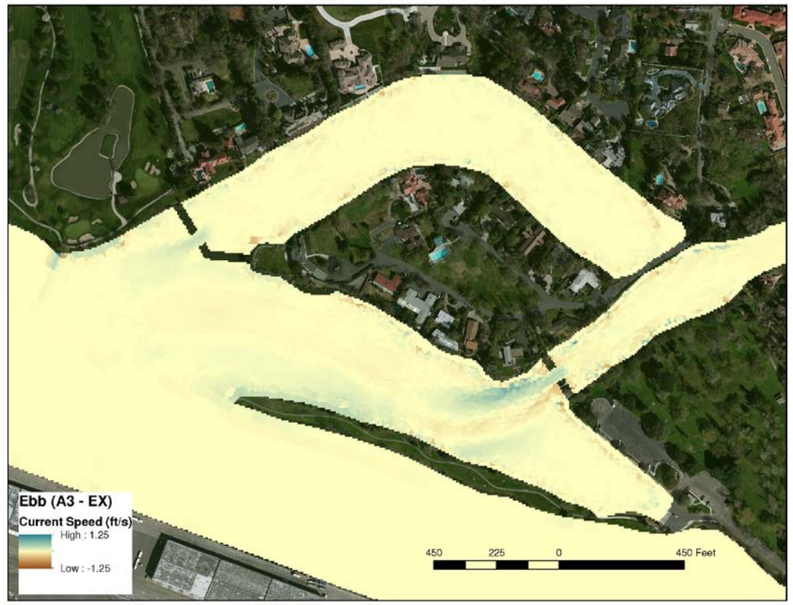
ALIGNMENT 3

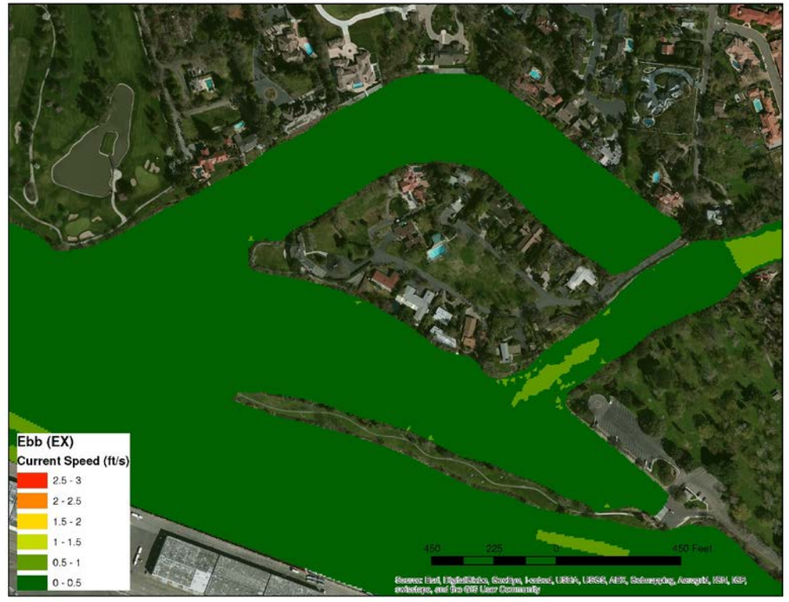
Figure 5-24: Existing and Alignment 3 Flood Tide Velocity Difference

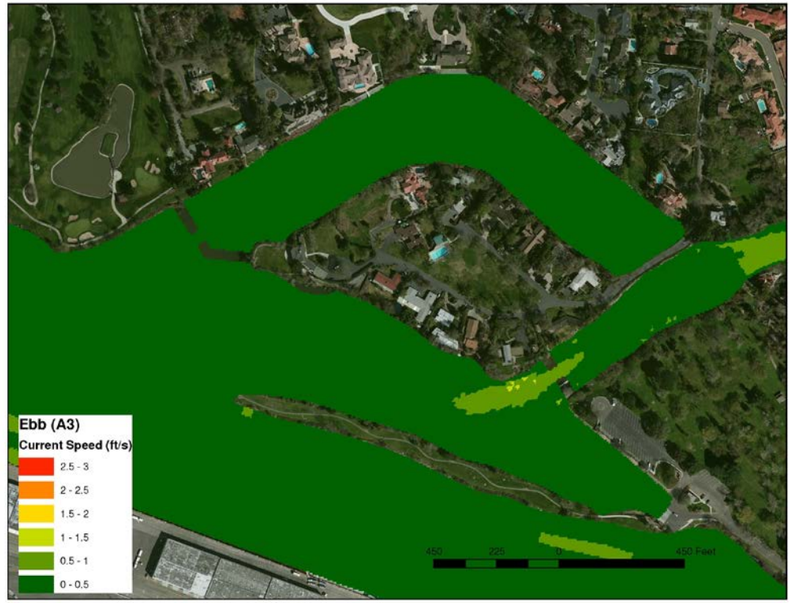
Alignment 3 during the ebb tide:

- Velocity: The velocity increase through the gate structure is slightly less than that during the flood tide (on the order of 0.5 fps at the peak), and it is much more localized around the gate structures. Away from the structure, the velocity pattern and magnitude largely remains unchanged.

ALIGNMENT 3 - EXISTING







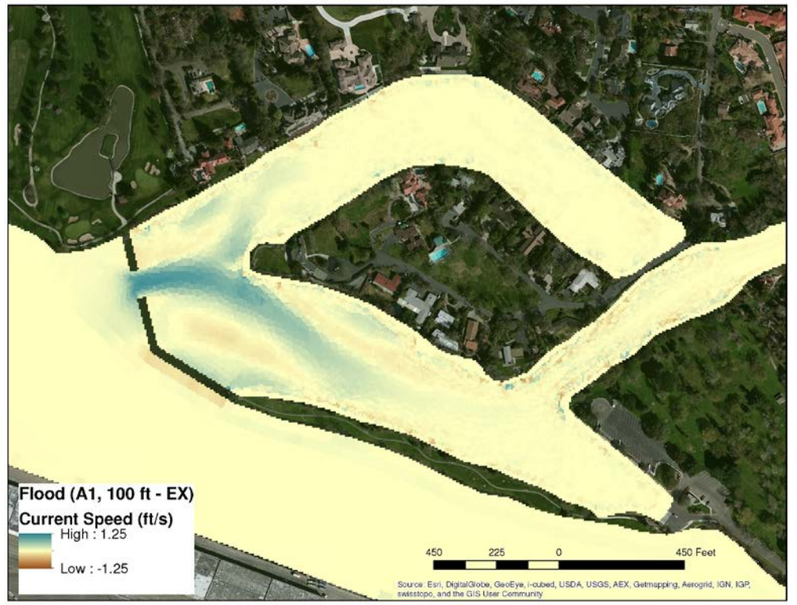
EXISTING ALIGNMENT 3

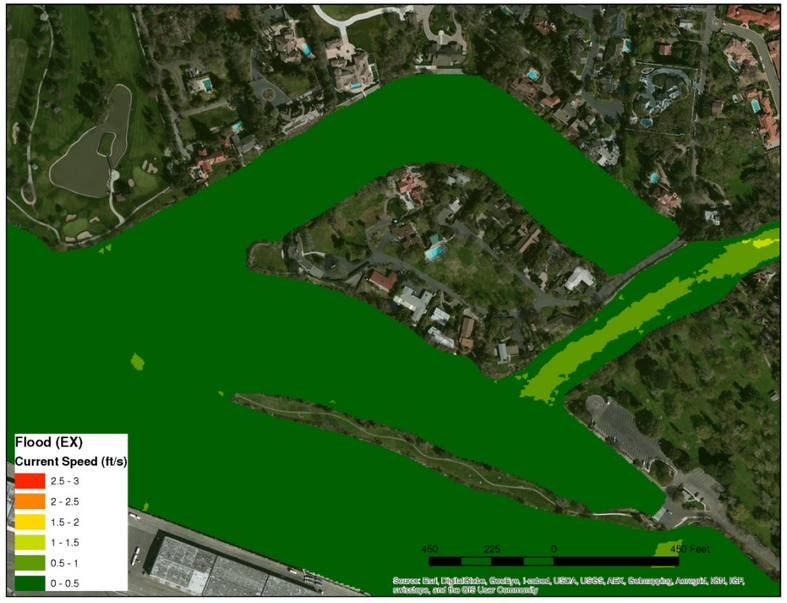
Figure 5-25: Existing and Alignment 3 Ebb Tide Velocity Difference

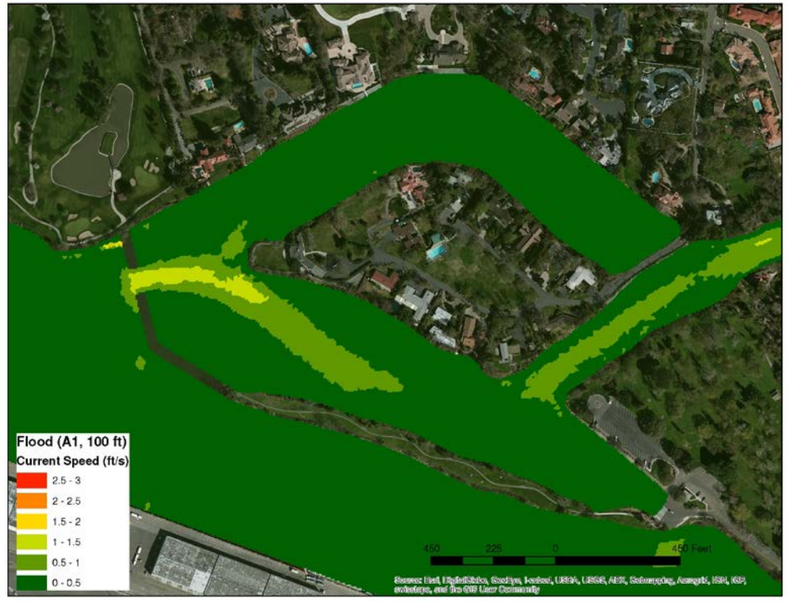
5.3.2 Alignment 1 Gate Width Sensitivity

The spring tide peak ebb and flood velocity of each proposed gate width are subtracted by the corresponding peak ebb and flood velocity under the existing conditions. Figure 5-18, Figure 5-21, and Figure 5-26 through Figure 5-29 show comparisons of peak tidal flow velocity for Alignment 1 with 50-ft, 100-ft, and 200-ft gate widths. The comparisons indicate that between different gate widths, the pattern of the flows with increased gate width remains largely unchanged. Rather, it is the changes to the flow velocity that decreases linearly with increased gate width. The velocity through the gate decreases to nearly half when the gate width doubles from 50-ft to 100-ft. On the flood tide, the gate creates a localized counter-clockwise eddy at the entrance to Atherton Cove and a clockwise eddy in Smith Canal as shown in Figure 5-19. The gate slightly increases the discharge into Atherton Cove, while slightly decreasing the discharge into Smith Canal. The extent of the flow redistribution reduces with increase in gate width. For the 200-ft wide gate, the flood shoal is expected to be along the inside of the south floodwall.

ALIGNMENT 1 (100 FT GATE) - EXISTING





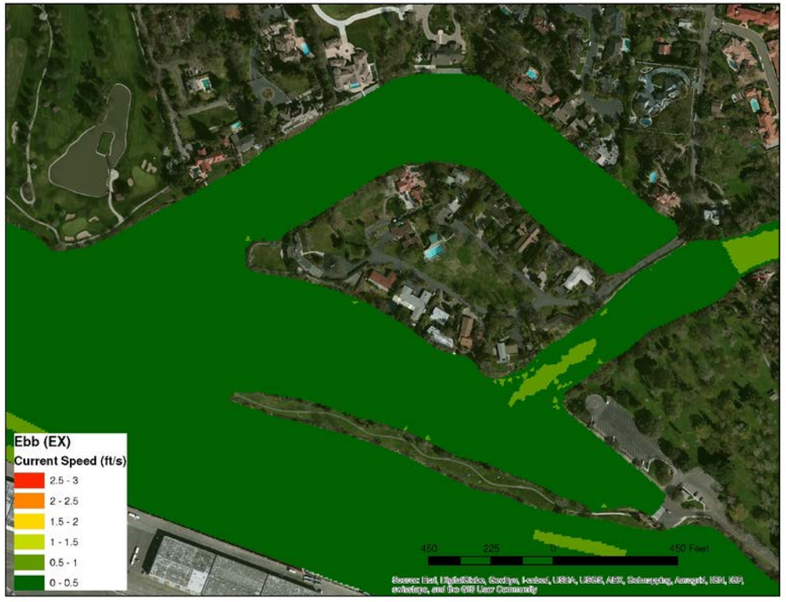


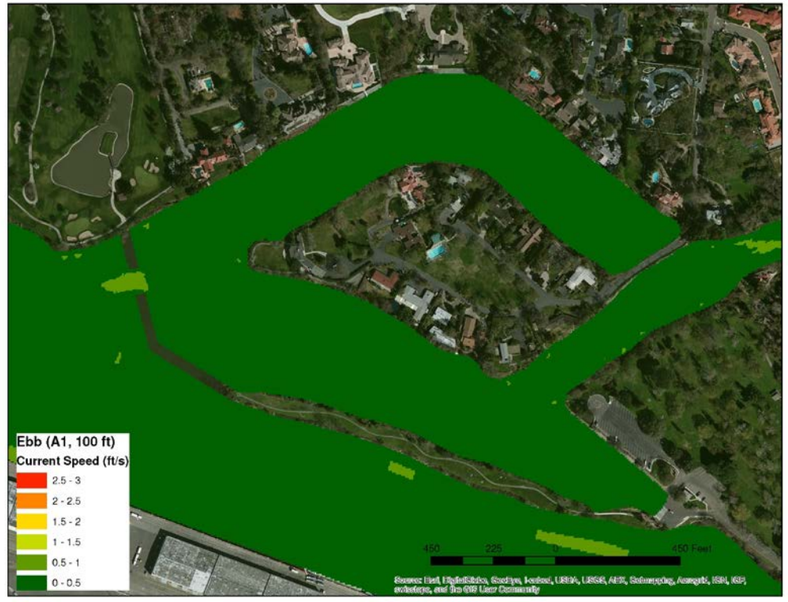
EXISTING ALIGNMENT 1 (100 FT GATE)

Figure 5-26: Existing and Alignment 1 (100 ft Gate) Flood Tide Velocity Difference

ALIGNMENT 1 (100 FT GATE) - EXISTING



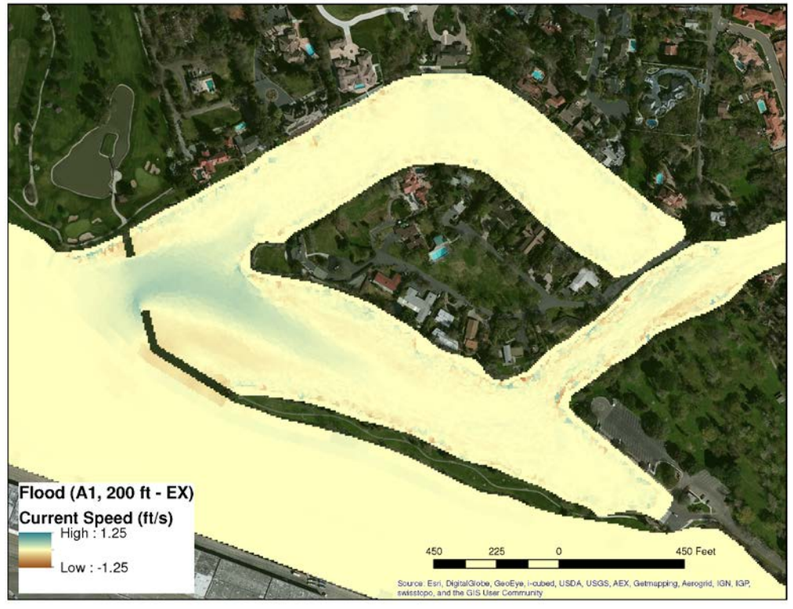


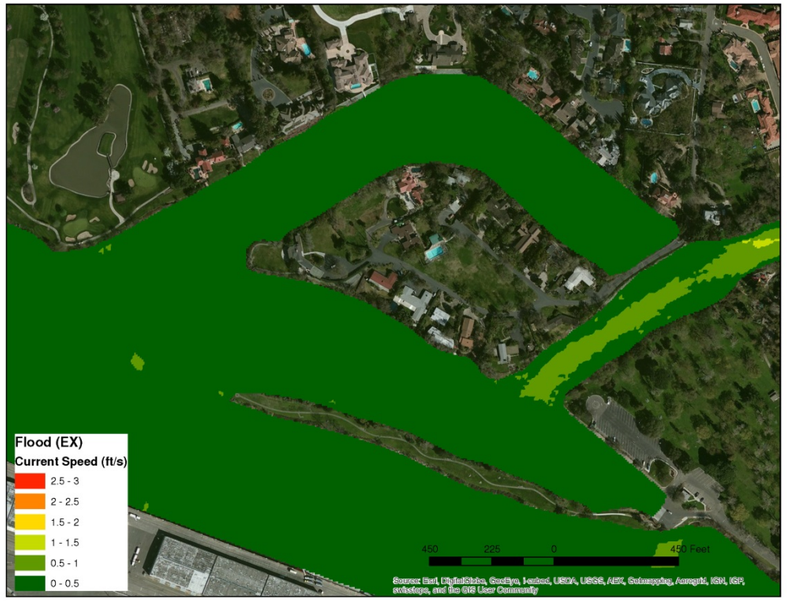


EXISTING ALIGNMENT 1 (100 FT GATE)

Figure 5-27: Existing and Alignment 1 (100 ft Gate) Ebb Tide Velocity Difference

ALIGNMENT 1 (200 FT GATE) - EXISTING





EXISTING

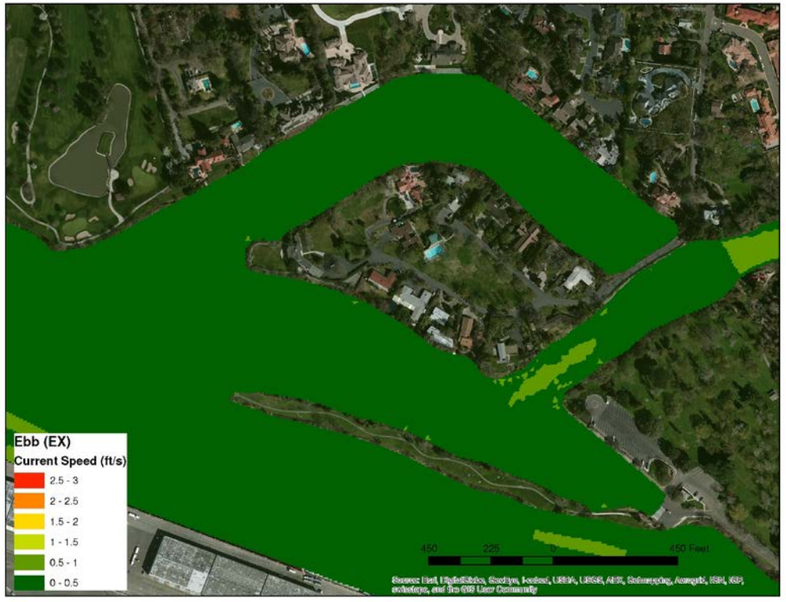


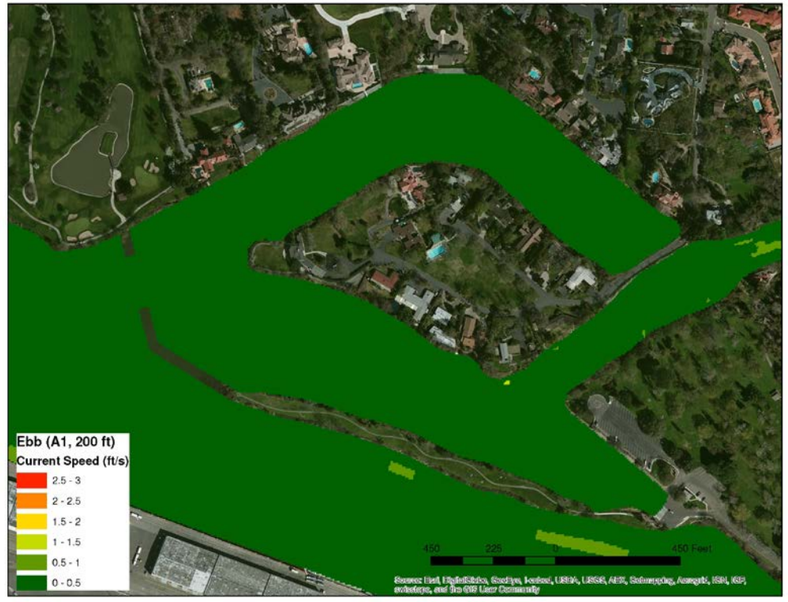
ALIGNMENT 1 (200 FT GATE)

Figure 5-28: Existing and Alignment 1 (200 ft Gate) Flood Tide Velocity Difference

ALIGNMENT 1 (200 FT GATE) - EXISTING







EXISTING ALIGNMENT 1 (200 FT GATE)

Figure 5-29: Existing and Alignment 1 (200 ft Gate) Ebb Tide Velocity Difference

5.3.3 Siltation Rates

5.3.3.1 Historical Siltation Rates

Construction of Smith Canal was planned in 1889 for the purpose of discharging storm water and sewage, and as a supply route for barging of goods as part of the development of the City of Stockton. The canal was first identified on survey maps from 1894 and the exact completion date is not documented.

The earliest available survey data was established in 1934. Since then, the Canal has not been resurveyed and depths indicated on navigation charts to this date reflected the originally surveyed water depths.

Figure 5-30 provides an excerpt of a hydrographic chart from 1948, indicating water depths in Smith Canal ranging from 3 to 7 ft relative to MLLW. Figure 5-31 is an excerpt from the current day NOAA nautical chart reflecting the same water depths as the 1948 chart. The nautical chart for this area has not been updated since 1948.

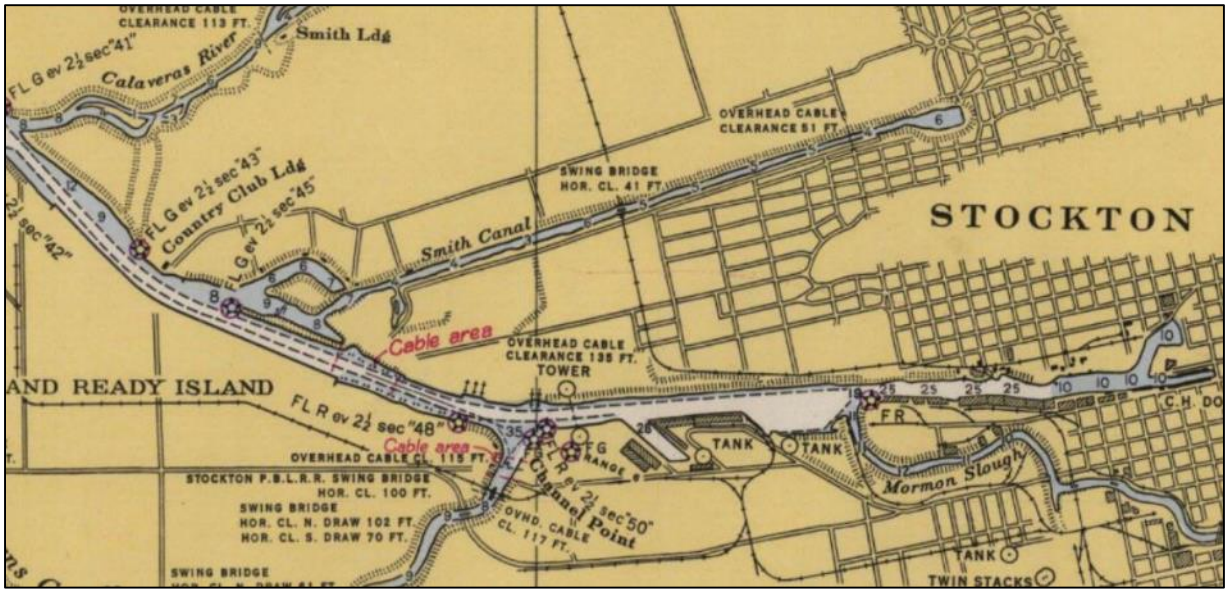


Figure 5-30: Smith Canal, excerpt from Chart No. 5527 – San Joaquin River, U.S. Coast and Geodetic Survey (1948)

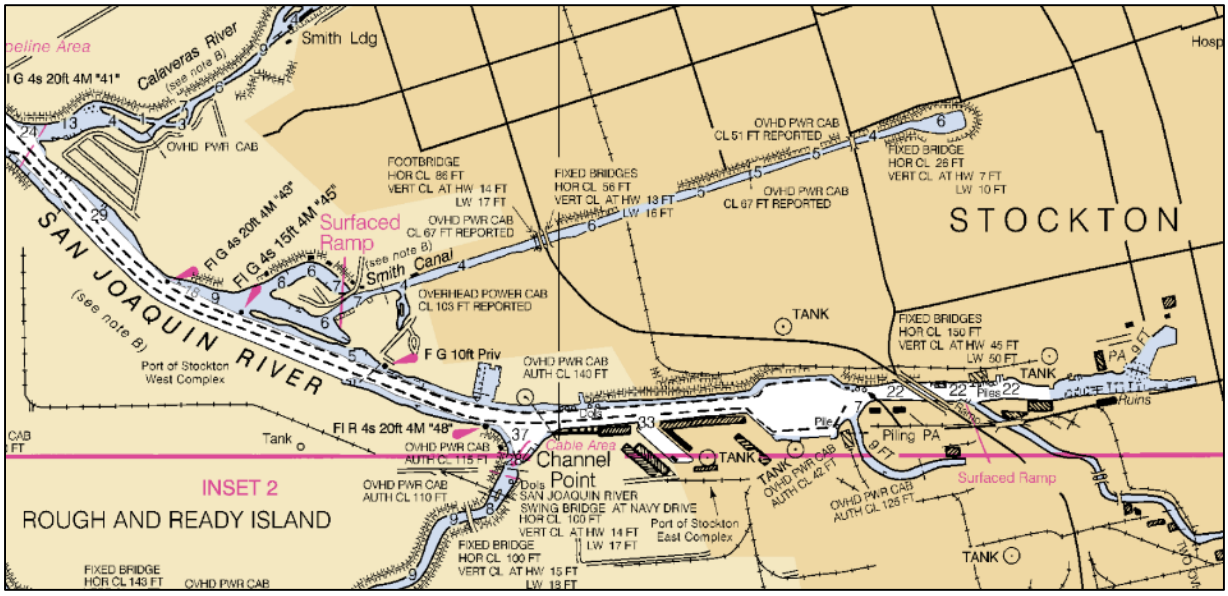


Figure 5-31: Smith Canal, excerpt from Nautical Chart No.18661 – Sacramento and San Joaquin Rivers, NOAA (2009)

Bathymetric surveying provided by KSN for the current project development indicate that water depths in Smith Canal to the east of I-5 are substantially lower than in past times, whereas water depths in the portion of the canal west of I-5 have increased. Water depths in Atherton Cove have also decreased due to siltation. The water depth increase west of I-5 may be a result of channel dredging.

Figure 5-32 shows an example comparison of the historical (red) canal cross-section with recent survey data (blue curve). The section is located approximately midway between the I-5 freeway overpass and Yosemite Lake. The example shows that the originally deeper center portion of the channel has silted up, and also that the embankment side slopes have been built out slightly, so the canal has become wider.

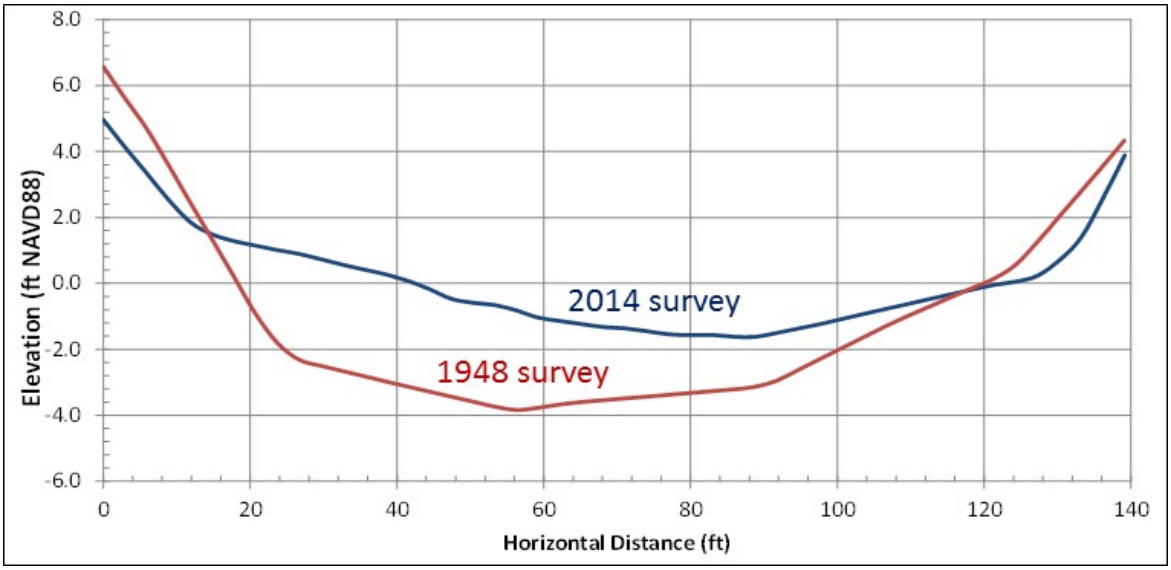


Figure 5-32: Example Siltation in Smith Canal

If a scenario of steady sedimentation of the canal over the past 80 years is assumed with no maintenance dredging, the average rate of siltation in Smith Canal on both sides of I-5 Bridge ranges from 0.2 to 0.3 in. per year, while the average siltation rate in Atherton Cove has been around 0.3 in. per year. This corresponds to siltation of approximately 1.5 to 2.0 ft.

The deepening of the canal ranges from around 1 ft at the I-5 Bridge to around 3 ft near the mouth of the Smith Canal, which is likely a result of dredging.

5.3.3.2 Future Siltation Rates

The hydrodynamic modeling results indicate that the proposed project would not change overall siltation rates in the study area except the area immediately adjacent to the gate. In Smith Canal, the historical average siltation rate ranges from 0.2 to 0.3 inches per year, as discussed in the section above. The sedimentation in the system is largely contributed by the sediment yield from the watershed as the existing peak tidal velocity, as shown in Table 5-5, is less than 0.2 fps, which is too low to mobilization sediment. The watershed has been further developed in the past 80 years and sediment yield from the watershed is expected to be reduced, therefore, the future average siltation rate is expected to be less than 0.2 to 0.3 inches per year. For similar reasons, the future average siltation rate in Atherton Cover is expected to be less than 0.3 inches per year.

6. RESIDENCE TIME ANALYSIS

The general water quality of Smith Canal can be characterized using residence time modeling. In residence time modeling, the constituent concentrations in a water body reflect a balance between the rate of constituent supply and the rate of constituent removal by tidal flushing and clean inflow. Residence time provides a useful measure of the rate at which waters in the hydraulic system are renewed. For example, if there are 100 particles released in a hydraulic system such as Yosemite Lake, the residence time is the average time it takes for the 100 particles to leave the hydraulic system. Accordingly, residence times provide a means for assessing the water quality of the hydraulic system, such as whether changes to a hydraulic system are likely to improve or degrade water quality in the system.

6.1 METHODOLOGY

Water quality is affected by a wide range of variables including salinity, flow exchange, water temperature, oxygen levels, and concentrations of nutrients in the water column. It is not within the scope of the present modeling effort to provide a description of the full range of variables attributing to water quality, but the two dimensional modeling effort does provide insight into two of the primary variables affecting water quality related to flow dynamics, which are flow velocities and flow exchange. These are combined into residence time, which describes the time it takes for water particles to move through the project area. For example, in areas with high flow velocities and substantial flow exchange, residence time may be as short as hours to days, whereas in stagnant areas having little flow exchange, typical residence time may be measured in weeks to months.

The model utilized to evaluate residence time is the MIKE21 MT (Material Transport) model. Consider the reduction of a contaminant concentration in a tidal embayment due to flushing after being released, in which C_0 is initial concentration, K is a reduction coefficient, and $C(t)$ is the concentration at time t:

$$C(t) = C_0 e^{-Kt}$$

The residence time of the contaminant (T_r) in the embayment is determined by:

$$T_r = \frac{\int_0^\infty t\, C(t)\, dt}{\int_0^\infty C(t)\, dt} = \frac{1}{K}$$

Since the concentration at $t = T_r$ is:

$$C(T_r) = C_0 e^{-1} = \frac{C_0}{e}$$

T_r can be calculated from the relative contaminant concentration distribution computed by the model. T_r corresponds to the time the relative concentration, $C(T_r)/C_0$, reaches a value of 1/e or 0.37. The variable e is the base of the natural logarithm and has a value of 2.718.

The general procedure for computing residence times for different parts of a tidal embayment is as follows:

- Assign an initial contaminant concentration of unity within the study area (Smith Canal and Atherton Cove) and a value of zero for the rest of water body. Also, a zero concentration is assigned at model open water boundaries.
- Run the model for a number of tidal cycles until substantial reductions of contaminant concentrations have occurred due to tidal flushing at the locations of interest.
- Extract the computed relative concentration time series at the selected gage locations, as shown in Figure 6-2.
- Determine residence times corresponding to the locations of interest from the distribution curves.

Figure 6-1 and Figure 6-2 show an example of how the method works. It is assumed that the water in the ambient environment outside of the study area is clean and an initial contaminant concentration of zero is assigned in the model, as shown in blue in Figure 6-1. An initial contaminant concentration of unity is specified within the study area, which is Atherton Cove and Smith Canal, as illustrated in Figure 6-1 as red.

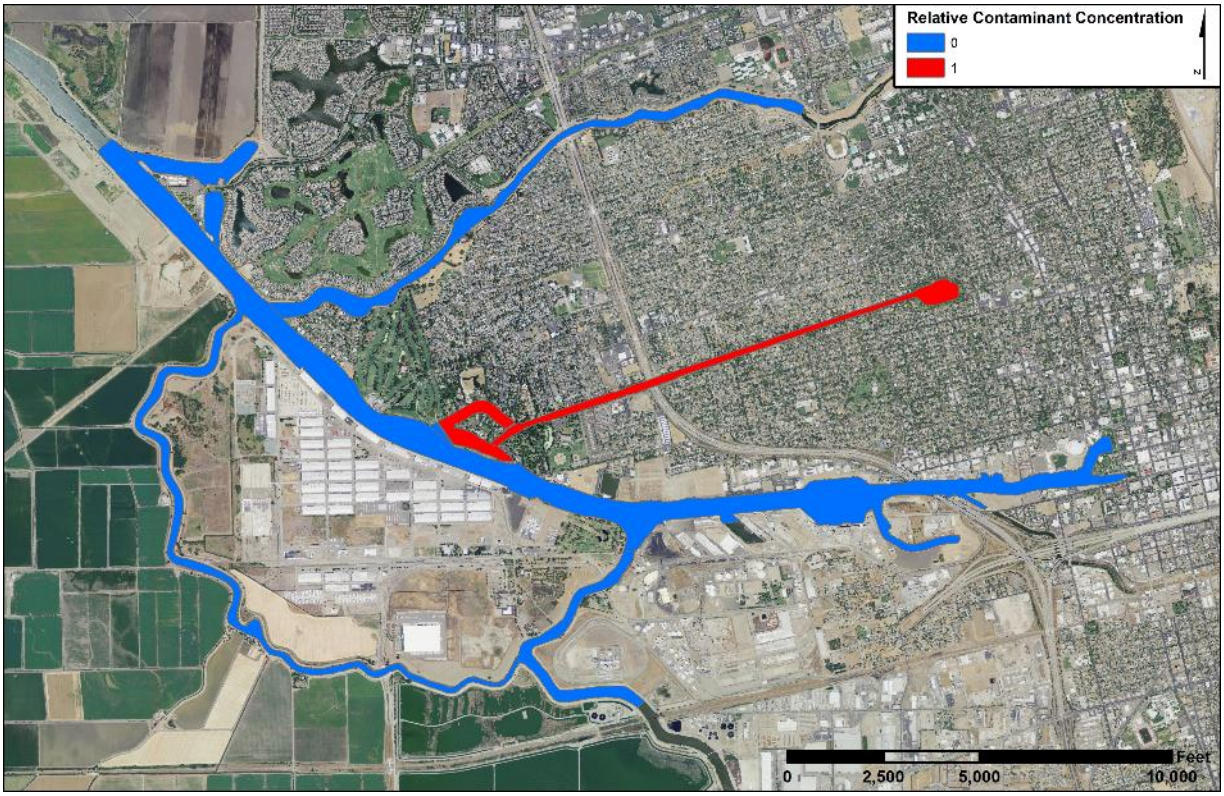


Figure 6-1: Initial Contaminant Concentrations (Blue: Zero; Red: 100% Relative Concentration)

The solid blue line in Figure 6-2 shows an example of results derived from the model. In this example, the red line shows the 25-hour running average (one full diurnal tidal cycle). The red line (average) drops to a value of 1/*e*, or approximately 0.37 after approximately 250 hours, and the blue line drops to 1/e after approximately 268 hours. In this study, the residence time is based on the instantaneous method (blue line) as the residence time in Atherton Cove is very short and less than a day if the moving average method is used. This method is applied to a number of

locations selected throughout Smith Canal and Atherton Cove and the results are compared for "without-project" and "with-project" conditions. The main purpose of transport modeling is to predict whether there are significant changes to residence times, and, therefore, to the water quality within Smith Canal with the proposed closure structure configurations.

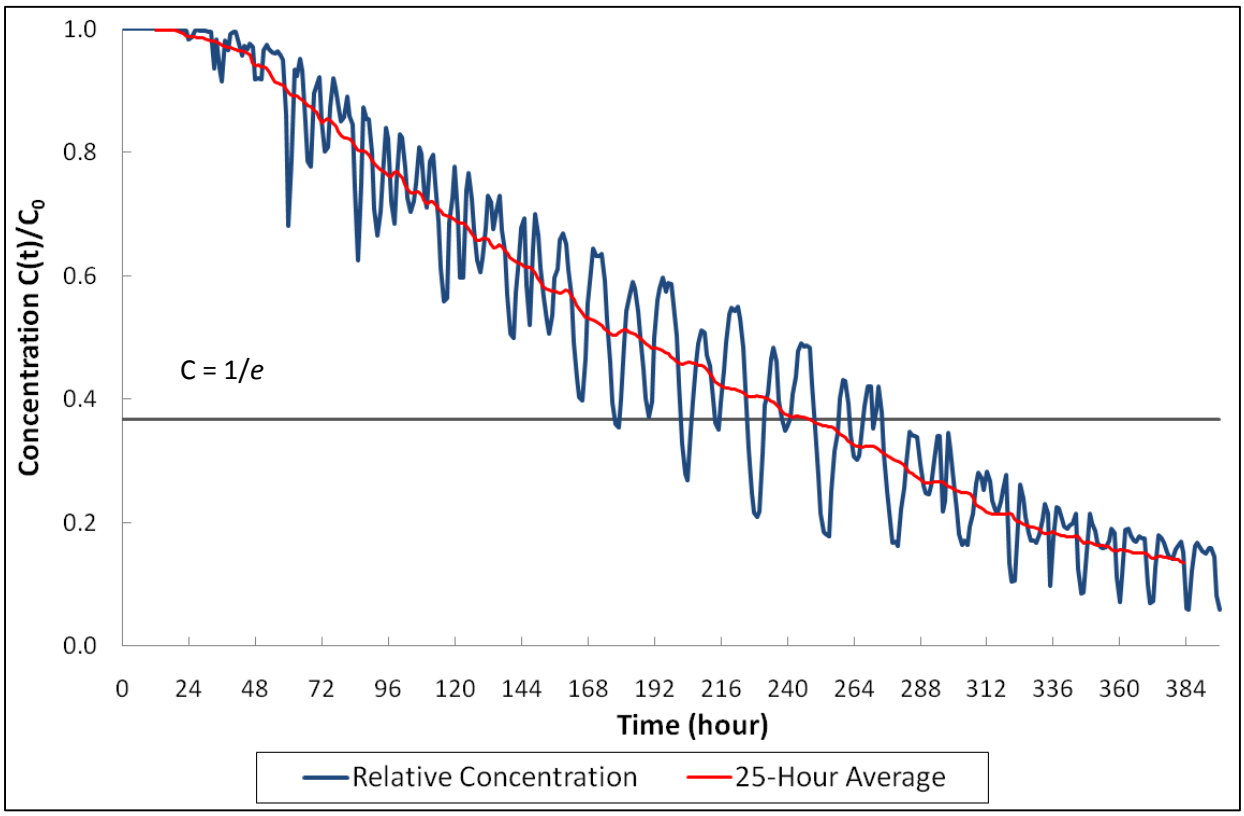


Figure 6-2: Example Residence Time Plot

6.2 RESIDENCE TIME RESULTS

The locations of the residence time reference sites selected in this analysis are presented in Figure 6-3 and Figure 6-4. There are eight sites within Smith Canal and seven within Atherton Cove.



Figure 6-3: Residence Time Locations for Smith Canal



Figure 6-4: Residence Time Locations for Atherton Cove

6.2.1 Alignments Comparison

A comparison of residence time between existing and proposed alignments is summarized in Table 6-1. The results indicate:

- For Alignment 1, there is a slight increase in residence time at Smith Canal 7 and 8. The increase in Smith Canal 7 and 8 are relatively small, about 2%, compared to an overall residence time of 41 days. Residence time at Atherton Cove 5 through 7 is reduced as a result of higher flow toward Atherton Cove.

- For Alignment 2, there is a decrease in residence time of 3.7 days at Smith Canal 4. Examing the relative concentration time series shown in Figure 6-5 indicates that the relative concentration for this alignment perched just below the threshold line of 0.37 while those for existing and Alignment 1 perched just above 0.37 for three consecutive days. This slight improvement of Alignment 2 is largely a result of the locally increased flushing, as model results are extracted from the gage located in the center of the Canal where flushing is better than the sides of the Canal due to its proximity to the gate opening. This improvement is very localized. The overall circulation remains the same when it is away from the gate, as shown in Smith Canal 5 through 8. The proposed closure structure has little effect to the residence time at Atherton Cove, as shown in the results.

- For Alignment 3, there is a similar decrease in residence time of 3.7 days at Smith Canal 4 as in Alignment 2 due to the same reason. The only increase in residence time is at Atherton Cove 5 and 6; again, the difference is very small - less than 4%.

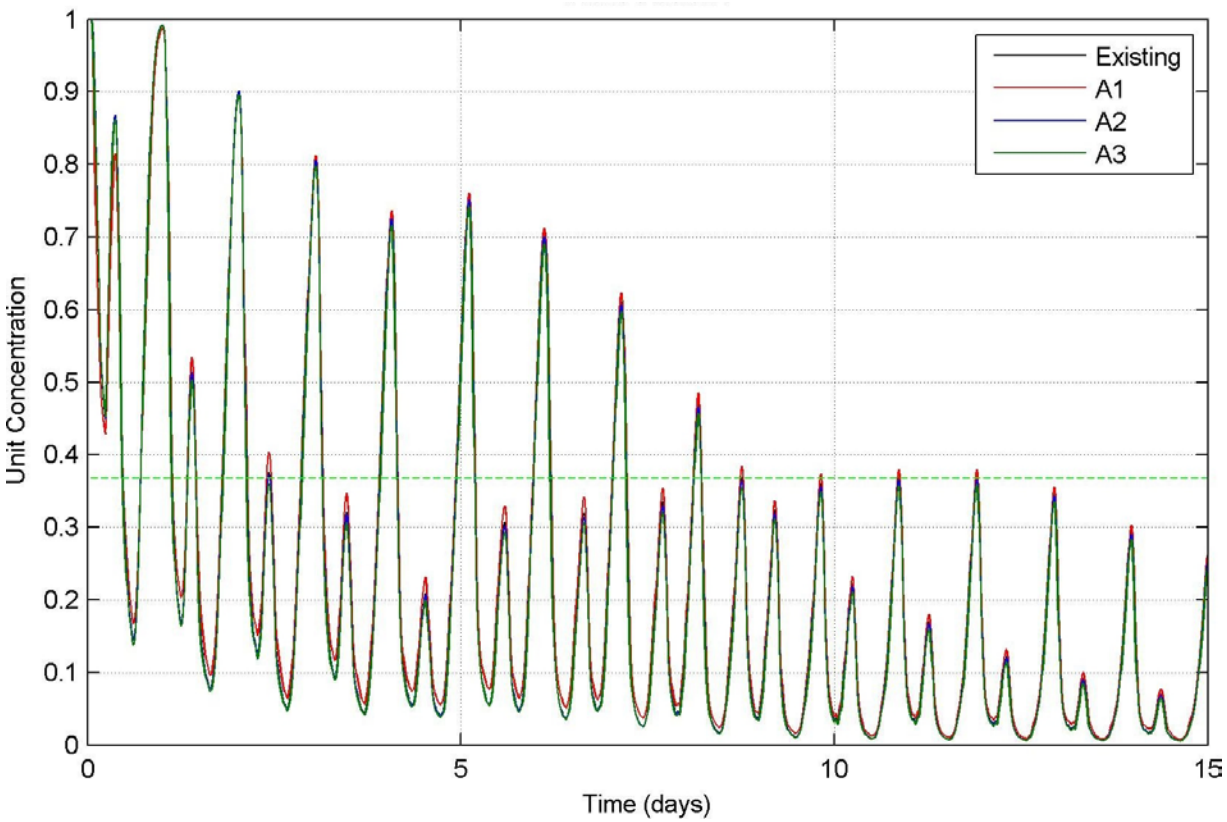


Figure 6-5: Relative Concentration Time Series at Smith Canal #4

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.

Table 6-2: Residence Time Comparison Between Different Gate Widths for Alignment 1 (in days)

Station	Existing	50-ft Gate	100-ft Gate	200-ft Gate
Smith Canal 1	1.0	1.0	1.0	1.0
Smith Canal 2	6.1	6.1	6.1	6.2
Smith Canal 3	7.2	7.2	7.2	7.2
Smith Canal 4	11.9	11.9	11.9	11.9
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	42.0	42.0
Smith Canal 8	41.5	42.2	42.2	42.2
Atherton Cove 1	1.0	1.0	1.0	1.0
Atherton Cove 2	1.0	1.0	1.0	1.1
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	1.2	1.4
Atherton Cove 6	1.5	1.4	1.5	1.5
Atherton Cove 7	1.6	1.5	1.6	1.6

7. ANALYSES OF WATER QUALITY IMPROVEMENT OPTIONS

The Alignment 1 with a 50-ft gate hydrodynamic model was used to assess the effectiveness of four different Water Quality Improvement Options on hydrodynamics and residence times. Each improvement Option is modeled independently, and compared to Alignment 1. This section describes the Water Quality Improvement Options and hydrodynamic and water quality modeling results.

The same modeling suite of MIKE21-FM used in the Alignment Alternative evaluation is used. However, the Water Quality Improvement Options include culverts and the model execution time with culvert structures is very long. The model execution time is almost equivalent to the real time. With this limitation, the simulation is reduced from 45-day for Alignment Alternative to 7 days for Water Quality Improvement Options. However, a 7-day simulation time is sufficient to assess effectiveness of Water Quality Improvement Options.

7.1 DESCRIPTION OF WATER QUALITY IMPROVEMENT OPTIONS

The four Water Quality Improvement Options are:

- *Option 1: Culverts under Moreing Road to Atherton Island* - propose to install culverts under the road. The function of the culverts is primarily as open conduits, enabling exchange of water between Atherton Cove and Smith Canal. Prior to numerical modeling, culverts were sized by hand-calculations to determine the likely number of culverts and size in order to facilitate flow exchange. The calculations indicated that 3, 4-ft diameter culverts should be used with inverts at both ends placed at -2 ft NAVD88. The culverts were assumed to be 180 ft (55 m) long and modeled using a Manning's n of 0.0167 $s/m^{1/3}$.

- *Option 2: Dredging Atherton Cove* - propose to dredge the bed elevation in the Cove to an elevation of -4 ft NAVD88. The average dredging depth is 2 ft. The mesh from Alignment 1 was revised to reflect the dredged condition in Atherton Cove.

- *Option 3: Combination of Configuration Options 1 and 2* - with both dredging of Atherton Cove and culverts under Moreing Road.

- *Option 4: Culverts in Floodwall* - Propose to install culverts within the floodwall. The culverts provide continuous water exchange on flood and ebb tides. Prior to numerical modeling, culverts were sized by hand-calculations to determine the likely number of culverts and size in order to facilitate flow exchange. The calculations indicated that 2 4-ft diameter culverts on the north side of the gate and three 4-ft diameter culverts on the south side of the gate should be used. Inverts at both ends were placed at -4 ft NAVD88. The culverts were assumed to be 29.5 ft (9 m) long and modeled using a Manning's *n* of 0.0167 $s/m^{1/3}$. This roughness coefficient is relatively conservative for new culverts, but is reasonable with some marine growth.

An overview of Water Quality Improvement Options 1, 3 and 4 is provided in Figure 7-1.

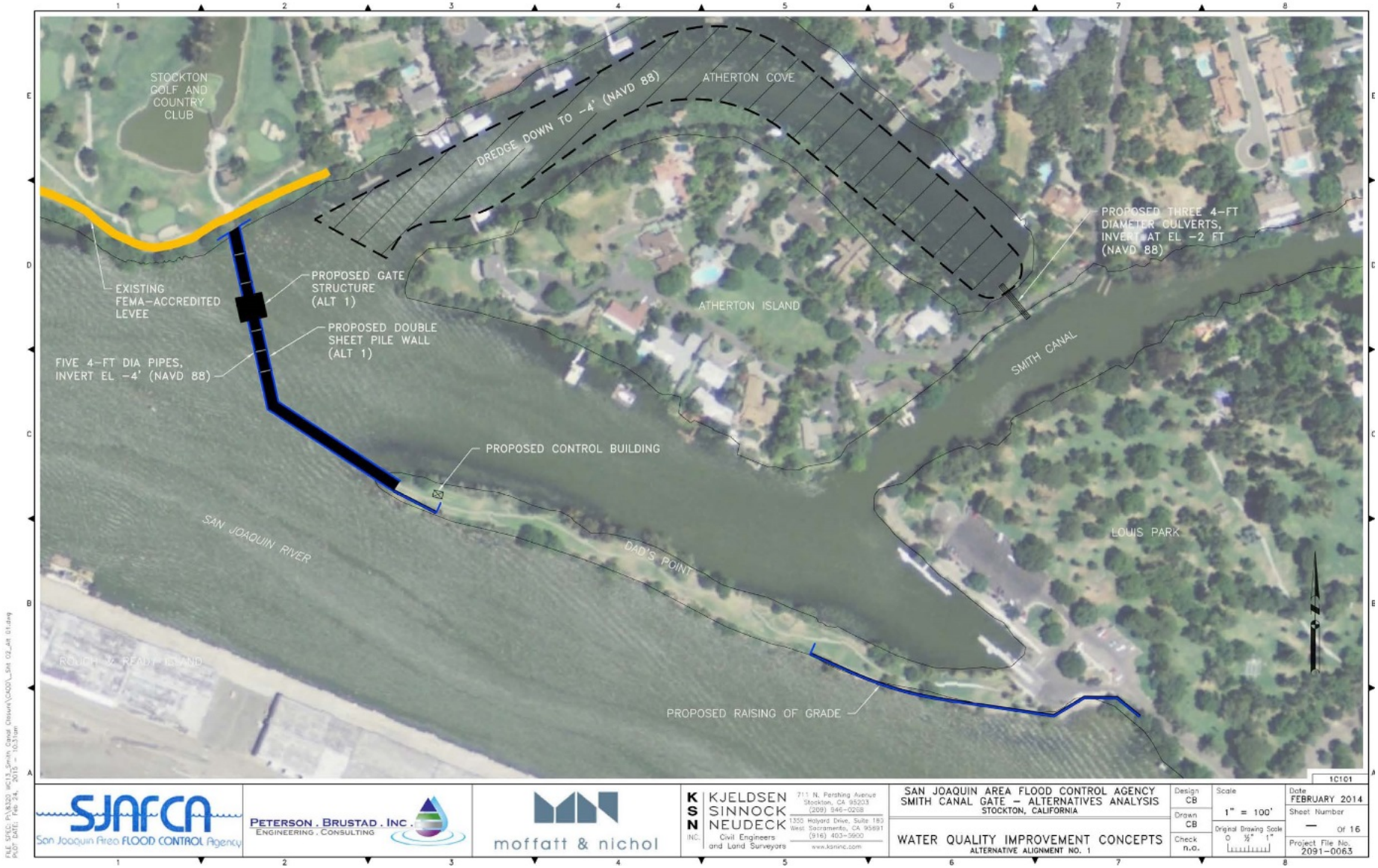


Figure 7-1: Overview of Water Quality Improvement Options 1, 3, and 4

7.2 HYDRODYNAMIC ANALYSIS OF WATER QUALITY IMPROVEMENT OPTIONS

Water Quality Improvement Options 1, 3 and 4 included culvert structures. The dimensions of culverts are much smaller than the model element size used in the computational grid. Therefore, the effect of structures is modeled by a subgrid technique. The flow past a structure is driven by differential head between the upstream and downstream not the current velocity.

7.2.1 Hydrodynamic Modeling Results

To assess effectiveness of Water Quality Options on tidal exchange and circulation in Atherton Cove and Smith Canal, two transects, one within Atherton Cove and one within Smith Canal, were selected and shown in Figure 5-1. Modeling results of stage and discharge were extracted as changes in stage and discharge are indications of tidal exchange and circulation changes. The stage is defined as the average surface elevation across transect. The discharge is the total flow rate through the cross-section where transects are located. The discharge is defined as positive if the water is flowing into Smith Canal/Atherton Cove or negative if it is flowing out. In other words, the flood tide discharge is positive and ebb tide discharge is negative.

The stage and discharge under each proposed Water Quality Option were compared to those under Alignment 1 conditions. Similar to the methods used in model calibration and validation, the correlation and NRMSE, defined in Section 4.2.2, were calculated for each comparison.

At the Smith Canal Transect, the comparison of stage and discharge are shown in Figure 7-2 and Figure 7-3. The time series plots show that stage and discharge under the proposed water Quality Improvement Options overlap those under Alignment 1. The scatter plots in Figure 7-3 also show a great match between Alignment 1 and proposed Water Quality Options. The statistical analysis of the comparison is summarized in Table 7-1. These results indicate:

- For the stage comparison, the R^2 correlation coefficients are nearly equal to 1, indicating perfect matches and NRMS difference is less than 0.1%. Therefore, there is very little change in stage from the Alignment 1 for all Water Quality Options.
- For the discharge comparison, the R^2 correlation coefficients are nearly equal to 1 and the NRMS difference is less than 0.5%. Therefore, there is a very small amount of change to discharge at this location with Water Quality Options when compared to Alignment 1.

Table 7-1: Statistical Analysis of Hydrodynamic Results at Smith Canal for Water Quality Improvement Options

Variable	Water Quality Improvement Option	R^2 Correlation Coefficient	NRMS Difference (%)
Stage	1	1.000	0.04%
	2	1.000	0.01%
	3	1.000	0.01%
	4	1.000	0.07%
Discharge	1	1.000	0.54%
	2	1.000	0.39%
	3	1.000	0.37%
	4	1.000	0.80%

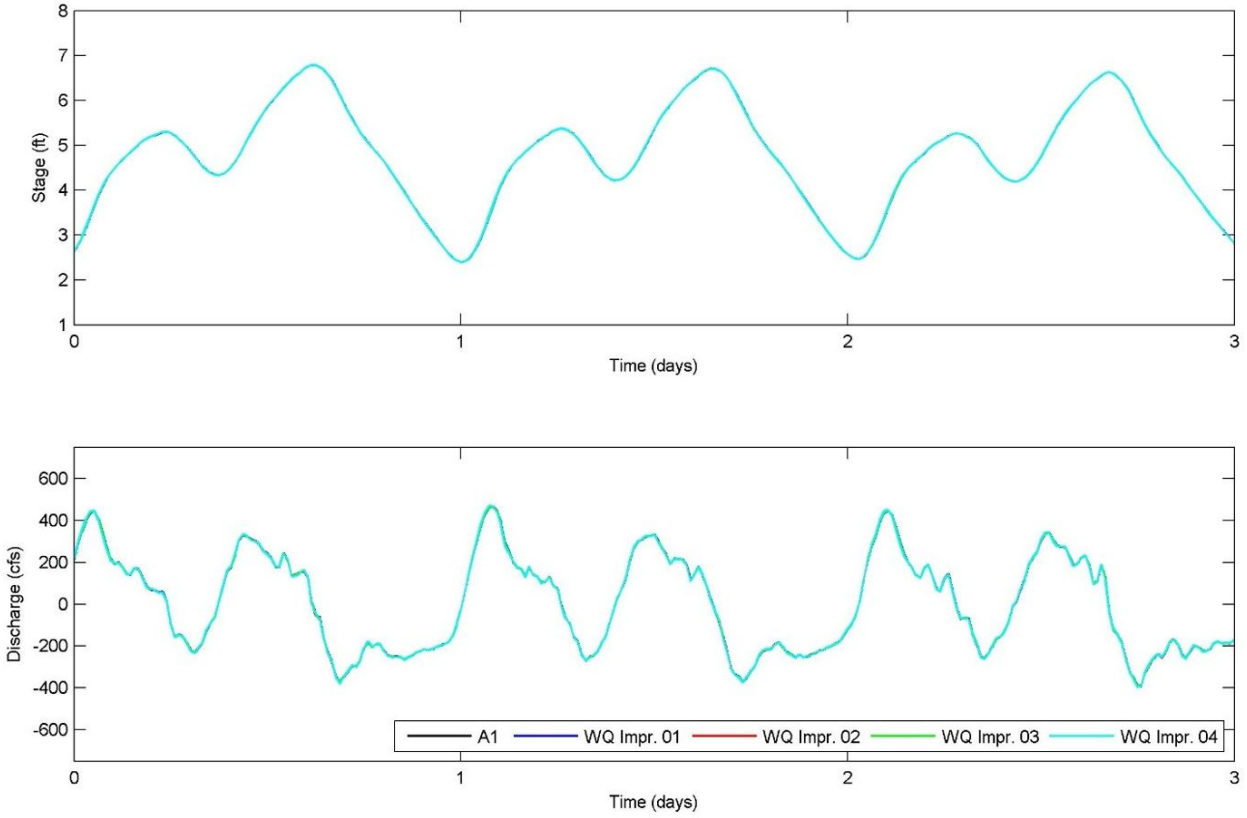


Figure 7-2: Time Series of Stage (Top) and Discharge (Bottom) at Smith Canal for Water Quality Improvement Options

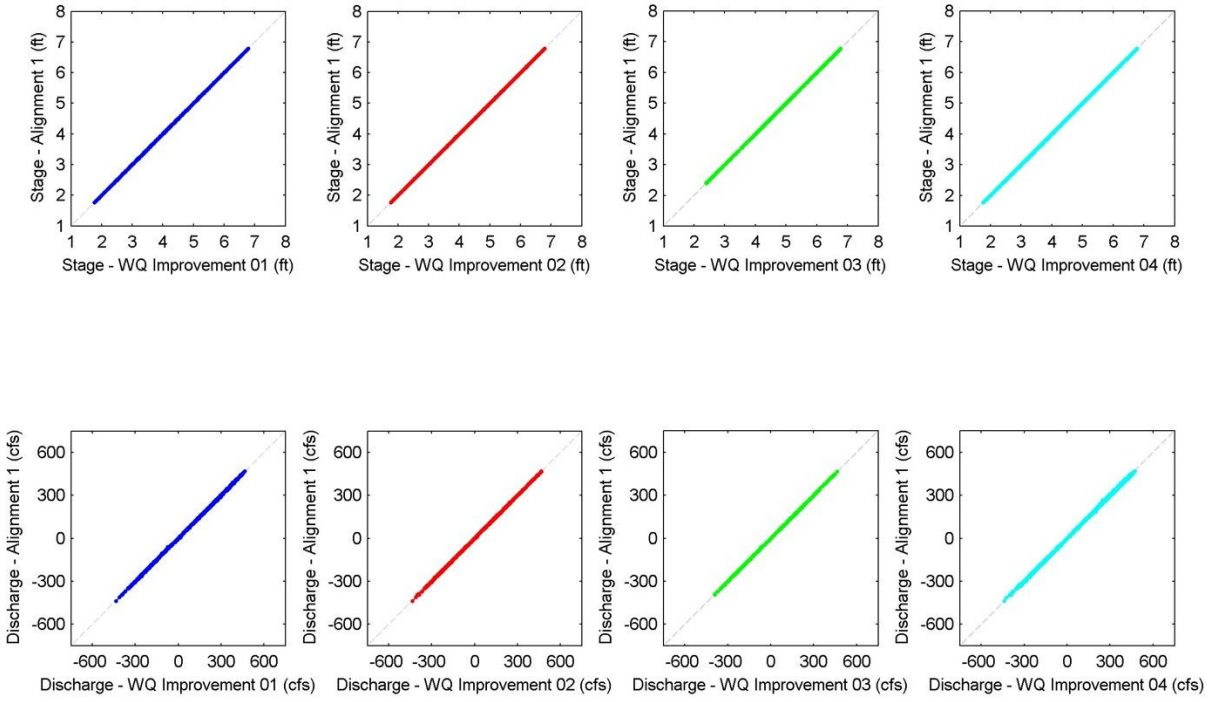


Figure 7-3: Stage (Top) and Discharge (Bottom) Correlation between Water Quality Options and Alignment 1 at Smith Canal

At the Atherton Cove Transect, the comparison of stage and discharge is shown in Figure 7-4 and Figure 7-5. The time series plots show that stage and discharge under the proposed Water Quality Improvement Options overlap those under Alignment 1. The scatter plots in Figure 7-5 also show a great match between Alignment 1 and proposed Water Quality Options. The statistical analysis of the comparison is summarized in Table 7-2. These results indicate:

- For the stage comparison, the R^2 correlation coefficients are nearly equal to 1, indicating perfect matches and NRMS difference is less than 0.1%. Therefore, there is very little change in stage from the Alignment 1 for all Water Quality Options.
- For the discharge comparison, the R^2 correlation coefficients are equal to 0.95 and the NRMS difference is between 11 and 16%. Therefore, there is a small amount of change to discharge at this location with Water Quality Options when compared to Alignment 1 as these Water Quality Improvement Options are located in or very close to the Atherton Cove. Slightly higher discharge of Option 2 is associated with increased Cove volume as a result of dredging.

Table 7-2: Statistical Analysis of Hydrodynamic Results at Atherton Cove for Water Quality Improvement Options

Variable	Water Quality Improvement Option	R^2 Correlation Coefficient	NRMS Difference (%)
Stage	1	1.000	0.03%
	2	1.000	0.01%
	3	1.000	0.01%
	4	1.000	0.07%
Discharge	1	0.964	11.18%
	2	0.929	16.08%
	3	0.953	13.74%
	4	0.952	11.65%

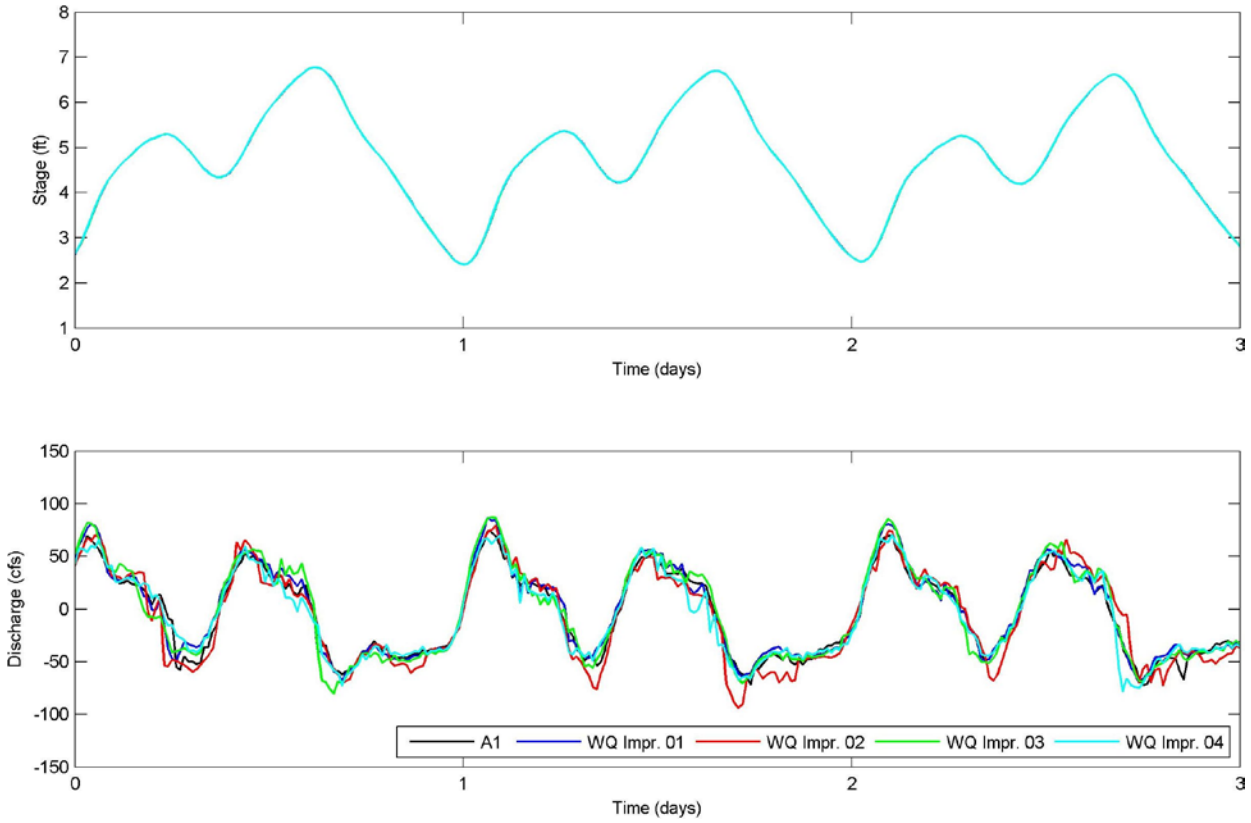


Figure 7-4: Time Series of Stage (Top) and Discharge (Bottom) at Atherton Cove for Water Quality Improvement Options

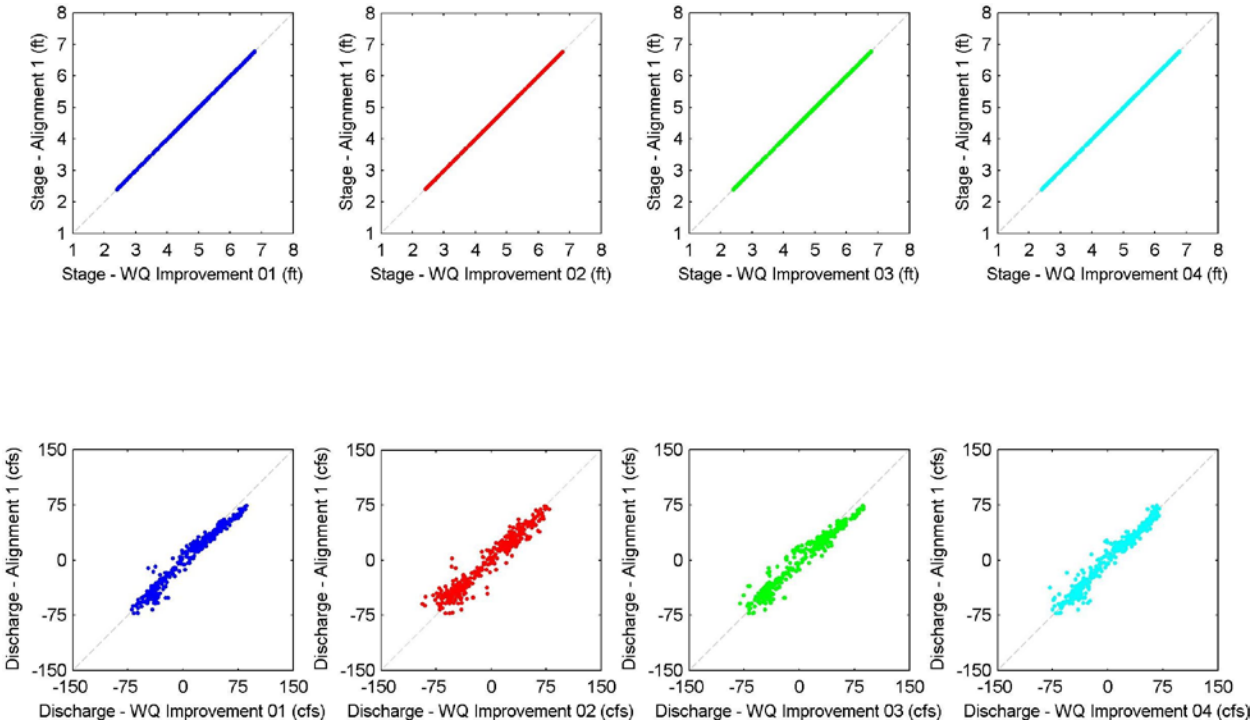


Figure 7-5: Stage (Top) and Discharge (Bottom) Correlation between Water Quality Options and Alignment 1 at Atherton Cove

7.2.2 Velocity at Proposed Gates

This section summarizes modeling results of tidal velocity through the proposed 50-ft gate under the four water Quality Improvement Options. The sample tidal velocity through the gate under the proposed Water Quality Improvement Options and that at the same location under the Alignment 1 are shown in Figure 7-6. The results indicate that the velocity through the 50-ft gate does not change much under the water Quality Improvement Options, except that for Option 4. Option 4 proposes to install five 4-ft diameter culverts through the floodwall. The culverts increase flood conveyance, hence slightly lowering the velocity through the gate. Similarly, the percentage of current speed exceedance does not change except for Option 4, as summarized in Table 7-3. Table 7-3 provided to show the relative comparison among the water Quality Improvement Options and was based on results from the 7-day modeling period; hence, the percentages were slightly different from those shown in Table 5-6, which was based on two spring-neap tidal cycles. Figure 7-7 shows comparison of the current speed exceedance curves. The exceedance curves are very similar except for Option 4.

Table 7-3: Current Speed Exceedance Percentages for Water Quality Improvement Options

Current Speed (ft/s)	Alignment 1	Water Quality Improvement			
		Option 1	Option 2	Option 3	Option 4
1.00	37.6%	38.8%	37.6%	37.9%	30.3%
1.50	7.3%	7.9%	7.6%	7.6%	5.1%
2.00	2.5%	2.5%	2.5%	2.5%	0.0%
2.50	0.0%	0.0%	0.0%	0.0%	0.0%

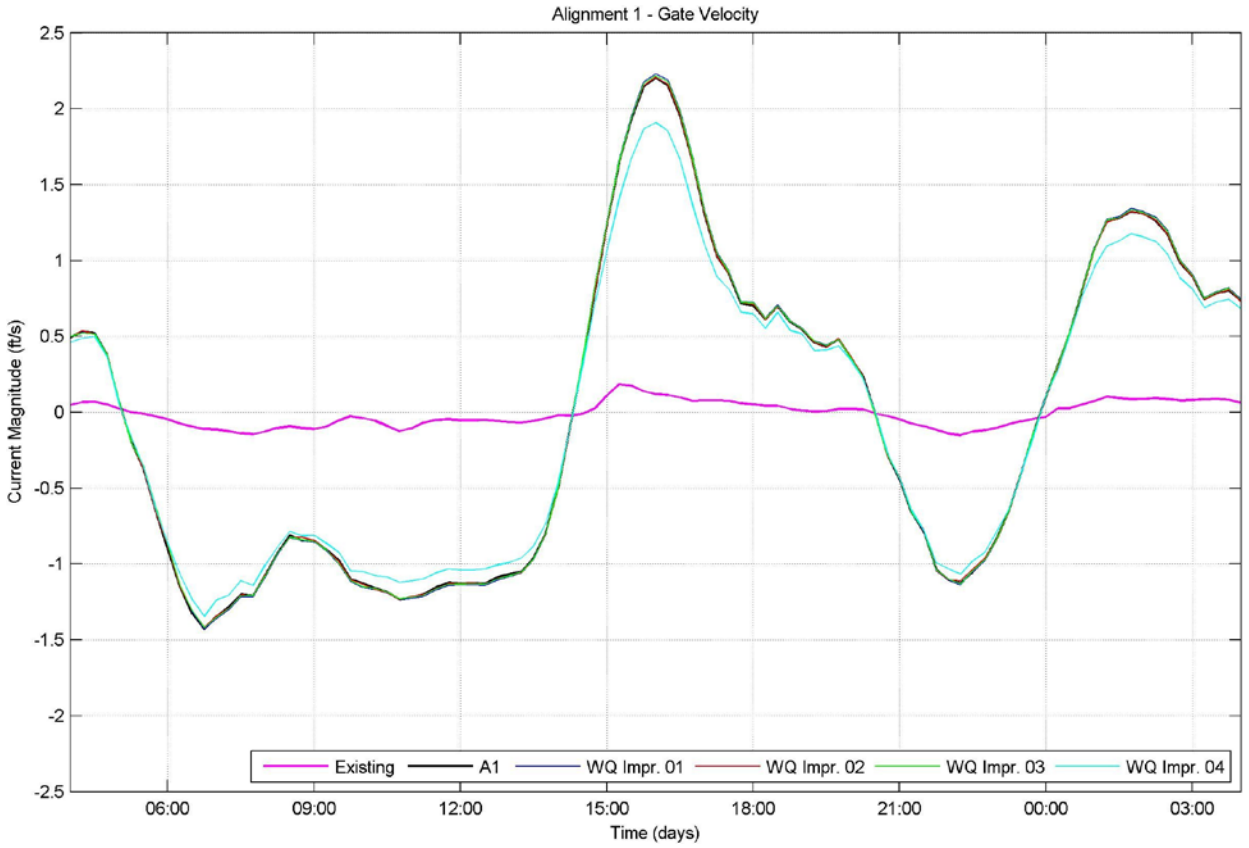


Figure 7-6: Comparison of Velocity at Gate of Alignment 1 with Water Quality Improvements

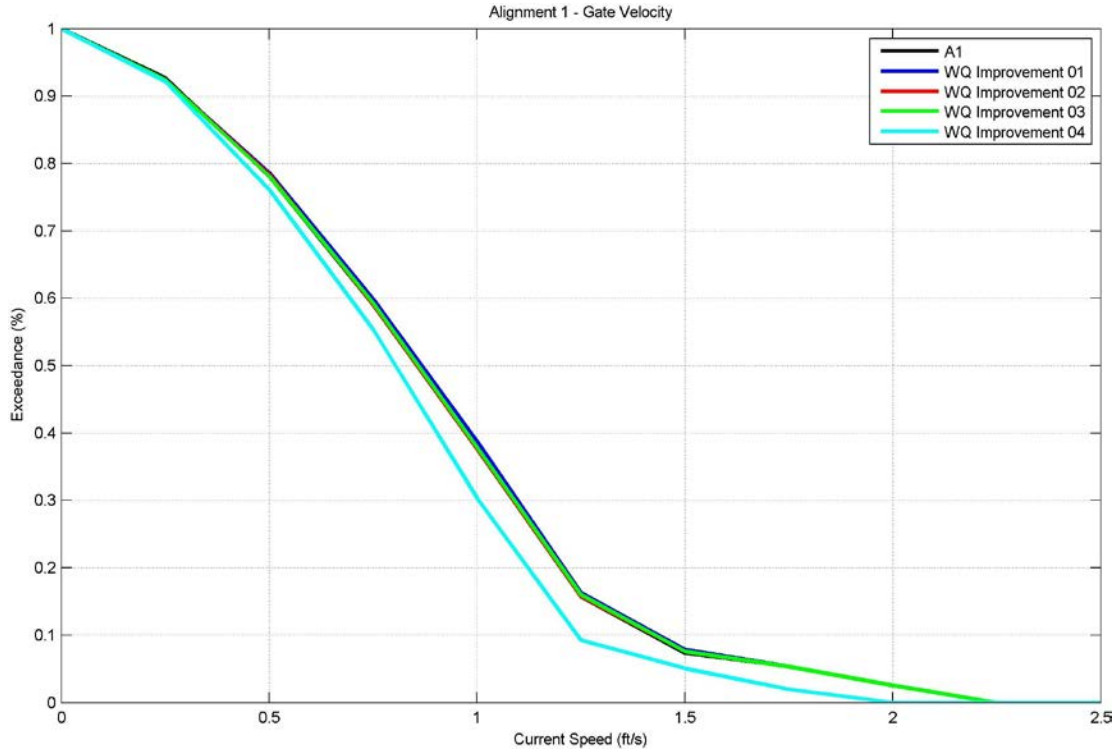


Figure 7-7: Current Speed Exceedance Curves at Gate of Alignment 1 with Water Quality Improvements

The velocity patterns of Alignment 1 with Water Quality Improvement Options are also very similar to those under the Alignment 1 condition. The comparison is included in Appendix B. Therefore, no appreciable differences in sedimentation pattern and trend are expected if Water Quality Improvement Options are incorporated into the project.

7.3 RESIDENCE TIME ANALYSIS OF WATER QUALITY IMPROVEMENT OPTIONS

The same methodology used in the Alignment Alternative analyses is used in assessment of residence time for water Quality Improvement Options. The residence times at the same gage locations in both Smith Canal and Atherton Cove, shown in Figure 6-3 and Figure 6-4 respectively, are analyzed and results are summarized in Table 7-4. For gages in Smith Canal, only Gages 1 and 2 results are included as the simulation duration is not long enough to extract results in the remaining gages. However, the simulation duration is long enough to assess the potential benefit of the Water Quality Improvements Options. These results indicate:

- In Smith Canal, the residence time is not affected by the Water Quality Improvement Options.
- In Atherton Cove, the residence time at Gages 6 and 7 is slightly reduced with the culverts under Moreing Road, but residence time will be slightly longer with proposed dredging at Atherton Cove due to increased tidal prism.

In general, marinas with a residence time of 1-2 days are considered well circulated. This modeling exercise assesses circulation and does not address other water quality issues and benefits; for example, dredging could remove contaminated soil if the soil is contaminated and may improve water quality in terms of dissolved oxygen, temperature, etc.

Table 7-4: Residence Time Comparison Between Different Water Quality Improvements for Alignment 1 (in days)

Location	Existing	Alignment 1	Water Quality Improvement			
			Option 1	Option 2	Option 3	Option 4
Smith Canal 1	1.0	1.0	1.0	1.0	1.0	1.0
Smith Canal 2	6.2	6.2	6.2	6.2	6.2	6.2
Atherton Cove 1	1.0	1.0	1.0	1.0	1.0	1.0
Atherton Cove 2	1.0	1.0	1.0	1.1	1.0	1.0
Atherton Cove 3	1.1	1.1	1.1	1.1	1.1	1.1
Atherton Cove 4	1.1	1.1	1.1	1.2	1.2	1.1
Atherton Cove 5	1.4	1.2	1.2	1.5	1.5	1.2
Atherton Cove 6	1.5	1.5	1.3	1.6	1.5	1.5
Atherton Cove 7	1.6	1.5	1.3	1.7	1.6	1.5

7.4 CONCLUSIONS OF WATER QUALITY IMPROVEMENT OPTIONS

The hydrodynamic and residence time analyses results indicate that proposed Water Quality Improvement Options do not change the overall hydrodynamic circulation, residence time, and sedimentation patterns. The impacts of individual options are:

- Water Quality Improvement Option 1 - the residence time at the far end of Atherton Cove is slightly reduced;

- Water Quality Improvement Option 2 - the residence time at the far end of Atherton Cove is slightly increased due to increased water volume in the Cove resulting from dredging;
- Water Quality Improvement Option 3 – the residence time results of Option 3 are between that of Options 1 and 2;
- Water Quality Improvement Option 4 – there is no discernable improvement to the residence time, however, it slightly reduces the tidal velocity through the gate with addition of culverts in the floodwall.

8. FINDINGS AND CONCLUSIONS

The MIKE21-FM model suite was applied in this study. The study focuses on hydrodynamic evaluation of the three proposed closure structure alignments, sensitivity evaluation of three gate widths and Water Quality Improvement Options for Alternative Alignment 1. For each proposed alternative alignment, gate width and Water Quality Improvement Option, analyses within Smith Canal and Atherton Cove included evaluation of the flow velocities at the proposed gates, potential impacts to tidal hydrodynamics, and changes in residence time.

The model results indicate that introduction of the closure structure has very little impact to tidal range and tidal prism of both Atherton Cove and Smith Canal for all three proposed alignments, gate widths and Water Quality Improvement Options. Large-scale flow patterns within Smith Canal and Atherton Cove in areas away from the closure structures are also largely unaffected. However, it does 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 gate. The peak flood tide velocity through the gate reaches approximately 2.4 fps for Alternative Alignment 1 with a 50-ft wide gate and less than 1.3 fps for remaining gate widths and alternatives. Below is a brief summary of flow field changes in the vicinity of the closure structures:

- For Alternative 1, on the flood tide, the gate redistributes the flow from the SDWSC and creates a localized counter-clockwise gentle eddy at the entrance to Atherton Cove. The sensitivity analysis indicates a wider gate opening would result in less flow redistribution and peak discharge changes.

- For Alignment 2, the sheet pile wall within Atherton Cove and gate structure within Smith Canal do not significantly change flow patterns, but slightly reduces the discharge into the Atherton Cove.

- For Alignment 3, there is a change to the flow field due to the convergence of the two jets from the gate structure. On the ebb tide, this convergence creates an area of slightly increased flow velocity at the entrance to Smith Canal from the SDWSC. Changes to the flow field on the flood tide are localized to the gate structures.

A literature review indicated the canal has not been resurveyed since the earliest available survey data in 1934. Bathymetric surveying provided by Kjeldsen, Sinnock, Neudeck, Inc. (KSN) for the current project indicates that water depths in Smith Canal to the east of I-5 are substantially lower than in past times due to siltation, whereas water depths in the portion of the canal west of I-5 have increased, which is likely the result of dredging. Water depths in Atherton Cove have also decreased due to siltation. The historical average siltation rate is around 0.2 to 0.3 ft per year in the past 80-years. More development has occurred in the past 80 years, so it is expected that the future average siltation rate shall be slightly reduced.

With regards to siltation, model results show regions of increased and decreased peak tidal velocities, which indicate a potential for areas of deposition and erosion. With the high flow velocities through the gate, there is a potential for mobilization of bottom sediments. However, changes in sedimentation are limited to the immediate vicinity of the structures and to the entrance area to Atherton Cove and Smith Canal. Scour protection may be required for some embankments.

Transport model results indicate that residence time is largely unaffected by introduction of the closure structures for any of the alternatives. Typical residence times near the mouth of Smith Canal are around one 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 is very short, less than 2 days in Atherton Cove, indicating good tidal flushing and circulation in the area.

Gate width sensitivity analyses indicate a wider gate would reduce the peak tidal velocity through the gate; however, it has no significant benefit in terms of tidal circulation or residence time in the hydraulic system modeled.

The modeling results of the Water Quality Improvement Options indicate these options would not change the overall hydrodynamics, circulation efficiency, and sedimentation pattern. The localized impacts and/or benefits are:

- Installing culverts under Moreing Road would slightly reduce residence at the end of Atherton Cove.
- Dredging of Atherton Cove would slightly increase residence time at Atherton Cove as dredging increases the water volume in the Cove, but the residence time at Atherton Cove is still very short, less than 2-days.
- Installing culverts in the floodwall would slightly reduce tidal velocity through the 50-ft gate, but would not change the overall circulation. This is consistent with results from the gate width sensitivity analyses.

9. REFERENCES

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APPENDIX A

MODEL MESH AROUND GATES

A.1 Alternative Alignment Comparison

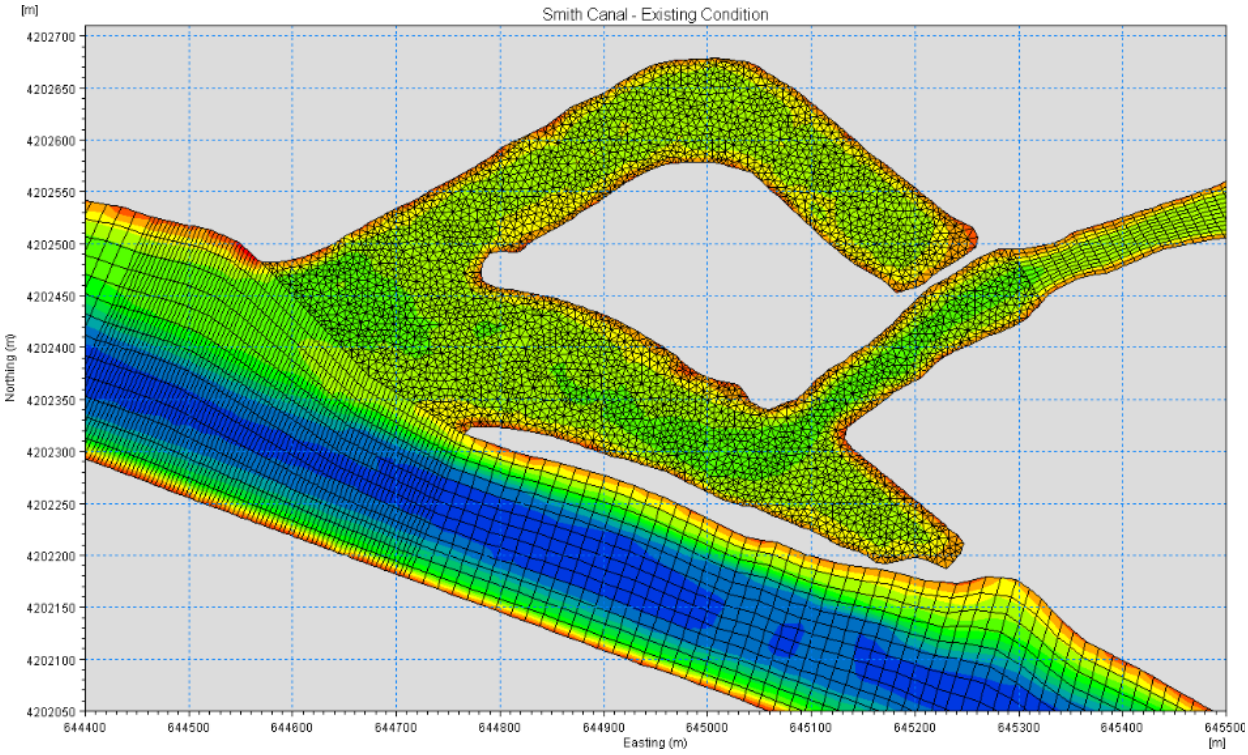


Figure A-1: Existing Condition Mesh

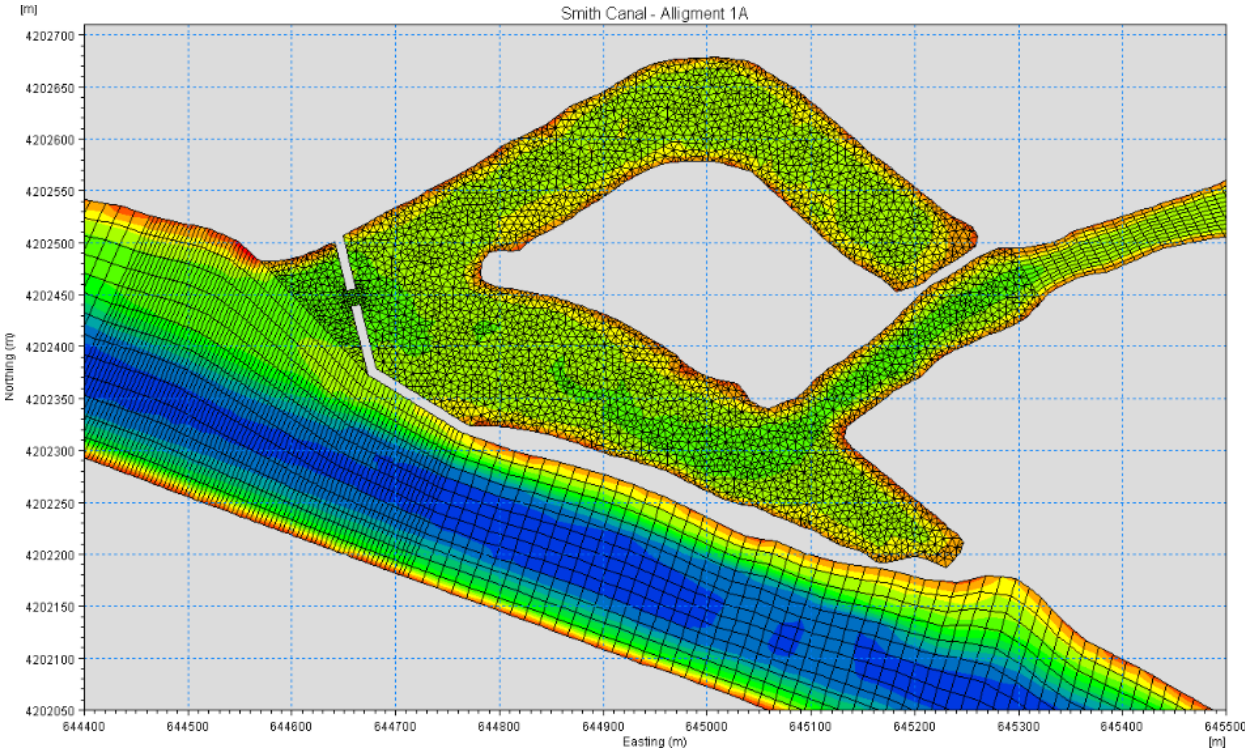


Figure A-2: Alignment 1 Mesh

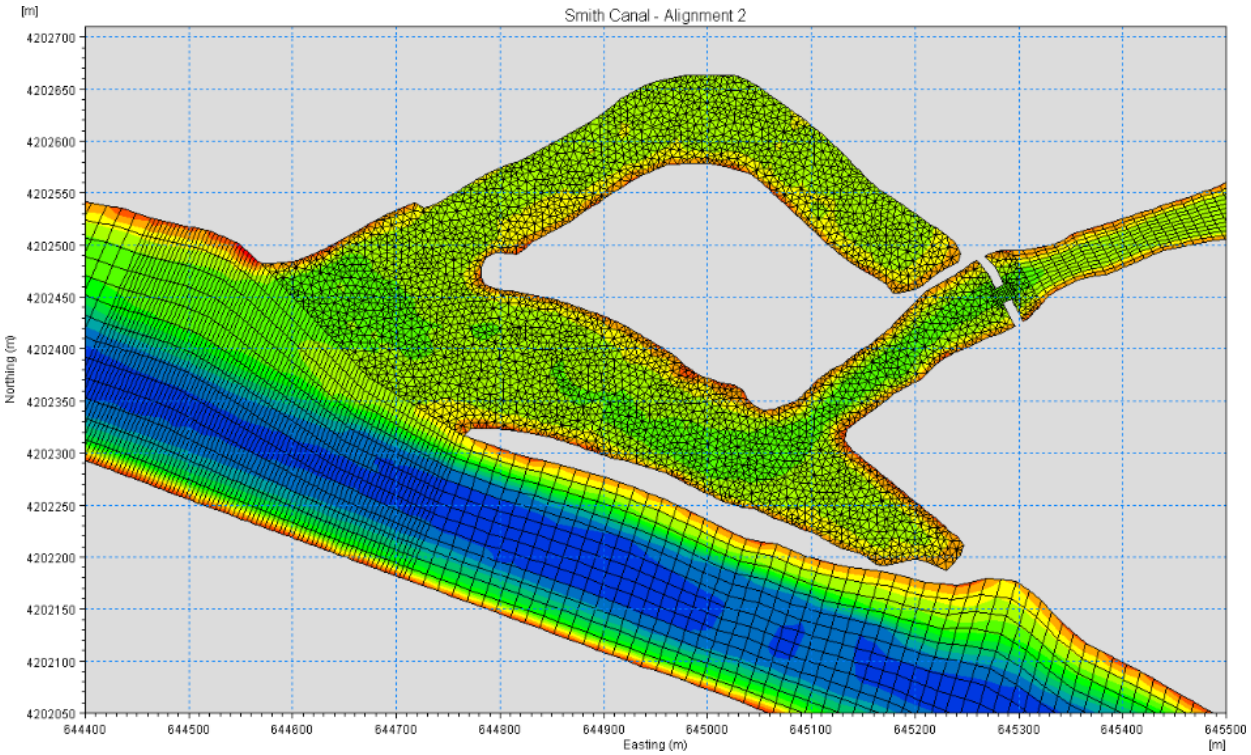


Figure A-3: Alignment 2 Mesh

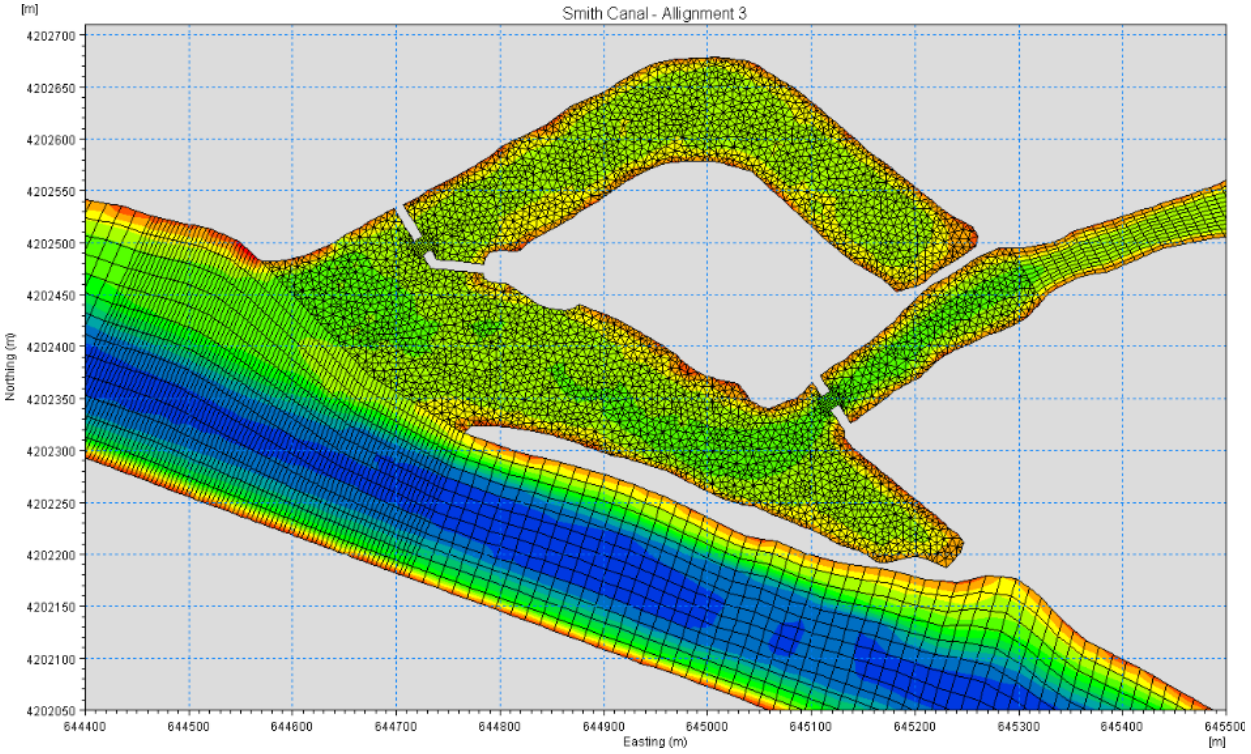


Figure A-4: Alignment 3 Mesh

A.2 Alignment 1A Gate Width Comparison

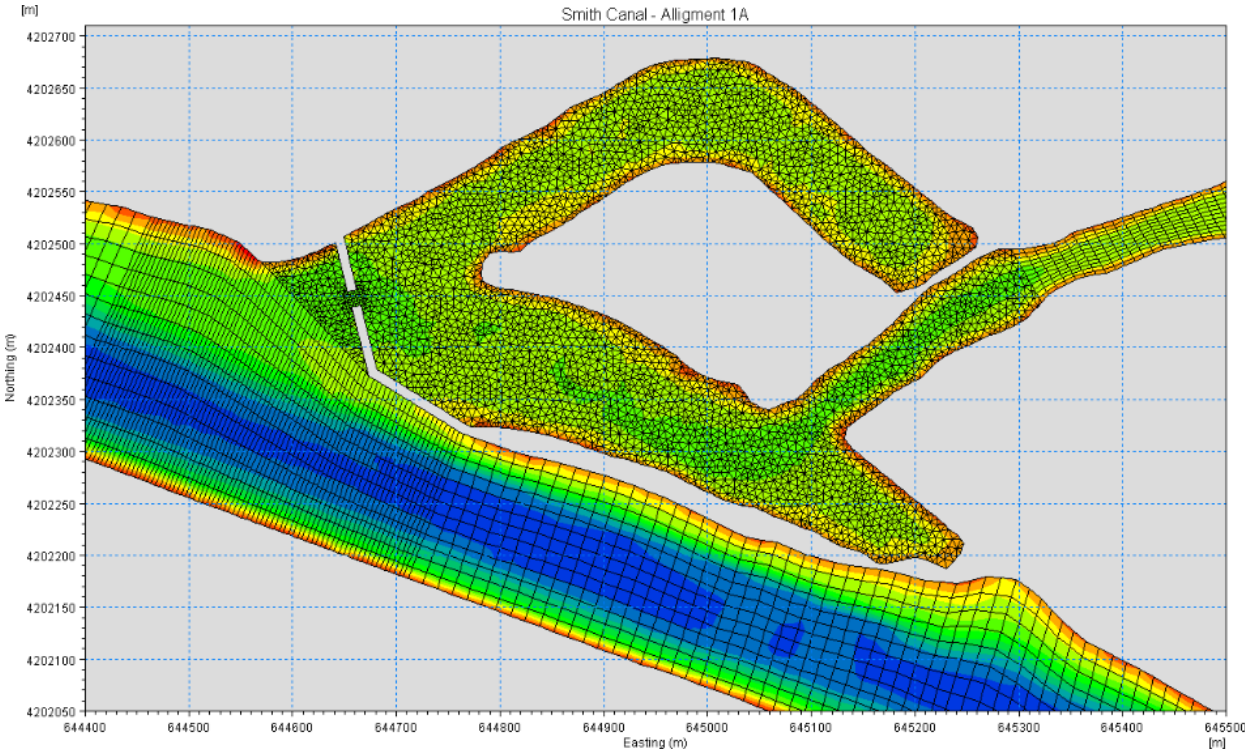


Figure A-5: Alignment 1 Mesh (50 ft Gate Width)

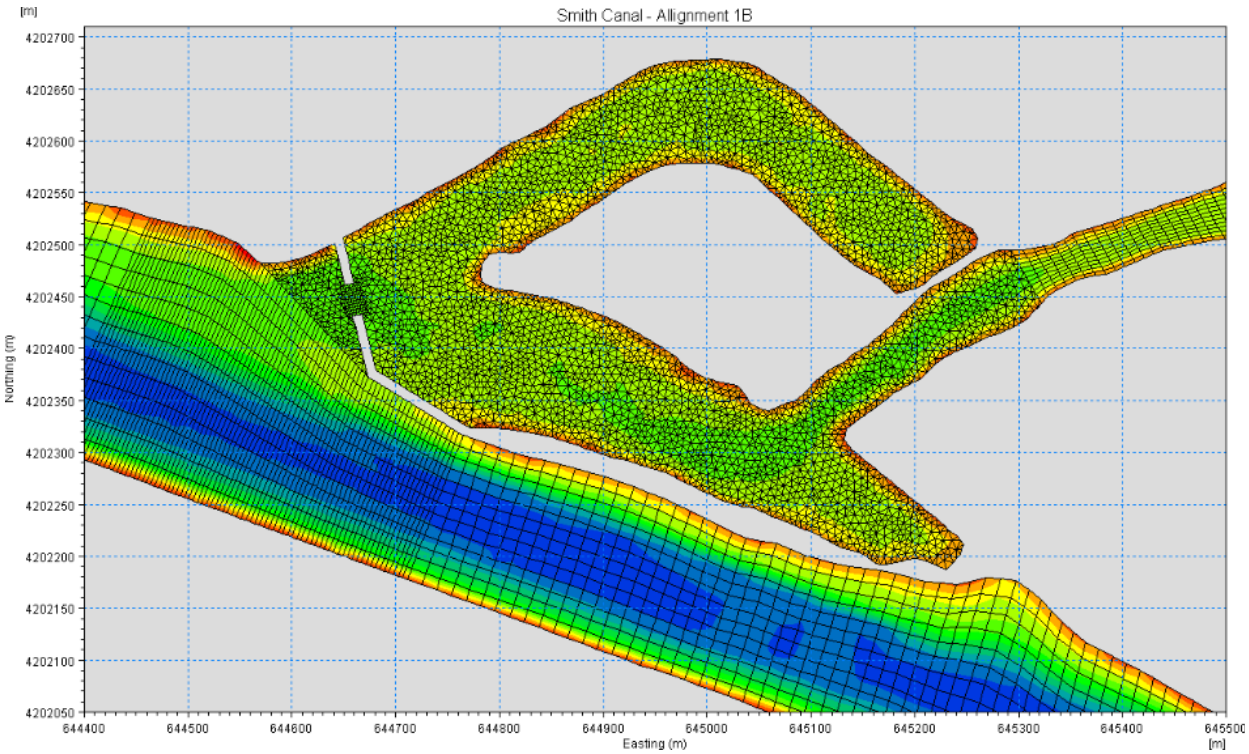


Figure A-6: Alignment 1 Mesh (100 ft Gate Width)

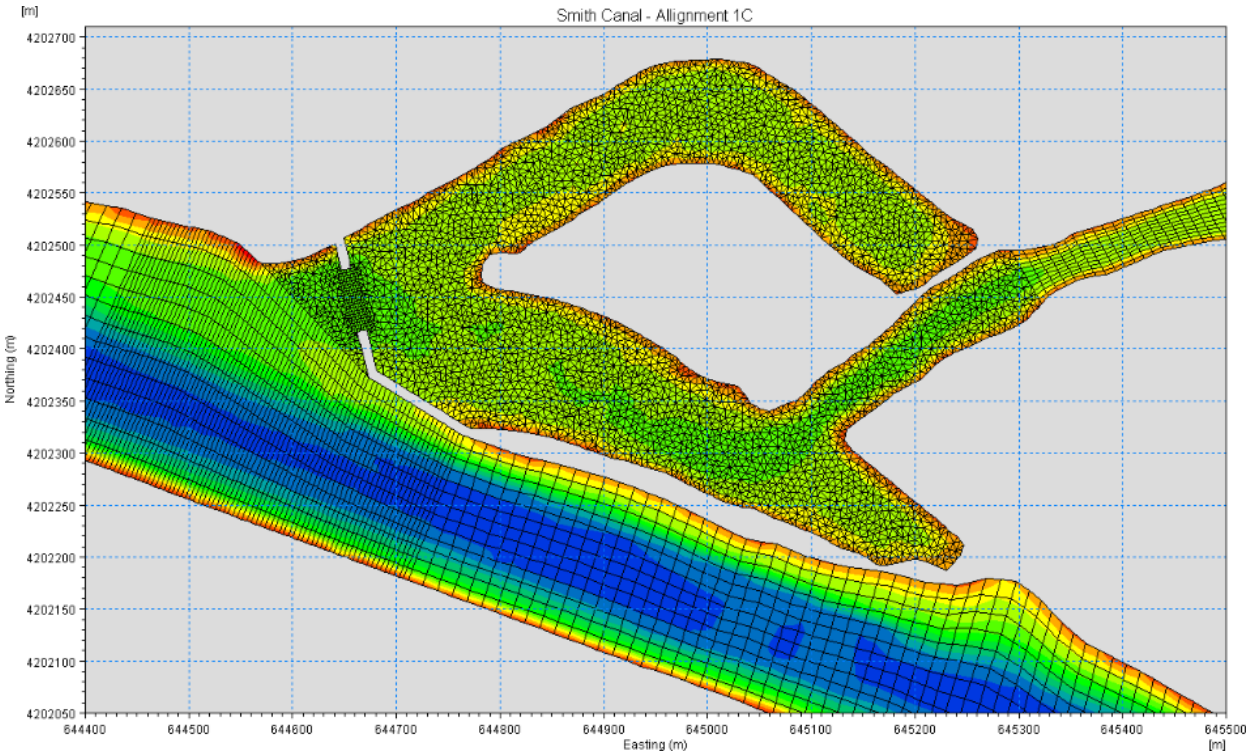


Figure A-7: Alignment 1 Mesh (200 ft Gate Width)

APPENDIX B

VELOCITY PATTERN AND DIFFERENCE PLOTS FOR WATER QUALITY IMPROVEMENT OPTIONS

Water Quality Improvement Option 1 during the flood tide:

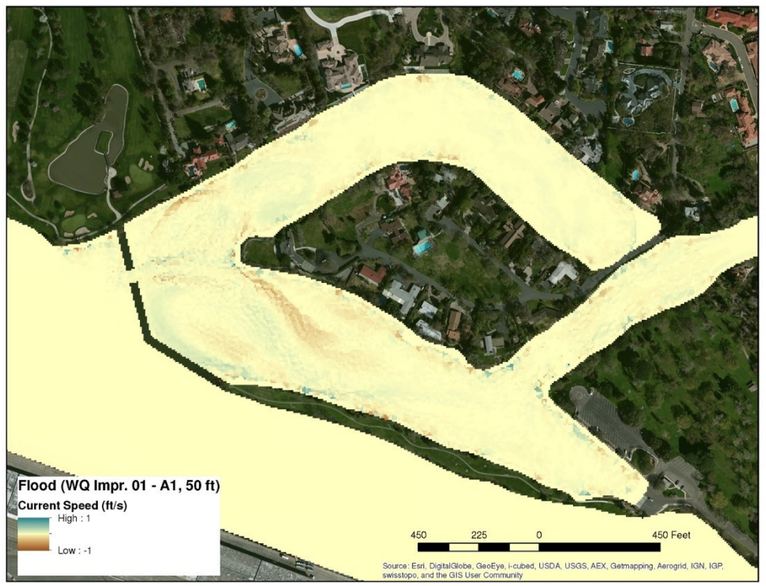
ALIGNMENT 1 (50 FT GATE)	WATER QUALITY IMPROVEMENT OPTION 1 - ALIGNMENT 1 (50 FT GATE)
	
	

Figure B-1:Alignment 1 (50 ft Gate) and Water Quality Improvement Option 1 Flood Tide Velocity Difference

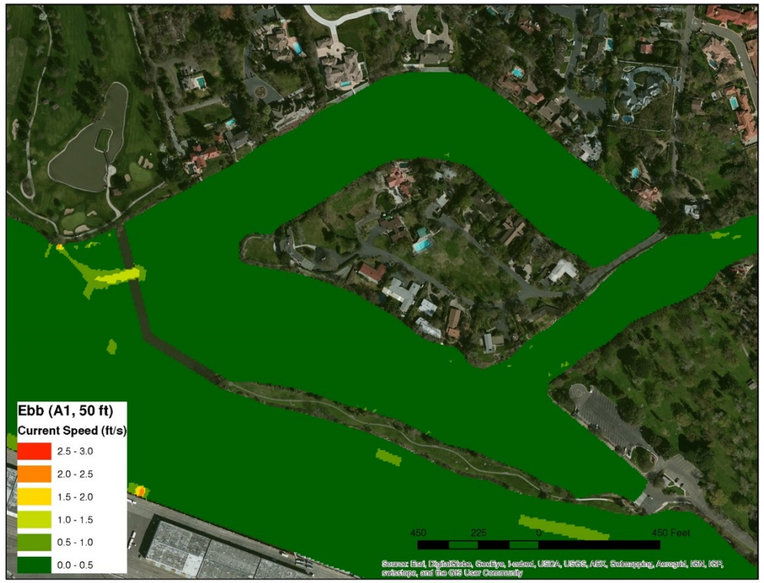
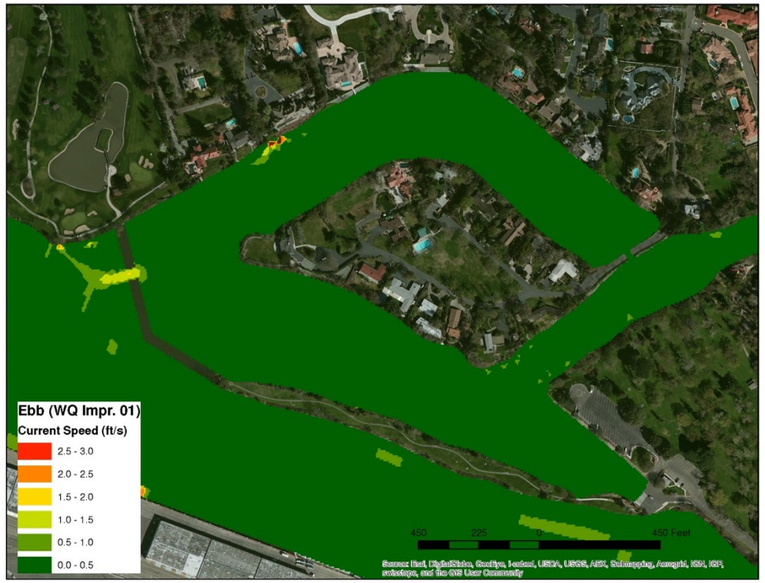
Water Quality Improvement Option 1 during the ebb tide:	WATER QUALITY IMPROVEMENT OPTION 1 - ALIGNMENT 1 (50 FT GATE)
	
ALIGNMENT 1 (50 FT GATE)	WATER QUALITY IMPROVEMENT OPTION 1

Figure B-2: Alignment 1 (50 ft Gate) and Water Quality Improvement Option 1 Ebb Tide Velocity Difference

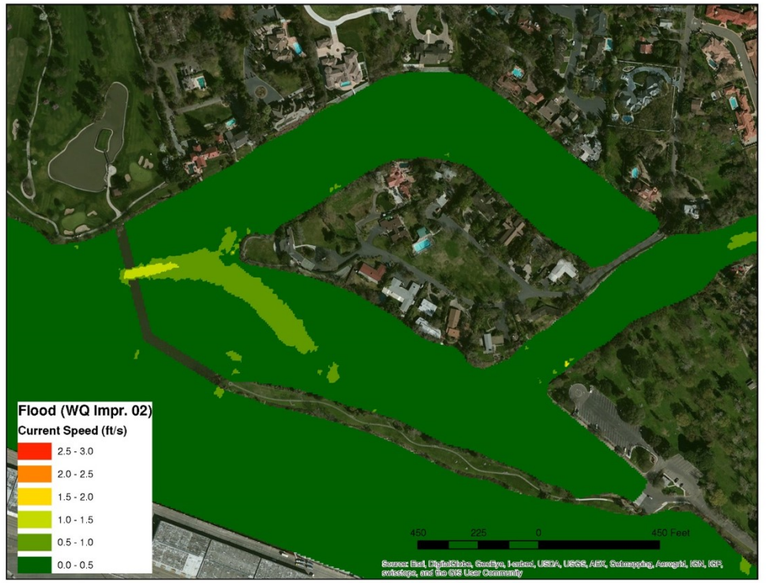
Water Quality Improvement Option 2 during the flood tide:	WATER QUALITY IMPROVEMENT OPTION 2 - ALIGNMENT 1 (50 FT GATE)
	
ALIGNMENT 1 (50 FT GATE)	WATER QUALITY IMPROVEMENT OPTION 2

Figure B-3: Alignment 1 (50 ft Gate) and Water Quality Improvement Option 2 Flood Tide Velocity Difference

Water Quality Improvement Option 2 during the ebb tide:

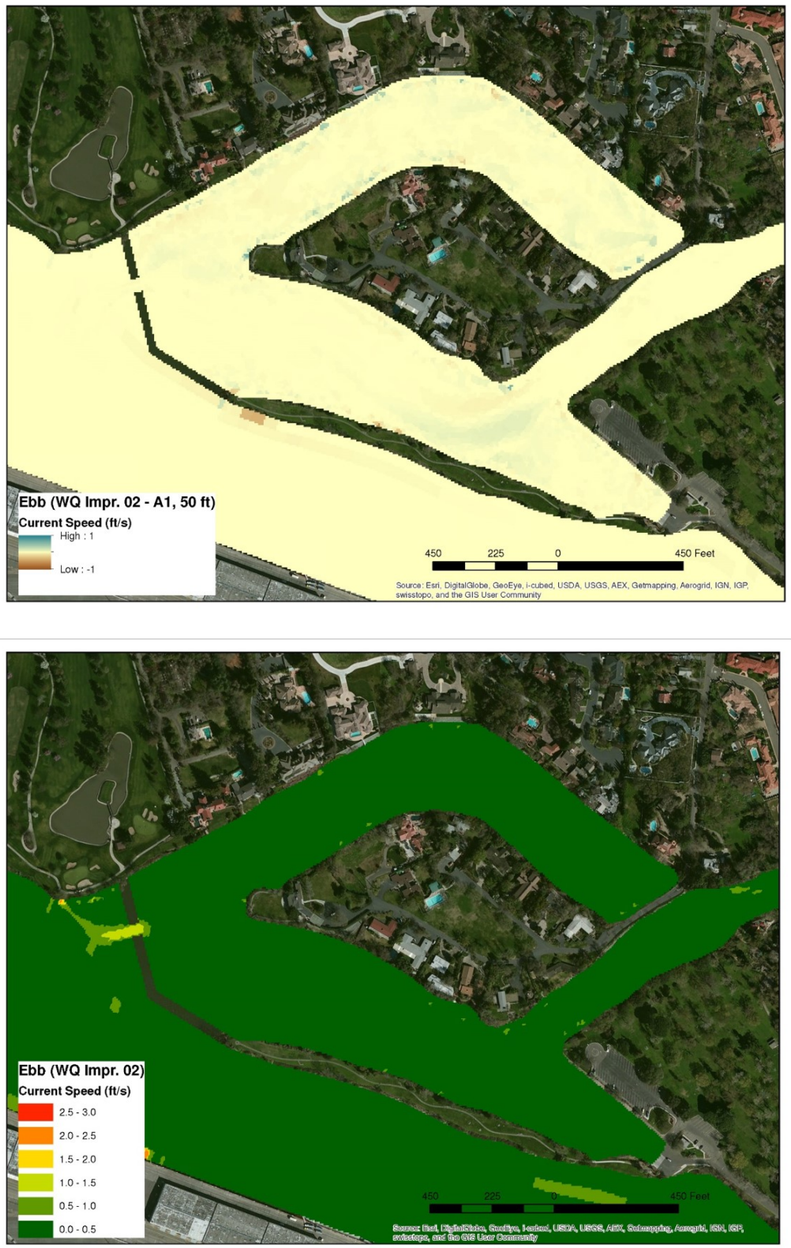
WATER QUALITY IMPROVEMENT OPTION 2 - ALIGNMENT 1 (50 FT GATE)	
	
ALIGNMENT 1 (50 FT GATE)	WATER QUALITY IMPROVEMENT OPTION 2

Figure B-4: Alignment 1 (50 ft Gate) and Water Quality Improvement Option 2 Ebb Tide Velocity Difference

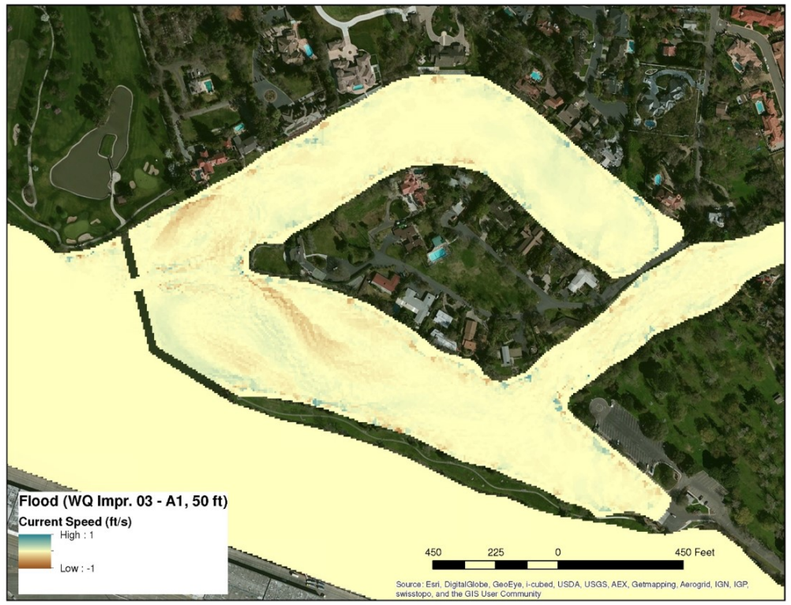
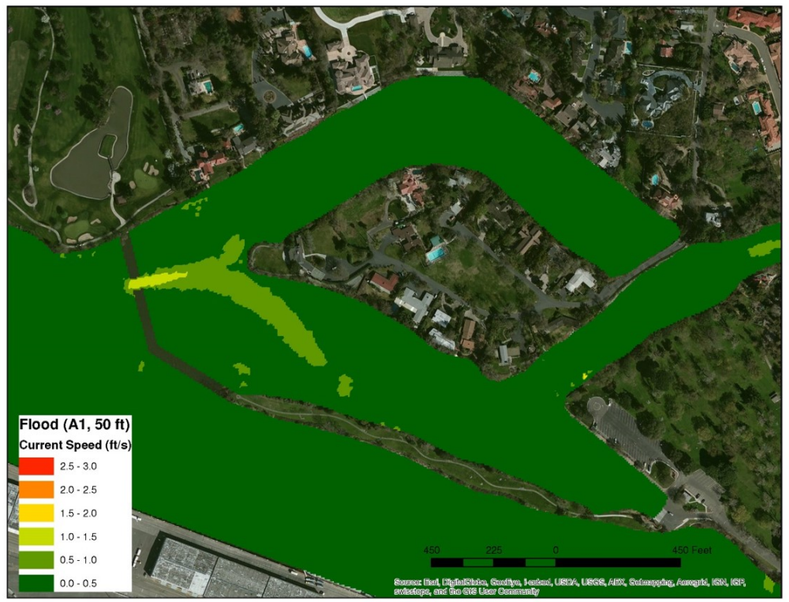
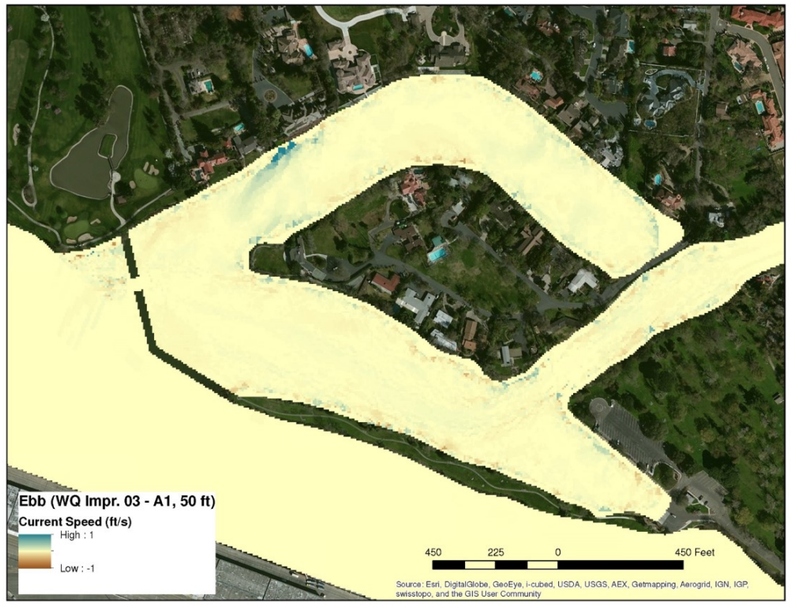
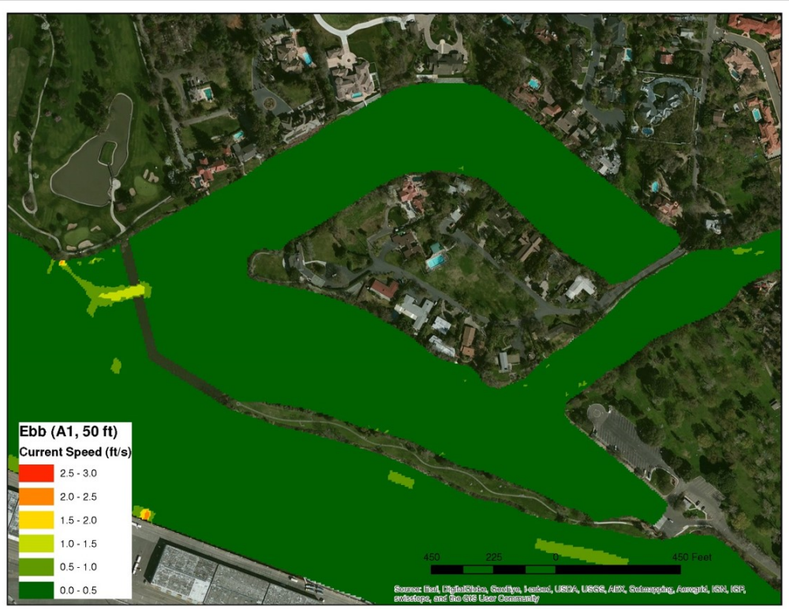
Water Quality Improvement Option 3 during the flood tide:	WATER QUALITY IMPROVEMENT OPTION 3 - ALIGNMENT 1 (50 FT GATE)
	
	
ALIGNMENT 1 (50 FT GATE)	WATER QUALITY IMPROVEMENT OPTION 3

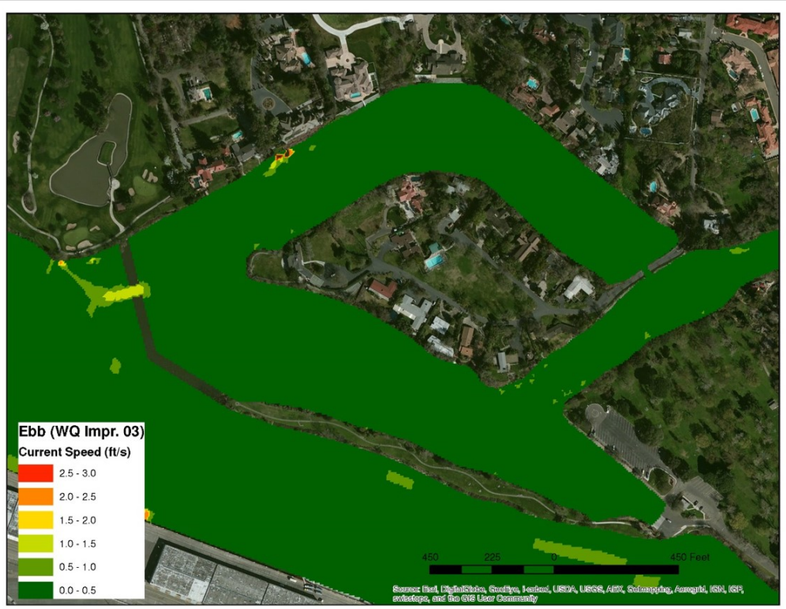
Figure B-5:Alignment 1 (50 ft Gate) and Water Quality Improvement Option 3 Flood Tide Velocity Difference

Water Quality Improvement Option 3 during the ebb tide:

WATER QUALITY IMPROVEMENT OPTION 3 - ALIGNMENT 1 (50 FT GATE)







ALIGNMENT 1 (50 FT GATE) | WATER QUALITY IMPROVEMENT OPTION 3

Figure B-6: Alignment 1 (50 ft Gate) and Water Quality Improvement Option 3 Ebb Tide Velocity Difference

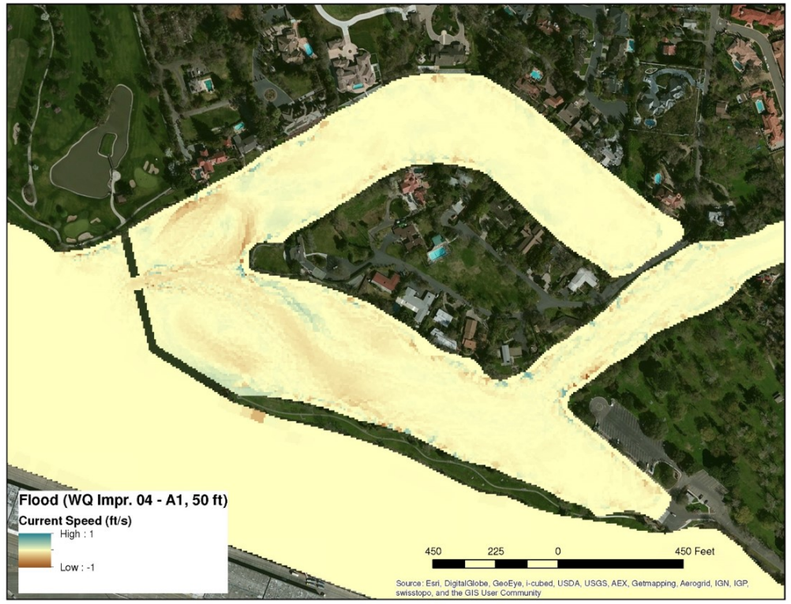
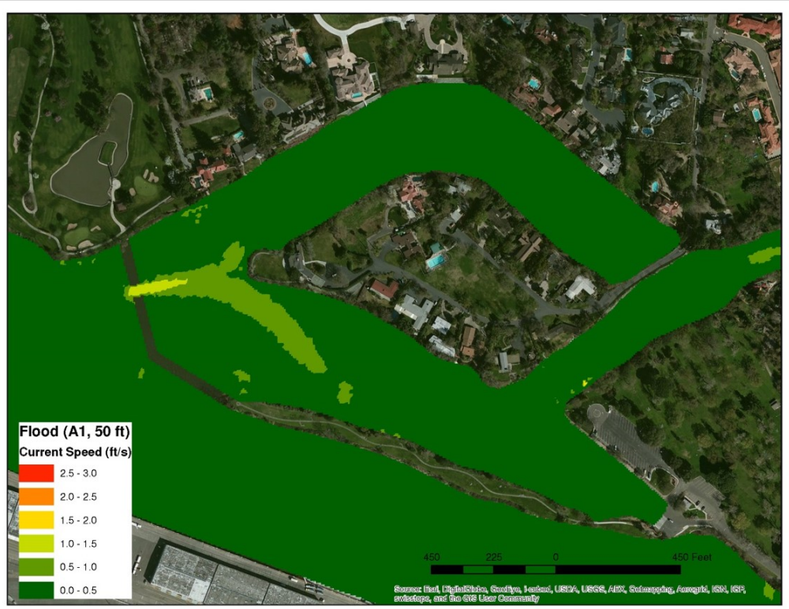
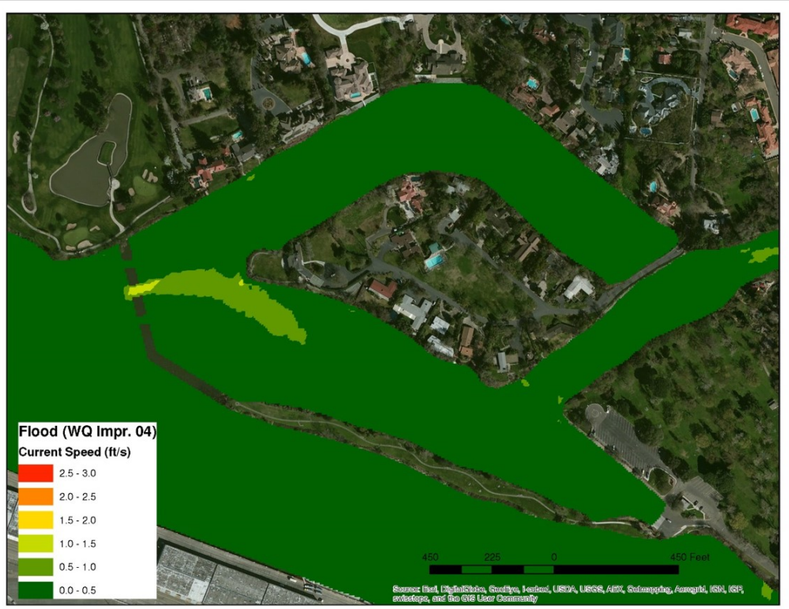
Water Quality Improvement Option 4 during the flood tide:	WATER QUALITY IMPROVEMENT OPTION 4 - ALIGNMENT 1 (50 FT GATE)
	
	
ALIGNMENT 1 (50 FT GATE)	WATER QUALITY IMPROVEMENT OPTION 4

Figure B-7:Alignment 1 (50 ft Gate) and Water Quality Improvement Option 4 Flood Tide Velocity Difference

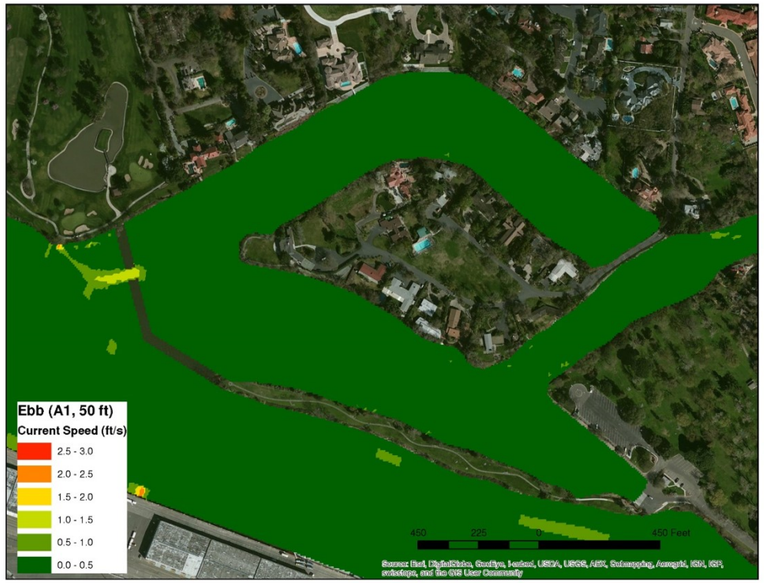
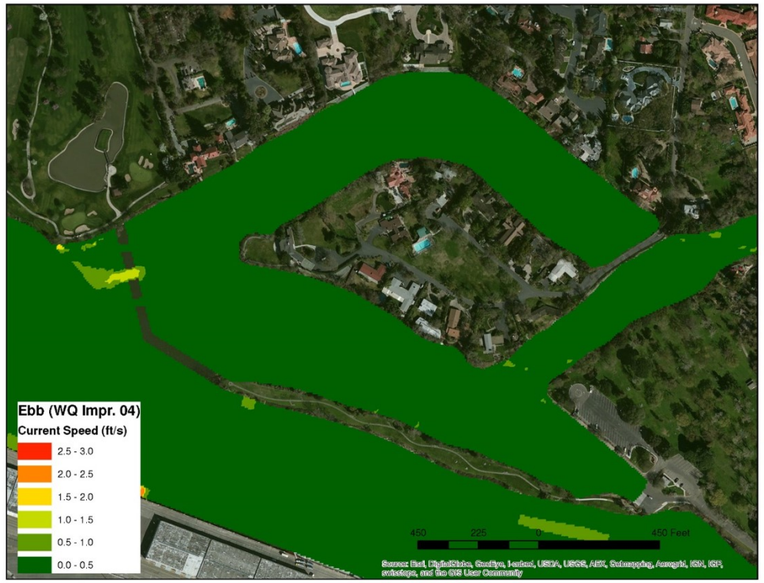
Water Quality Improvement Option 4 during the ebb tide:	WATER QUALITY IMPROVEMENT OPTION 4 - ALIGNMENT 1 (50 FT GATE)
	
ALIGNMENT 1 (50 FT GATE)	WATER QUALITY IMPROVEMENT OPTION 4

Figure B-8: Alignment 1 (50 ft Gate) and Water Quality Improvement Option 4 Ebb Tide Velocity Differenc

Appendix C

Transportation and Navigation Technical Appendix

TRAFFIC IMPACT ANALYSIS

FOR

SMITH CANAL GATE PROJECT

Stockton, CA

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April 20, 2015

3910-02

TRAFFIC IMPACT ANALYSIS FOR SMITH CANAL

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APPENDIX 41

April 20, 2015

KDA

TRAFFIC IMPACT ANALYSIS
FOR SMITH CANAL GATE PROJECT

STUDY PURPOSE AND OBJECTIVES

This study summarizes the traffic impacts associated with the proposed Smith Canal project. Because the project will generate little traffic after completion, this analysis focuses on the traffic impacts occurring during project construction. The analysis describes the existing conditions along the roadways that have been identified as the construction haul routes and at site access during construction of the proposed project. The analysis is intended to describe potential impacts during construction of the pipeline project within the context of existing traffic operations and volumes, while also addressing potential cumulative impacts associated with other construction projects occurring at the same time.

PROJECT DESCRIPTION

The Project

Figure 1 locates the project within San Joaquin County and the City of Stockton. The proposed project will construct measures to implement flood risk-reduction in the vicinity of Smith Canal and the San Joaquin River in and adjacent to the City of Stockton. The project would consist primarily of a fixed wall with a gated structure, which would close off Smith Canal during high flow events and allow existing levees to function as a secondary risk-reduction measure. The site will be accessed via Interstate 5 (I-5). Two roads will be available for use as haul routes to the construction areas, either via County Club Boulevard north of Smith Canal or via Monte Diablo Avenue south of the Smith Canal. A third alternative method for delivering construction materials could include access to the site via boat or barge along the San Joaquin River.

Construction staging areas that will house construction equipment and mobilize construction activities for the project have been identified and may include a portion of Louis Park, the Pixie Woods Amusement Park parking area near the boat launch at the entrance to Smith Canal, a parcel south of Monte Diablo Avenue and west of Interstate 5, and/or the Port of Stockton. Should the Port of Stockton be used as a staging area, it is assumed the contractor will move materials and equipment via a barge across the river to the project area.

Project Alternatives

Three alternatives for the project were evaluated and are described below:

- **Alternative 1 - Single Gated Wall to Dad's Point (Proposed Project).** Alternative 1 would reduce flood risk by constructing a gated fixed wall structure from Dad's Point Levee to the right bank of the San Joaquin River, to isolate Atherton Cove and Smith Canal from the San Joaquin River during flood events. The grade along Dad's Point

would also be raised and a reinforced concrete floodwall would be constructed on the section of Dad's Point near the boat launch ramp to prevent flooding without constricting boat launch traffic. Figure 2 presents the location of the wall structure.

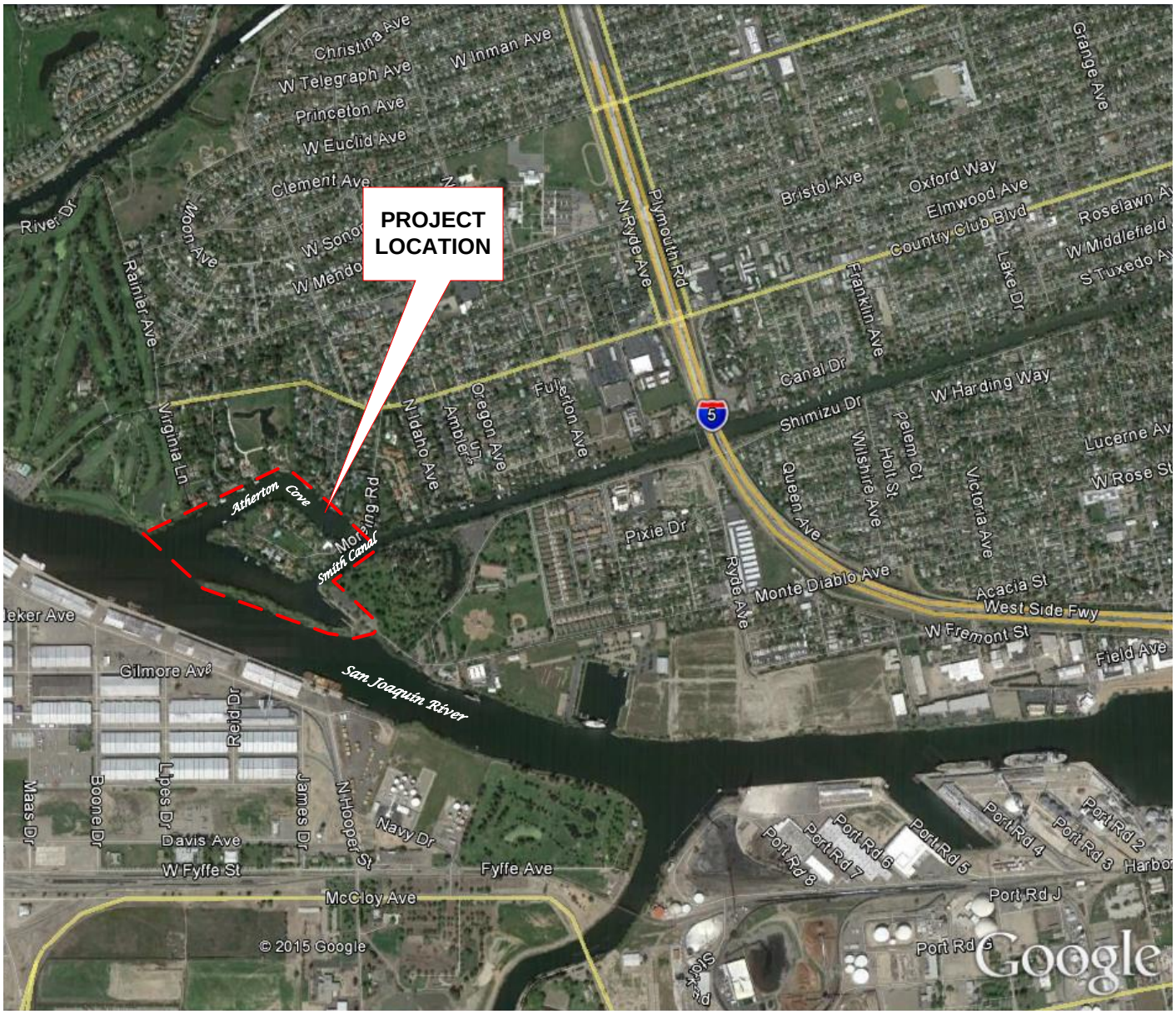
- **Alternative 2 - Atherton Cove Flood Wall with Smith Canal Gate.** Alternative 2 would reduce flood risk by constructing a gated fixed wall structure across Smith Canal to isolate Smith Canal from the San Joaquin River during flood events. Alternative 2 would also construct a sheet pile floodwall along the waterside of the existing levee abutting the north side of Atherton Cove, tying into the existing FEMA-accredited levee at the golf course. Figure 3 presents the location of the wall structure.

- **Alternative 3 - Alternative 3- Dual Gated Walls to Atherton Cove and Smith Canal.** Alternative 3 would reduce flood risk by constructing two gated fixed wall structures across Smith Canal and Atherton Cove to isolate these areas. The gated fixed wall structure across Smith Canal would isolate Smith Canal from Louis Park to Atherton Island. The gated fixed wall structure across Atherton Cove would isolate Atherton Cove from Atherton Island to the Stockton Golf and Country Club. Figure 4 presents the location of the wall structures.

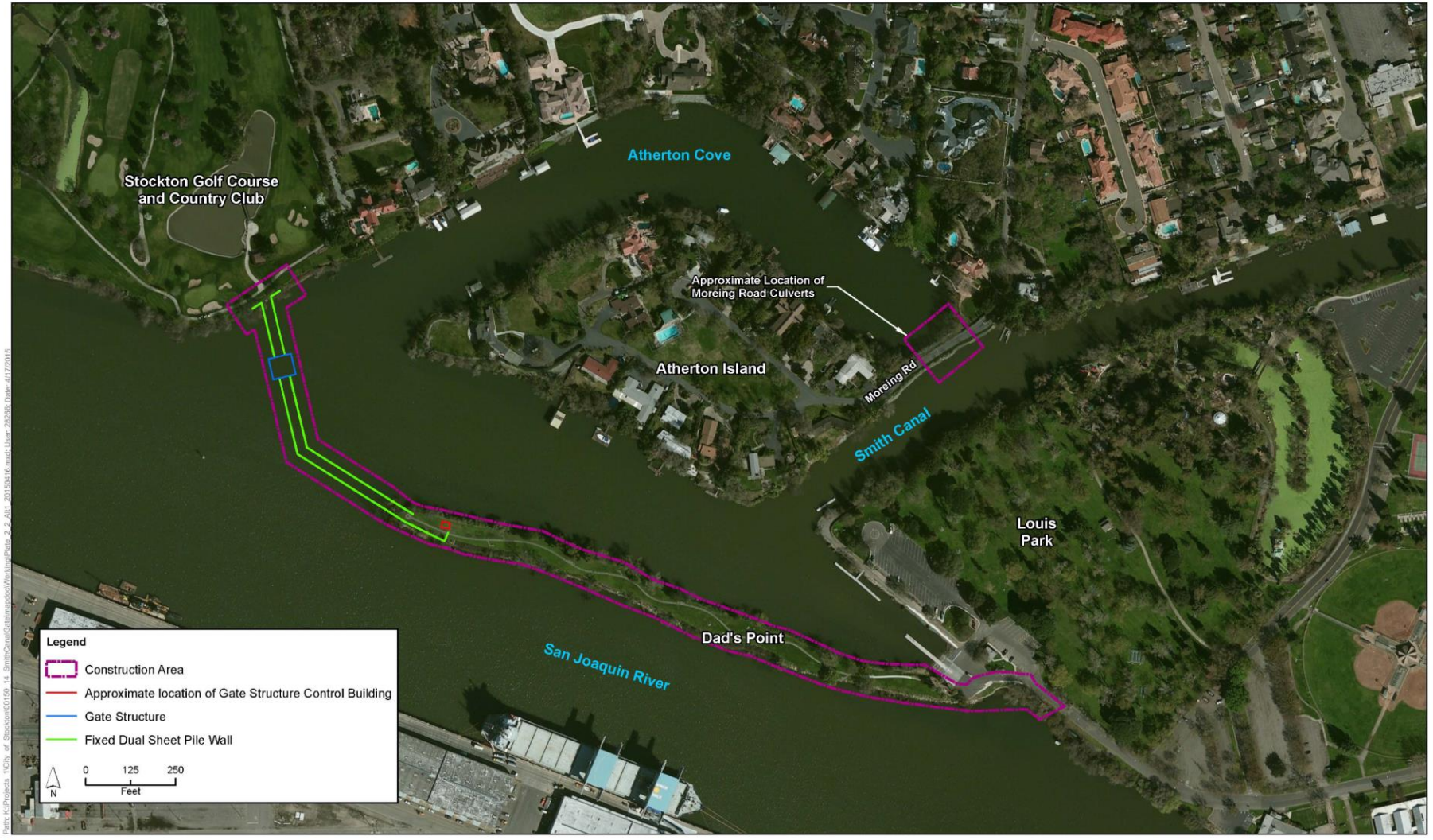
Culverts will be installed under Moreing Road on the north side of Smith Canal with each alternative.

For each of these alternatives construction will occur along both Dad's Point and along the north shore of Atherton Cove. The designated construction haul route to Dad's Point from Interstate 5 is to leave the freeway at the Monte Diablo Avenue interchange and proceed west along Monte Diablo Avenue to its terminus at Dad's Point where the staging area will be located.

The designated construction haul route to the north shore of Atherton Cove has northbound traffic exiting I-5 at the Country Club Blvd and proceeding west on Country Club Blvd to Virginia Lane. Southbound I-5 truck traffic will exit at Alpine Avenue and proceed south on N. Ryde Avenue to Country Club Blvd where they will turn right and travel west to Virginia Lane. Construction traffic will use Virginia Lane to access the Atherton Cove shoreline. Truck traffic heading to Moreing Road for the culvert installation component of the project will use this same route but turn left onto Moreing Road prior to reaching Virginia Lane.



VICINITY MAP



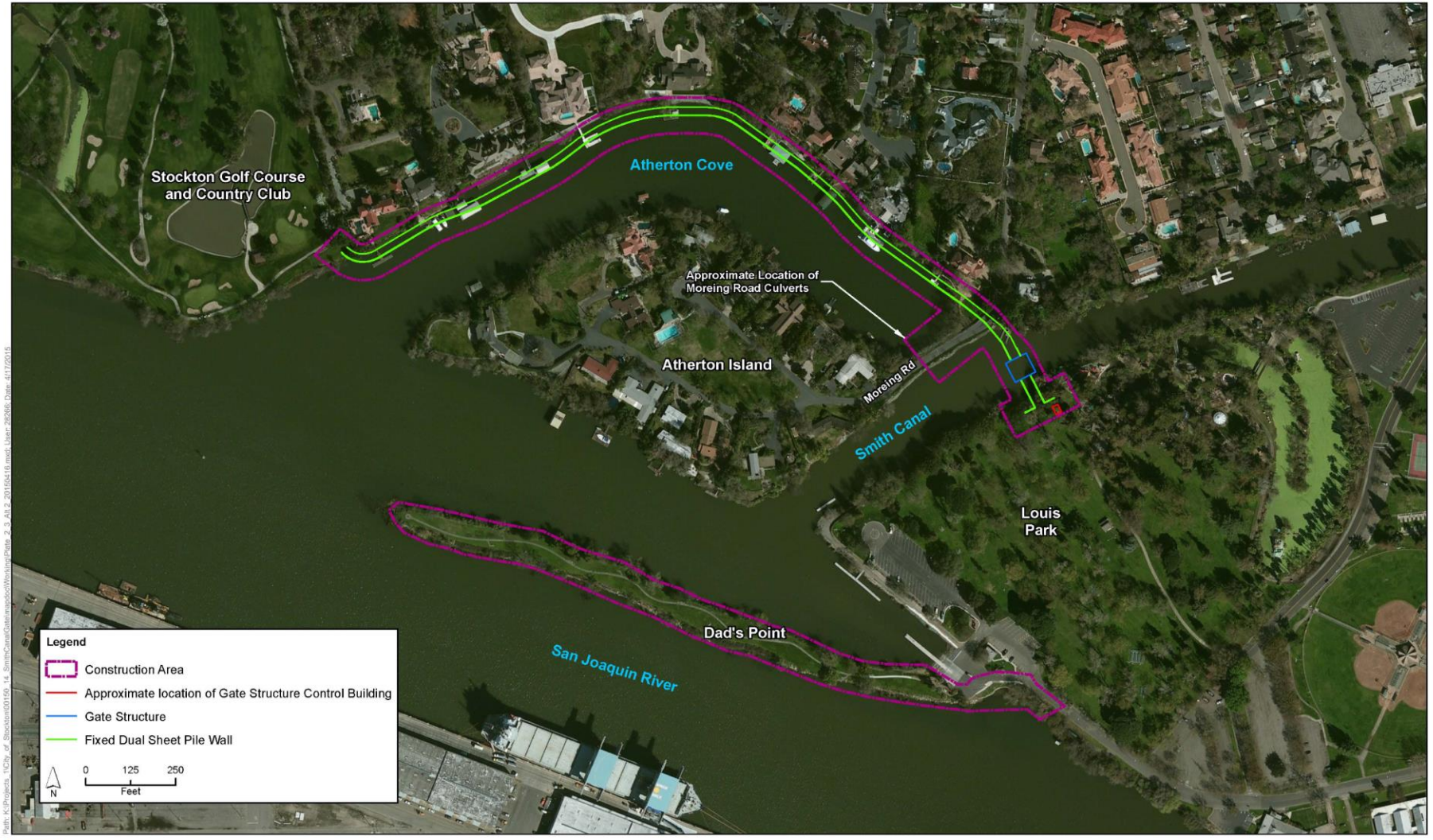
Source: ICF International

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ALTERNATIVE ALIGNMENT NO. 1

3910-02 LT 4/17/2015

figure 2



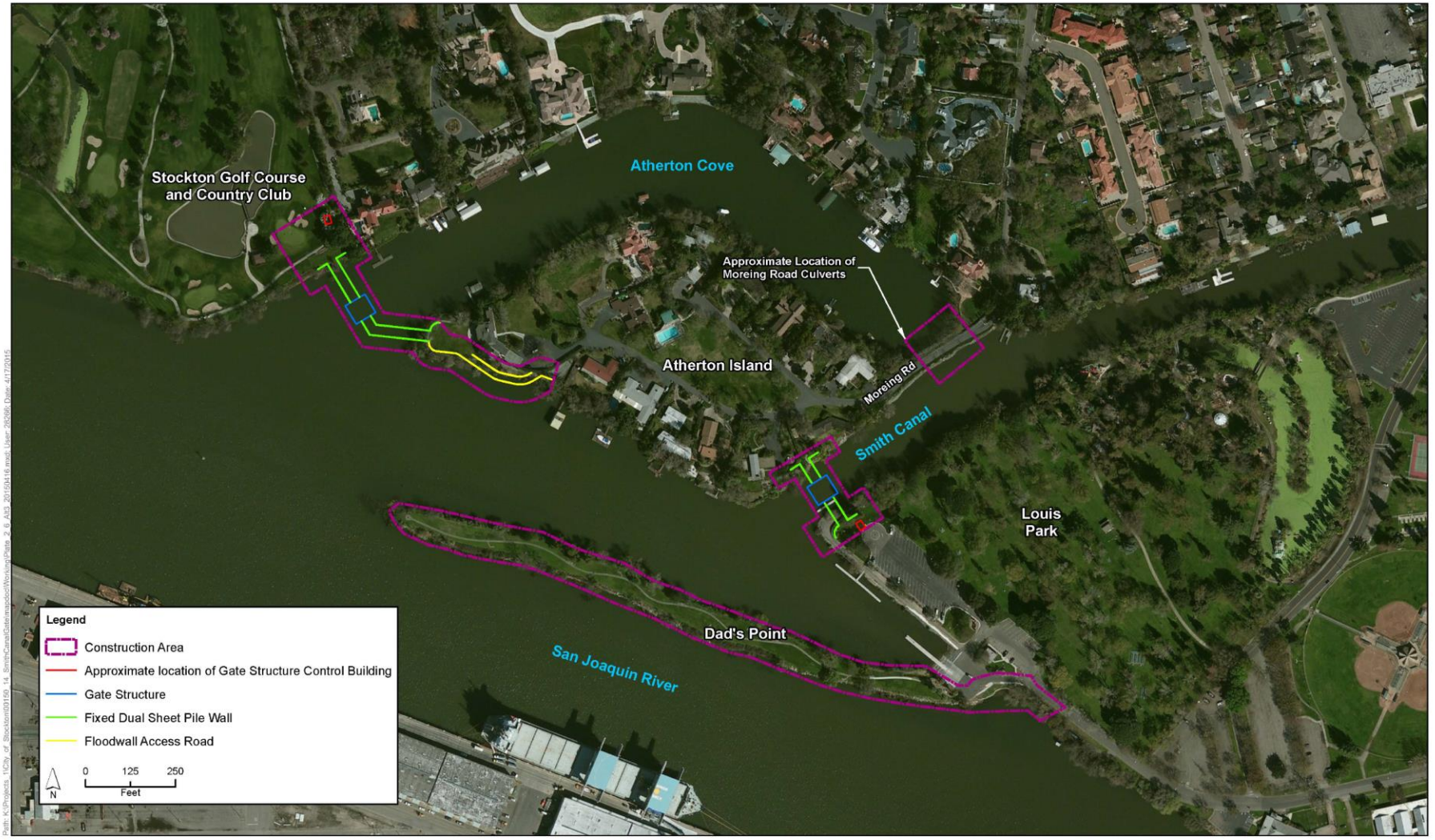
Source: ICF International

ALTERNATIVE ALIGNMENT NO. 2

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3910-02 LT 4/9/2015

figure 3



Smith Canal Gate Project

Plate 2-6
Alternative 3 – Dual Gated Walls to Atherton Cove and Smith Canal

Source: ICF International

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ALTERNATIVE ALIGNMENT NO. 3

3910-02 LT 4/9/2015

figure 4

EXISTING SETTING

Study Area

Roadways. This study addresses traffic conditions along the routes providing access to the proposed project alternatives. The text that follows describes the primary roadways and intersections that would be affected by project traffic during construction of the canal gates:

Monte Diablo Avenue. Monte Diablo Avenue is classified as an arterial roadway in the City of Stockton General Plan. The two-lane roadway begins at Victory Park east of I-5 and continues 1½ miles west to its terminus at Louis Park, adjacent to the San Joaquin River. Access to and from I-5 occurs via a diamond interchange with the off-ramp intersections controlled by stop signs. West of the interchange the roadway width varies between about 30 feet and 50 feet. Depending on the location the pavement is in generally fair to good condition. The posted speed limit is 35 mph. Traffic counts conducted in February 2015 indicate that the daily volumes are about 3,850 vehicles per day in the area west of Interstate 5.

West of I-5 the all-way stop at the Ryde Avenue intersection is the only location along Monte Diablo Avenue with stop control. Sidewalk is discontinuous along Monte Diablo Avenue with segments of the street having sidewalk along either the north or south side of the roadway. Monte Diablo Avenue provides access to Louis Park, which includes four softball diamonds, tennis courts, handball courts, picnicking areas and a boat launch; the boat launch may be intermittently closed during project construction while the remaining uses are projected to remain open.

County Club Blvd. Country Club Blvd is classified as a collector roadway in the City of Stockton and San Joaquin County General Plan. The two-lane roadway begins just east of the Pershing Avenue intersection in the area east of I-5 and continues about 2½ miles west to its terminus at the entrance to the Stockton Golf and Country Club. The roadway is within the incorporated limits of the City of Stockton, except for the 1,100 foot long segment between Wisconsin Avenue and Oregon Avenue and a 1,300 foot long segment east of Virginia Lane.

Access to and from I-5 is via a split diamond interchange with the on- and off-ramps located at Country Club Blvd and Alpine Avenue. Collector-distributor roads run parallel and adjacent to I-5 with Ryde Avenue located west of I-5 and Plymouth Road located east of I-5. The four intersections that make up the interchange are controlled by traffic signals. West of the interchange the width of Country Club Blvd varies. The road is roughly 64 feet in width adjacent to the freeway where the road includes two through lanes in each direction and left turn lanes at intersections. West of Delano Avenue the roadway narrows to a two-lane roadway, with the road width eventually narrowing to about 34 feet near the entrance to the country club. The pavement is generally in fair condition. The posted speed limit is 35 mph. Traffic counts conducted in February 2015 indicate that the daily volumes are about 4,450 vehicles west of Gardena Avenue and about 1,200 vehicles west of Moreing Road.

Operationally, there is one traffic signal at the North Ryde Avenue / SB I-5 On-ramp intersection and an all-way stop at the Rainier Avenue / Virginia Lane intersection in the area west of

Interstate 5. These intersections are at the east and west limits of construction access. All other intersections are side street stop controlled. Sidewalk generally exists along Country Club Blvd east of Oregon Avenue to N. Ryde Avenue, however, there are some locations west of Delano Avenue that have yet to be improved. Sidewalks do not exist along Country Club Blvd west of Oregon Avenue except along two short segments.

Virginia Lane. Virginia Lane is designated as a local roadway by San Joaquin County and is part of a four-way all-way stop controlled intersection with Country Club Blvd and Rainier Avenue. The roadway varies from about 16 feet to 20 feet wide, and on street parking is prohibited. The pavement is generally in fair to good condition. Traffic counts conducted in February 2015 indicate that the daily volumes are about 300 vehicles.

Moreing Road. This roadway is a local San Joaquin County roadway that tees into Country Club Blvd and extends south for about ½ mile to provide access to residences on Atherton Island. The roadway varies in width from about 20 feet to 24 feet. The pavement is generally in fair to good condition. Traffic counts conducted in February 2015 indicate that the daily volumes are less than 100 vehicles.

Intersections. The quality of traffic flow is often governed by the operation of key intersections. The following intersections have been identified for evaluation in this study based on their location along identified haul routes:

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

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

Level of Service

The City of Stockton General Plan and San Joaquin County General Plan establish traffic capacity and Level of Service (LOS) criteria for various types of highways, and an operational LOS for signalized intersections. The LOS describes the quality of traffic flow through intersections, using a scale from A to F. This analysis procedure is a measure of several factors: operating speeds, freedom to maneuver, traffic interruptions, and average delay for vehicles at intersections. The LOS descriptions provided in Table 1 are used by both agencies and summarize the quality of traffic flow for each LOS rating. Intersections operating at LOS A, B, or C function effectively; traffic can move relatively freely. At LOS D, delay is more noticeable, with a traffic condition characterized by heavy but stable traffic flows. LOS E represents conditions where traffic volumes are at or near capacity, resulting in notable delays and average speeds that are one-third the uncongested speed or lower, frequently requiring motorists to wait

more than one signal cycle. Finally, LOS F represents traffic volumes in excess of the intersection's capacity, indicates extreme vehicle delay, and is characterized by very slow traffic speeds (stop-and-go) and long delays and queues at signalized intersections.

TABLE 1
LEVEL OF SERVICE DEFINITIONS

Level of Service	Signalized Intersection	Unsignalized Intersection	Roadway (Daily)
"A"	Uncongested operations, all queues clear in a single-signal cycle. Delay ≤ 10.0 sec	Little or no delay. Delay ≤ 10 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. Delay > 10.0 sec and ≤ 20.0 sec	Short traffic delays. Delay > 10 sec/veh and ≤ 15 sec/veh	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. Delay > 20.0 sec and ≤ 35.0 sec	Average traffic delays. Delay > 15 sec/veh and ≤ 25 sec/veh	Ability to maneuver and select operating speed affected.
"D"	Significant congestion of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35.0 sec and ≤ 55.0 sec	Long traffic delays. Delay > 25 sec/veh and ≤ 35 sec/veh	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay > 55.0 sec and ≤ 80.0 sec	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and ≤ 50 sec/veh	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. Delay > 80.0 sec	Intersection blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.

Sources: 2010 Highway Capacity Manual, Transportation Research Board (TRB).

Various procedures are available for calculating Level of Service. Current operations at study intersections were assessed using the procedures contained in the *2010 Highway Capacity Manual.* Evaluation of unsignalized Level of Service has been supplemented by consideration of the need for traffic signals based on the Traffic Signal Warrant criteria published in the *California Manual of Uniform Traffic Control Devices (MUTCD).* Peak hour traffic volume warrants have been used to identify needed improvements and/or confirm the significance of impacts at unsignalized locations.

Level of Service on roadway segments is evaluated based on planning level thresholds adopted by each agency. The LOS thresholds employed by the City of Stockton are measured based on daily traffic volume and is shown in Table 2. The thresholds employed by San Joaquin County are shown in Table 3. San Joaquin County identifies Country Club Blvd between Franklin Avenue and Pershing Avenue as a minor arterial roadway. No other segment along Country

Club Blvd is identified. For this analysis the portion of Country Club Blvd within the project area and within San Joaquin County was classified as a residential collector roadway.

TABLE 2
CITY OF STOCKTON GENERAL PLAN
ROADWAY SEGMENT LEVEL OF SERVICE THRESHOLDS

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: Stockton General Plan Draft Environmental Impact Report (City of Stockton 2006).							

TABLE 3
SAN JOAQUIN COUNTY GENERAL PLAN
ROADWAY SEGMENT LEVEL OF SERVICE THRESHOLDS

Roadway Classification	Thru 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		

SIGNIFICANCE THRESHOLDS

In this traffic impact study, the significance of the proposed project's impact on traffic operating conditions is based on a determination of whether resulting intersection or roadway segment LOS is considered acceptable by the City of Stockton and San Joaquin County. A project's impact on traffic conditions is considered significant if implementation of the project would result in LOS changing from levels considered acceptable to levels considered unacceptable, or if the project would substantially worsen already unacceptable LOS.

As noted in the City of Stockton Transportation Impact Analysis Guidelines (City of Stockton 2003),

> "The City of Stockton's General Plan has a LOS 'D' standard for its roadway system. Intersections and roadway segments operating at LOS 'A', 'B', 'C', or 'D' conditions are considered acceptable, while those operating at LOS 'E' or 'F' conditions are considered unacceptable.
>
> "For a City intersection, a transportation impact for a project is considered significant if the addition of project traffic would cause an intersection that would function at LOS 'D' or better without the Project to function at LOS 'E' or 'F'.
>
> "For City intersections with a LOS 'E' or 'F' conditions without the project, a transportation impact for a project is considered significant if the addition of project traffic causes an increase of greater than 5 seconds in the average delay for the intersection."

As noted in the *San Joaquin County Traffic Study Guidelines – November 2008* (San Joaquin County 2008),

> "As defined in the San Joaquin County 2010 General Plan, adopted in July 1992, 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. Per Caltrans, all state facilities shall operate at LOS C in rural areas and LOS D in urban areas. All roadways within a local city's jurisdiction shall conform to that city's current LOS standards. The LOS of any County road within a city's sphere of influence shall be determined by County staff and documented appropriately in the study."

The City's guidelines do not specifically address significance thresholds for roadway segments, and for this traffic impact study, the City's significance thresholds described above are also applied to roadway segments. The measures for intersections and segments differ, and an incremental increase in delay cannot be determined based on daily segment volume. For this traffic impact study, if a roadway segment within the City of Stockton operates at LOS E or F without the project, an impact is considered significant if the addition of project traffic causes an increase of greater than five percent in background traffic volume.

Existing Traffic Operations and Level of Service

Intersection Levels of Service. Figure 5 presents the existing lane configurations and current traffic volumes at intersections in the study area. These traffic volumes were counted in late February 2015. Table 4 summarizes current Levels of Service at the two study area intersections during the a.m. and p.m. peak hours. Both of the intersections operate at an acceptable Level of Service, operating at LOS B or better.

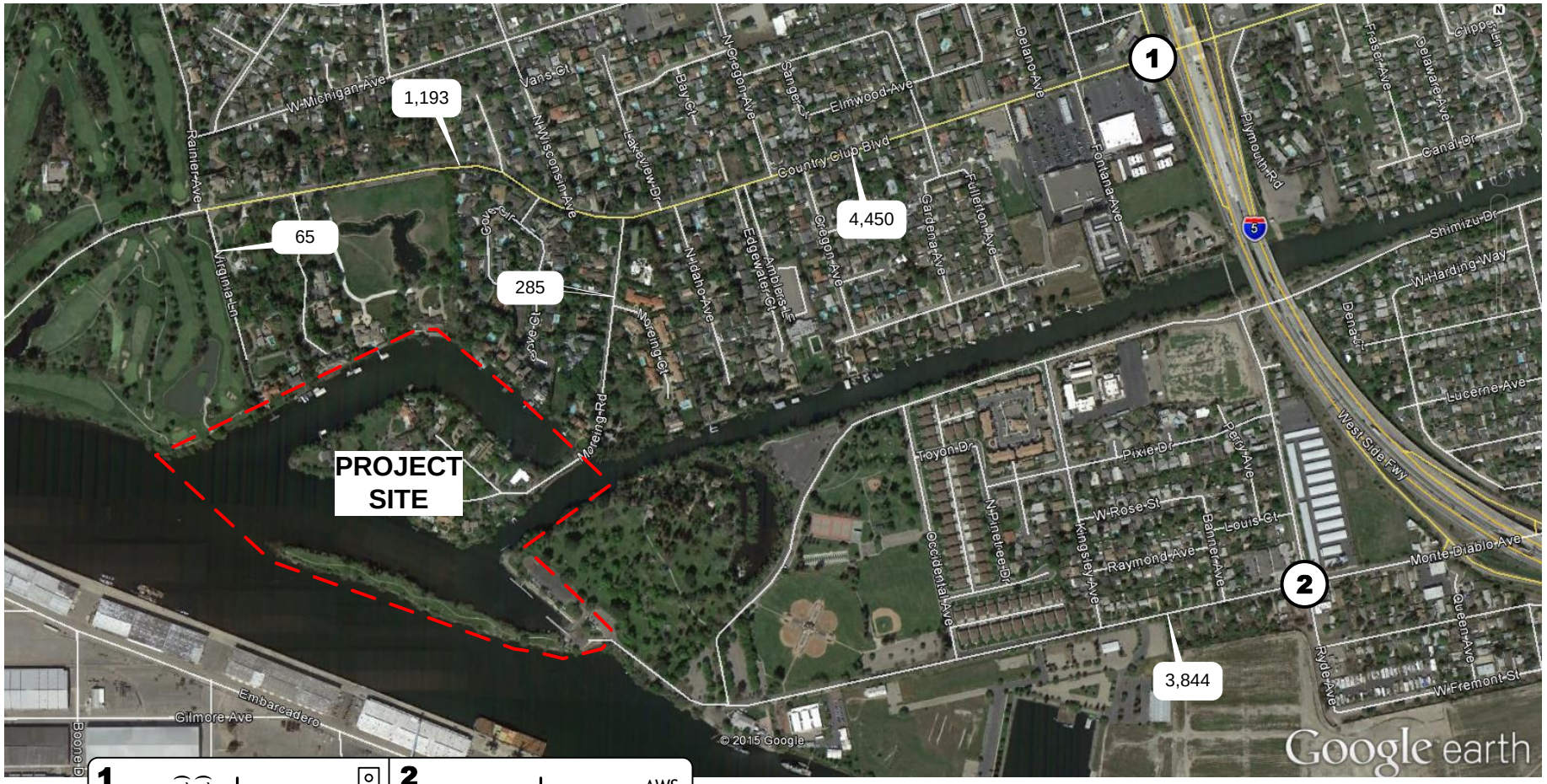
TABLE 4
EXISTING PEAK HOUR LEVELS OF SERVICE AT INTERSECTIONS

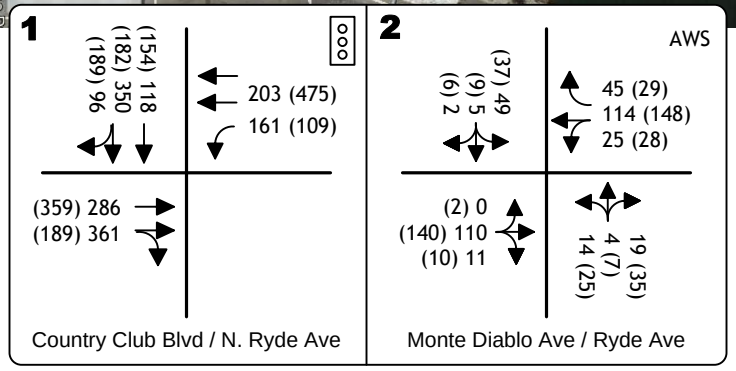
Location	Control	AM Peak Hour Intersection		PM Peak Hour Intersection	
		LOS	Average Delay	LOS	Average Delay
1. Country Club Dr / N. Ryde Ave*	Signal	B	16.0	B	10.8
2. Monte Diablo Ave / Ryde Ave*	AWS	A	8.4	A	8.9
*City of Stockton AWS – all way stop					

Levels of Service based on Daily Traffic Volumes. Table 5 summarizes Levels of Service based on the current daily traffic volumes on the primary study roads. Applicable Level of Service thresholds and roadway classifications are presented. As shown, the existing Level of Service along the main roadways in the project area are LOS A conditions within the City of Stockton and LOS C or better for the roadways within San Joaquin County.

TABLE 5
EXISTING ROADWAY SEGMENT LEVELS OF SERVICE

Roadway	Location	Facility Classification	Standard		Existing Conditions	
			LOS	Daily Volume Threshold	Daily Volume	LOS
Country Club Dr	Between Oregon Ave and Gardena Ave	Collector*	D	11,300	4,450	A
	Between Moreing Rd and Virginia Ln	Collector†	D	7,000	1,193	A
Moreing Road	South of Country Club Dr	Local†	C	2,000	285	>C
Virginia Lane	South of Country Club Dr	Local†	C	2,000	65	>C
Monte Diablo Ave	Between Occidental Ave and Ryde Ave	Arterial*	C	14,700	3,844	A
Source: *City of Stockton General Plan †San Joaquin County General Plan						





Legend

- XX — AM Peak Hour Volume
- (XX) — PM Peak Hour Volume
- AWS — Stop Sign
- Signalized Intersection
- Average Daily Traffic

EXISTING TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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3910-02 LT 4/17/2015

figure 5

Transit Service

Bus service is provided by San Joaquin Regional Transit District (SJRTD) with Route 61 providing service in this area along a route that serves the Downtown Transit Mall and Sherwood Mall in north Stockton. In the project vicinity Route 61 travels along Michigan Avenue, Oregon Avenue and Country Club Blvd. The route operates during the week with the first bus departing the County Club Blvd / Fontana Avenue intersection at 5:46 a.m. Buses operate at approximately one hour headways with the last bus operating along Country Club Blvd at about 8:15 p.m.

Bus service is provided by San Joaquin Regional Transit District (SJRTD) with Route 60 providing service in this area along Monte Diablo Avenue that serves Louis Park / Pixie Woods and the Downtown Transit Mall. From the Transit Mall Route 60 travels west along Monte Diablo Avenue before turning north on Occidental Avenue along the east side of Louis Park. The route then proceeds west along Shimuzu Drive where it intersects Monte Diablo Avenue just east of Dad's Point. It then proceeds east on Monte Diablo Avenue back to the transit mall.

Alternative Transportation Modes

Two schools are in the general vicinity of construction routes, Hoover Elementary School and Commodore Stockton Skills School. Both are located along Michigan Avenue, about ¼ mile north of Country Club Blvd. School children living south of Country Club Blvd will cross this street if walking or riding their bike to or from school.

PROJECT CHARACTERISTICS

Trip Generation

Construction of the Smith Canal Gate project will result in a temporary increase in local traffic due to travel by construction workers and deliveries of construction equipment and materials at the site. There are three possible alternatives to construct the proposed flood control structure, each with varying amounts of construction traffic.

The relative impact of implementing each alternative has been determined by estimating the amount of traffic associated with the construction activities within the study area and superimposing that traffic onto current traffic volumes levels. Because construction activity is a short term condition that will cease when the project is completed, no evaluation of long term cumulative impacts of construction traffic is required. Within each alternative the various construction tasks required to complete the project occur at various times.

The amount of automobile and truck traffic associated with implementation of the project alternatives will vary throughout construction as different activities occur. For this analysis a "worst case" approach has been taken that assumes maximum probable concurrent employment on the site, as well as maximum concurrent truck activity. Proposed construction schedules were reviewed to determine when these activities will occur. Additionally, the Moreing Road culvert installation may or may not have occurred at this time. Since the culvert installation is specific to Moreing Road this roadway segment was analyzed separately.

Construction Employee Traffic. It has been assumed that each construction worker drives a personal vehicle to the construction site. In reality, it is likely that some employees within individual trade groups will informally car pool to the job site, and as a result, this assumption yields a "worst case" view of site trip generation.

Based on the *Impact Assessment for Construction* dated December 16, 2014 from Peterson Brustad Inc. (PBI) and an updated environmental summary (*e-mail correspondence Stefanie Lyster IFC International, March 19, 2015*) the dry land work will occur between 7:00 a.m. and 4:00 p.m. Monday through Friday. It is assumed that on any given day construction employees will arrive at the project site prior to the a.m. peak hour of adjacent street traffic; however, 100% of the employees are assumed to depart the project site during the p.m. peak hour. For the purpose of this analysis it was assumed that all employees will also arrive during the a.m. peak period. This represents a "worst case" view of peak hour construction employee traffic.

The number of employees at the site varies by 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.

Construction Truck Traffic. Trucks will 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 and the various construction tasks, and the worst case truck traffic estimates vary by alternative. Alternative 1 would expect to see 85 trucks access the site on a daily basis, while alternative 2 would see 140 trucks and Alternative 3 could see 137 trucks.

Hourly and daily truck trips were developed based on this information provided by PBI. As noted, under the anticipated construction schedule no truck traffic would be expected in the p.m. peak hour.

Table 6 presents the projected trip generation for each of the three alternatives. These estimates also include miscellaneous site traffic as noted.

TABLE 6
PROJECT TRIP GENERATION

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

Trip Distribution/Assignment. It is necessary to identify the routes that will be used by project traffic, and the regional distribution of project trips is an element in that process. It is assumed that the regional distribution of the project's employee and construction truck traffic will differ, as employee traffic will 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 Blvd.

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 will provide concrete and fill materials from their 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. The relative assumptions made with regards to employee and truck distribution are identified in Table 7.

TABLE 7
PROJECT TRIP DISTRIBUTION

Direction	Route	Percentage of Total Traffic	
		Trucks	Employees
North	I-5	10%	50%
South	I-5	90%	50%
Total		100%	100%

Trip Assignment. The assignment of traffic to study area roads is based on the Personnel and Equipment Schedule identified by PBI for the projected durations of each alternative. The schedule to construct the flood control project will vary, with the shortest construction duration being 25 months (March 2016 to April 2018) and the longest duration being 43 months. Construction traffic will vary for each 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 8 presents the trip assignment during the months where the highest volume of truck traffic and employee traffic occurs. 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 Blvd haul route.

TABLE 8
PROJECTED TRIP ASSIGNMENT

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

PROJECT TRAFFIC IMPACTS

Intersection Levels of Service

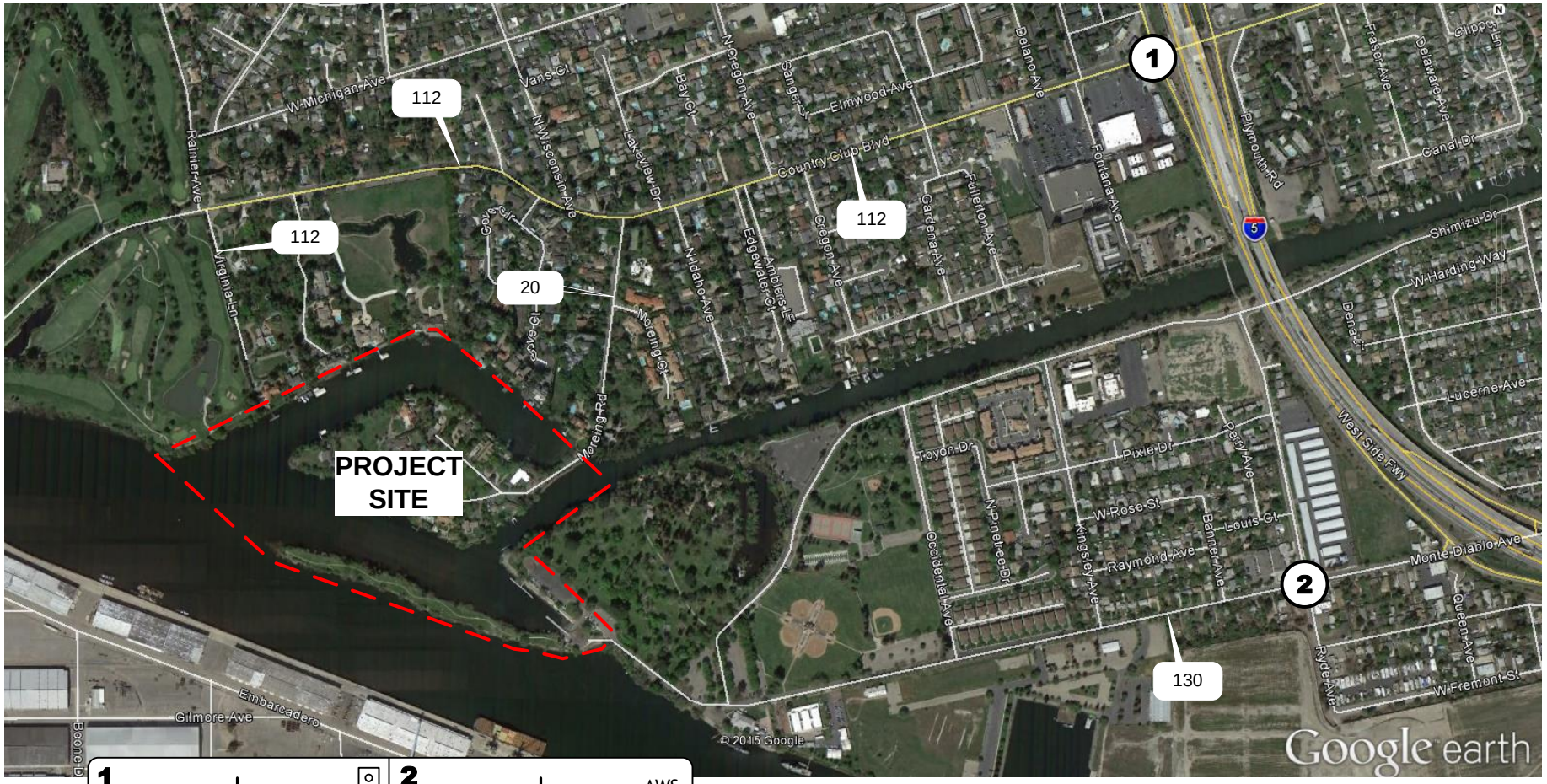
Figures 6-11 present the projected traffic generated for each alternative and the Existing plus Alternative traffic volumes at the two study intersections. Table 9 summarizes the projected Levels of Service at the intersections for both a.m. and p.m. peak hours under each of the project alternatives.

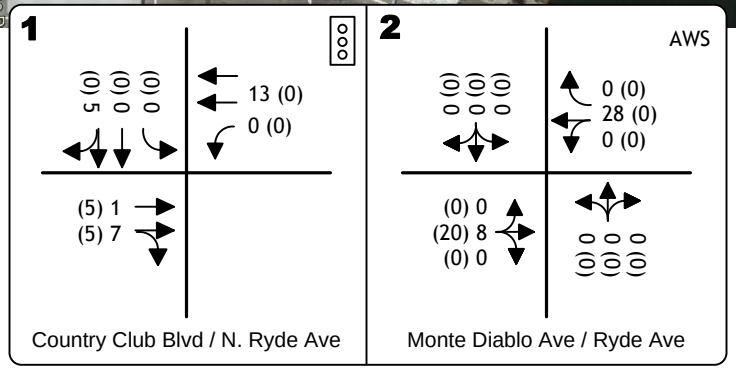
Because the acceleration and deceleration characteristics of trucks differ from those associated with conventional automobiles, it is necessary to account for these factors in Level of Service analysis. Level of Service analysis accounts for the truck percentage on each approach, and current factors were adjusted upwards to account for the additional truck traffic associated with the project.

As shown in Table 9 both of the study intersection will continue to operate at an acceptable level of service, operating at LOS B or better for each alternative. As LOS B satisfies the LOS D minimum standard, the project's impact is not significant.

Daily Traffic Volumes Level of Service

To provide additional perspective on project impacts, the amount of traffic added to local streets on a daily basis during construction has been identified. These forecasts have been identified in terms of automobile and truck traffic that will occur over the duration of construction and "random" traffic that may occur occasionally when construction takes place in areas that make use of specific access routes. This additive traffic has been compared to existing 24 hour traffic volume counts. Tables 10-12 compare the maximum projected roadway segment traffic volumes for each of the alternatives. Traffic will increase along each of the project routes; however, all arterial and collector routes will operate at LOS C or better through the duration of the project. The local streets will see an increase in construction traffic over the short term, and these streets will operate above the County's LOS C threshold.



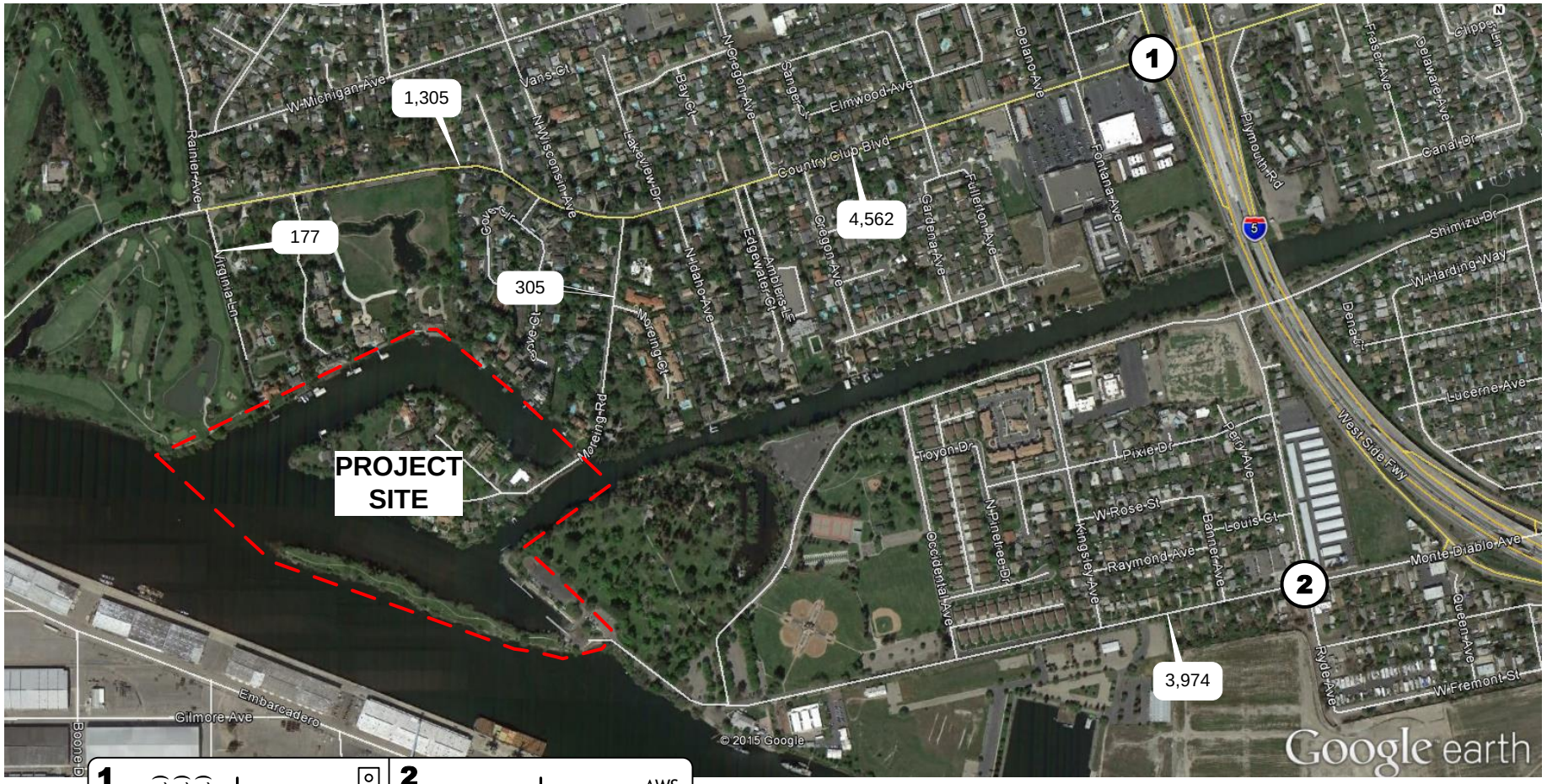


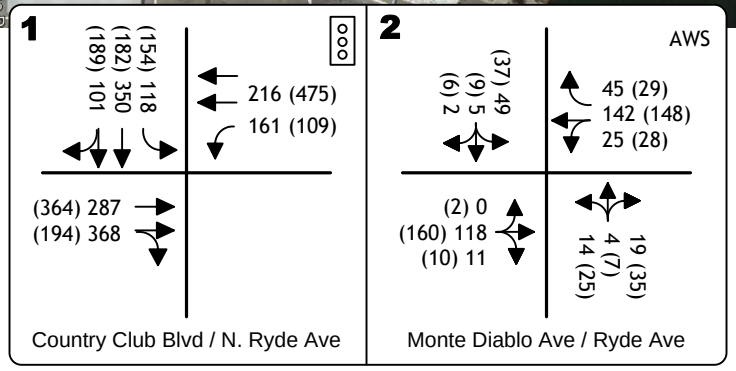
Legend

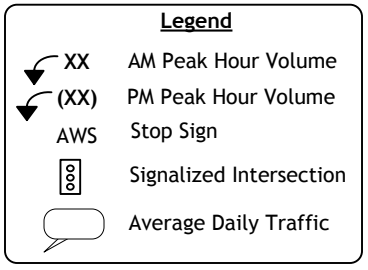
XX	AM Peak Hour Volume
(XX)	PM Peak Hour Volume
AWS	Stop Sign
	Signalized Intersection
	Average Daily Traffic

PROJECT ONLY – ALTERNATIVE 1
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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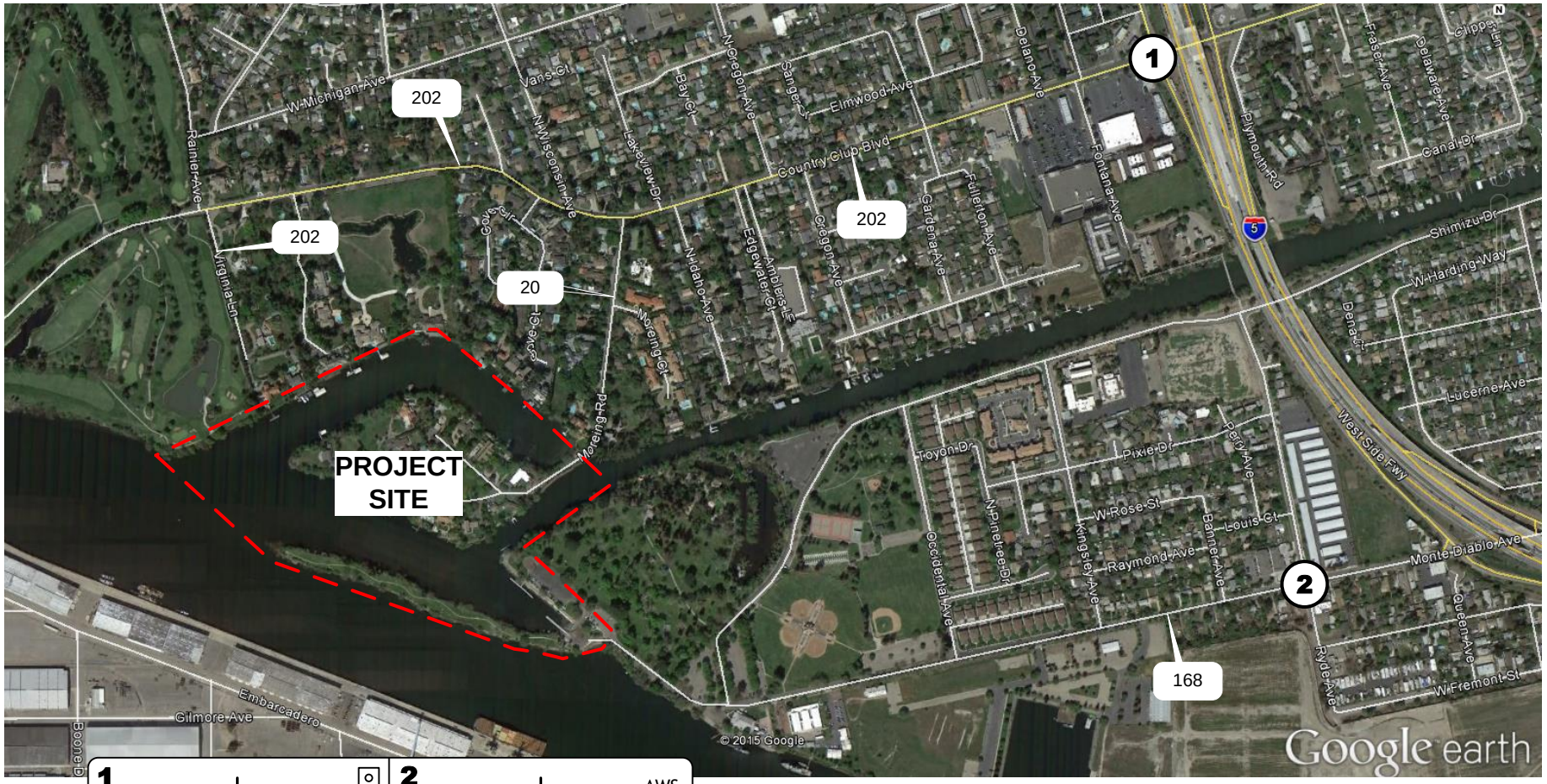


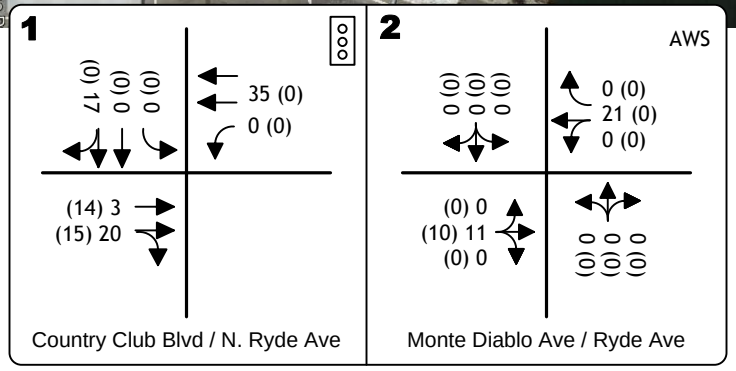


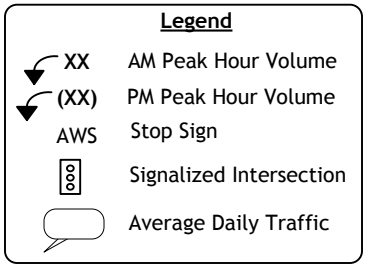


EXISTING PLUS PROJECT – ALTERNATIVE 1
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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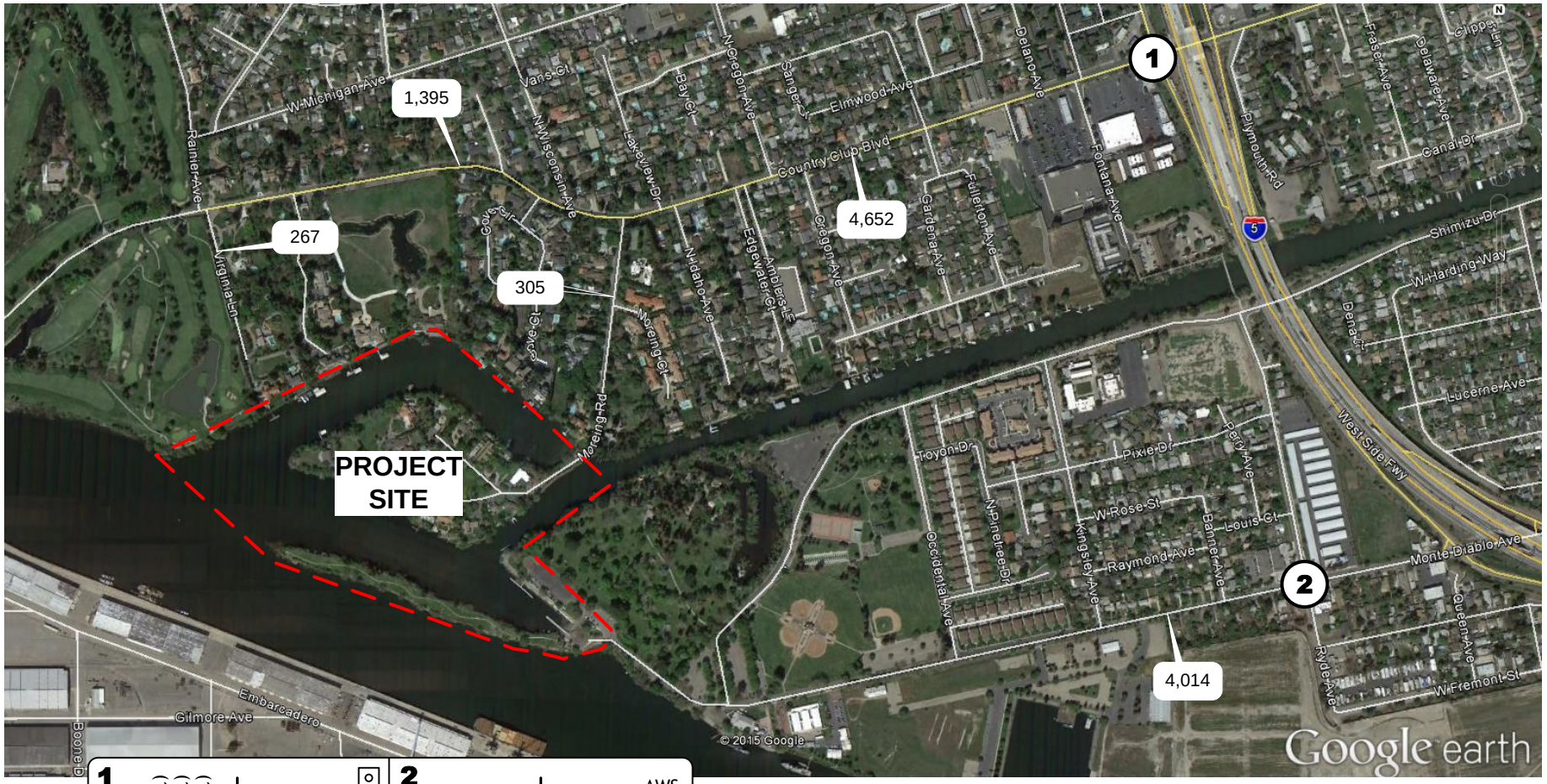


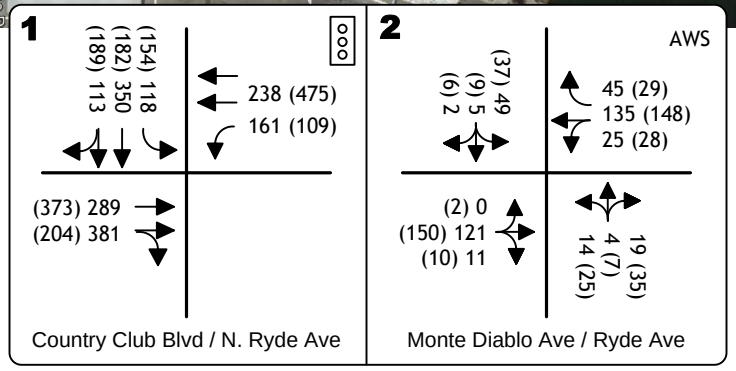


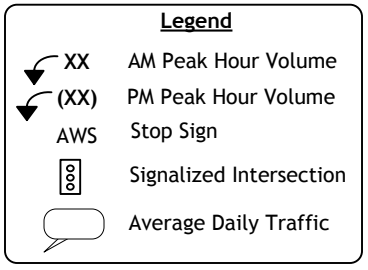


PROJECT ONLY – ALTERNATIVE 2
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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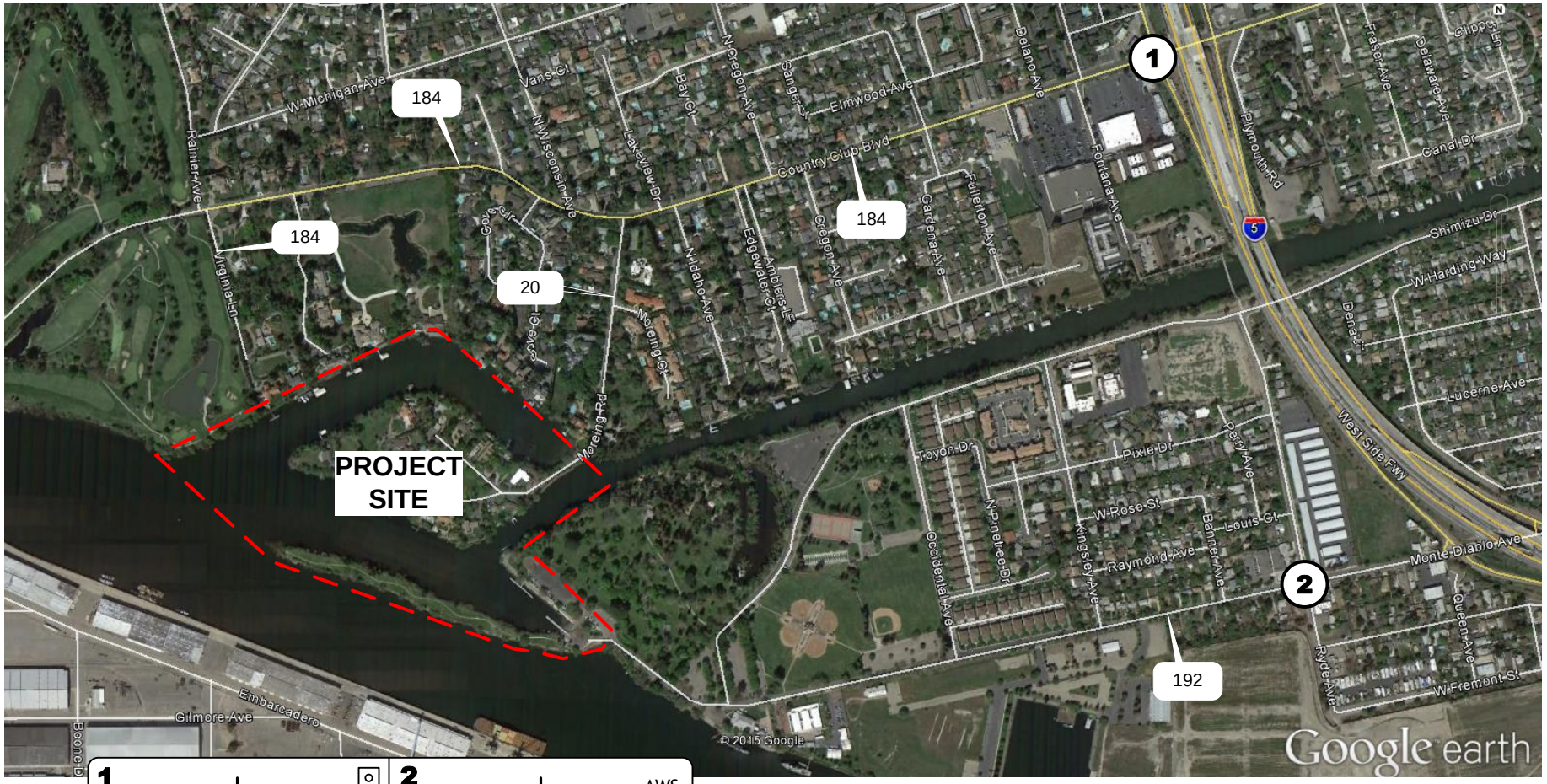


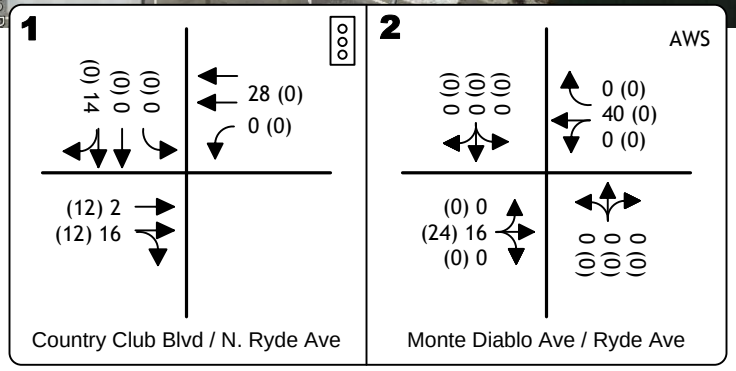
EXISTING PLUS PROJECT – ALTERNATIVE 2
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

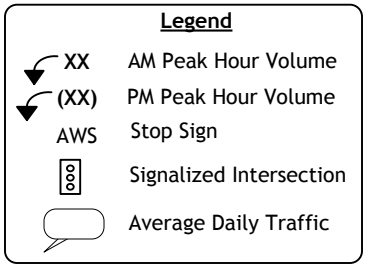
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figure 9

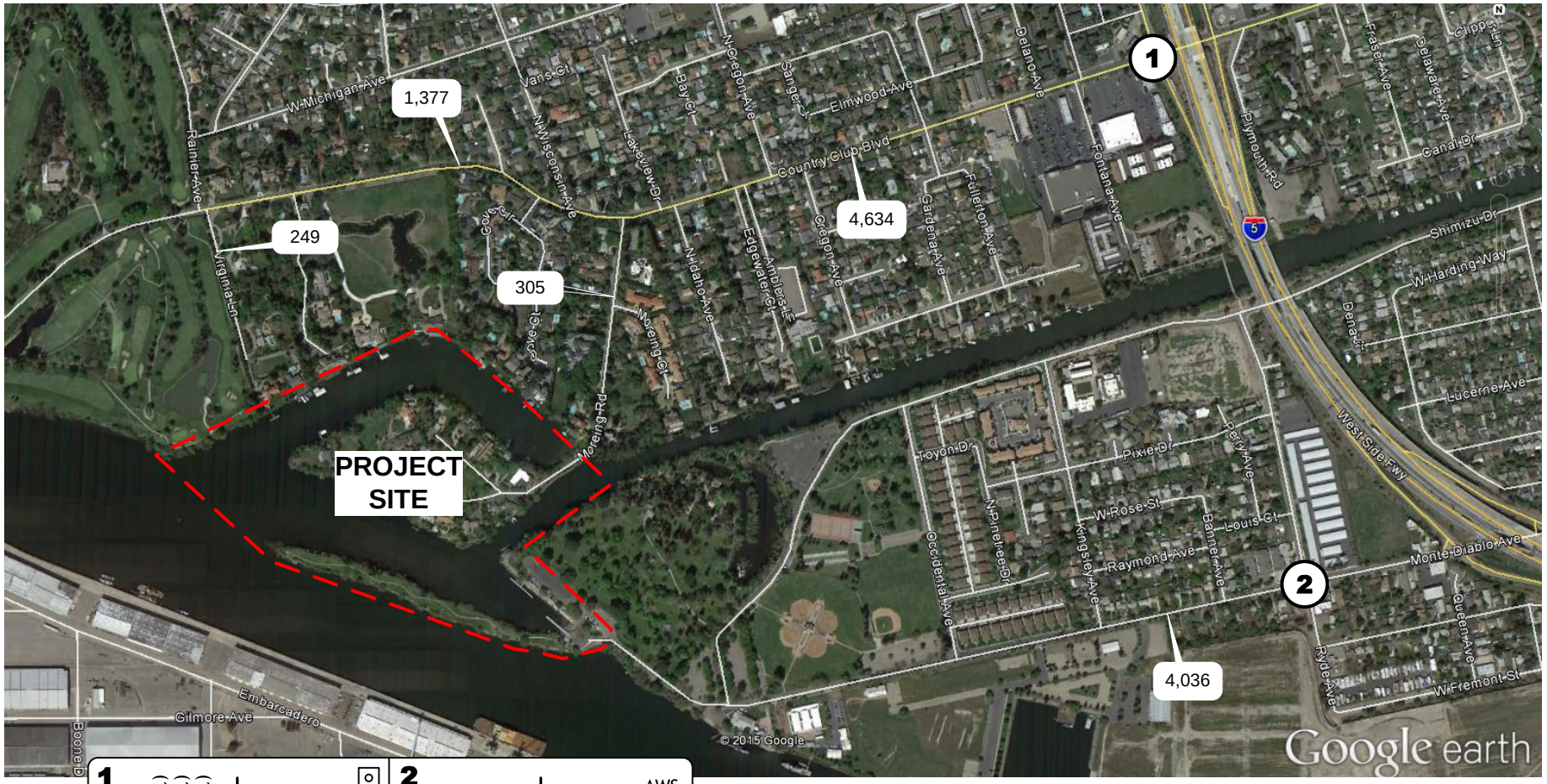


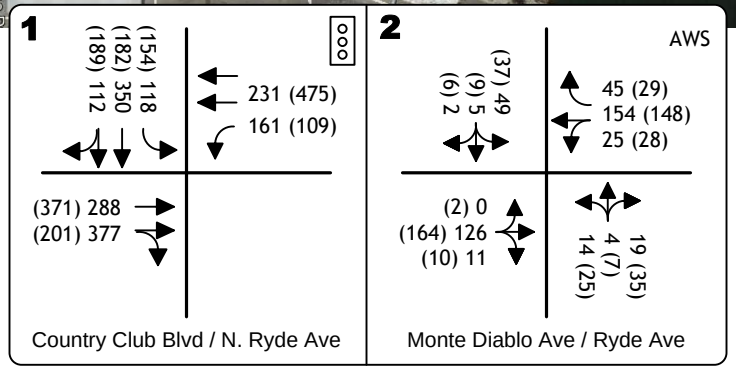


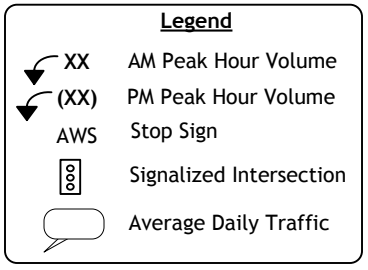


PROJECT ONLY – ALTERNATIVE 3
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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EXISTING PLUS PROJECT – ALTERNATIVE 3
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

TABLE 9
EXISTING PLUS PEAK HOUR LEVELS OF SERVICE AT INTERSECTIONS
ALTERNATIVES 1 THROUGH 3

Location	Control	Alternative #1		Alternative #2		Alternative #3	
		AM	PM	AM	PM	AM	PM
1. Country Club Dr / N. Ryde Ave*	Signal	B / 16.5	B / 10.8	B / 17.2	B / 10.9	B / 17.0	B / 10.9
2. Monte Diablo Ave / Ryde Ave*	AWS	A / 8.7	A / 9.0	A / 8.7	A / 8.9	A / 8.9	A / 9.0
* City of Stockton AWS – all way stop A/3.2 – Level of Service / Delay							

TABLE 10
PEAK HOUR LEVELS OF SERVICE ALONG ROADWAY SEGMENTS
ALTERNATIVE 1

Roadway	Location	Facility Classification	Standard		Alternative #1			
			LOS	Daily Volume	Daily Volume			LOS
					Existing	Project Only	Total	
Country Club Dr	Between Oregon Ave and Gardena Ave	Collector*	D	11,300	4,450	112	4,562	A
	Between Moreing Rd and Virginia Ln	Collector†	C	7,000	1,193	112	1,305	>C
Moreing Rd	South of Country Club Dr	Local†	C	2,000	285	20	305	>C
Virginia Ln	South of Country Club Dr	Local†	C	2,000	65	112	177	>C
Monte Diablo Ave	Between Occidental Ave and Ryde Ave	Arterial*	C	14,700	3,844	130	3,974	A
Source: *City of Stockton General Plan †San Joaquin County General Plan								

TABLE 11
PEAK HOUR LEVELS OF SERVICE ALONG ROADWAY SEGMENTS
ALTERNATIVE 2

Roadway	Location	Facility Classification	Standard		Alternative #2			
			LOS	Daily Volume	Daily Volume			LOS
					Existing	Project Only	Total	
Country Club Dr	Between Oregon Ave and Gardena Ave	Collector*	D	11,300	4,450	112	4,562	A
	Between Moreing Rd and Virginia Ln	Collector†	C	7,000	1,193	202	1,395	>C
Moreing Rd	South of Country Club Dr	Local†	C	2,000	285	20	305	>C
Virginia Ln	South of Country Club Dr	Local†	C	2,000	65	202	267	>C
Monte Diablo Ave	Between Occidental Ave and Ryde Ave	Arterial*	C	14,700	3,844	170	4,014	A

Source: *City of Stockton General Plan
†San Joaquin County General Plan

TABLE 12
PEAK HOUR LEVELS OF SERVICE ALONG ROADWAY SEGMENTS
ALTERNATIVE 3

Roadway	Location	Facility Classification	Standard		Alternative #3			
			LOS	Daily Volume	Daily Volume			LOS
					Existing	Project Only	Total	
Country Club Dr	Between Oregon Ave and Gardena Ave	Collector*	D	11,300	4,450	184	4,634	A
	Between Moreing Rd and Virginia Ln	Collector†	C	7,000	1,193	184	1,377	>C
Moreing Rd	South of Country Club Dr	Local†	C	2,000	285	20	305	>C
Virginia Ln	South of Country Club Dr	Local†	C	2,000	65	184	249	>C
Monte Diablo Ave	Between Occidental Ave and Ryde Ave	Arterial*	C	14,700	3,844	192	4,036	A

Source: *City of Stockton General Plan
†San Joaquin County General Plan

Traffic Safety/Pavement Deterioration

At various time over the life of the project truck traffic will be added to the roads that link the designated access locations with the regional highway network. While the effect of this traffic on overall traffic operations and LOS has been evaluated, it is also important to consider the effects of trucks with regards to impacts to the conditions of these roads and to truck maneuvering requirements. Because of their weight, trucks can have a disproportional impact on roadway pavement sections and can accelerate the need for maintenance. Because the turning paths taken by large trucks exceed that of regular automobiles, trucks may encroach into opposing lanes or leave the pavement when negotiating turns on narrow streets. The effects of truck circulation on local streets have been evaluated based on the general width of key roads/intersections used under each alternative and on the availability of pedestrian/bicycle facilities along haul routes.

Construction Employee Parking

Staging areas to house construction equipment and mobilize construction activities for the project could include a portion of Louis Park, the Pixie Woods parking area near the boat launch at the entrance to Smith Canal; a parcel south of Monte Diablo Avenue and west of Interstate 5; and/or the Port of Stockton. These staging areas may include limited facilities for employee parking; however, employee parking areas have not been specifically identified. 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 lack of open areas providing access to these locations.

CUMULATIVE TRAFFIC IMPACTS

Because the impacts of project construction traffic will cease once the project has been built, no analysis of the long term cumulative impacts is required. However, it would be appropriate to consider the cumulative impacts of other short term projects that may be ongoing while the project is being constructed, as well as the effects of any development proposal that can be expected to be completed and occupied before this project is completed. One such on-going project is the I-5 Rehabilitation Project which 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.

IMPACT ANALYSIS AND MITIGATION MEASURES

Alternative 1 – Single Gated Wall to Dad's Point

IMPACT #1 – Increased Traffic on Regional Circulation System. Construction of Alternative 1 would not add traffic to major roads in the project vicinity. The project will add 170 daily truck trips on a temporary basis along I-5. I-5 currently serves about 26,000 trucks on a daily basis. Because no appreciable change to current operating LOS would result at key intersections and construction traffic would be added on a temporary and intermittent basis, this is **less than significant.**

IMPACT #2 – Contribution to Deterioration of Roads. Construction of Alternative 1 will add truck traffic on local roads in the vicinity of the study area. Alternative 1 will contribute to the deterioration of street and bicycle trail pavement sections. This impact **may be significant**.

Mitigation: The Contractor shall prepare a baseline videography survey of the pavement conditions on potential haul routes and use this information as the basis for identifying and installing final repairs to return the routes to "pre-existing" conditions at the end of the job. The project proponents shall also monitor pavement conditions each year and make "interim" improvements as needed to ensure motorist safety.

Because the road will be returned to its pre-existing condition with implementation of this Mitigation Measure Impact #2 would be **less than significant**.

IMPACT #3 - Parking for Construction Employees will need to be provided off the roadways throughout the project area. Adequate parking for employees may not be readily available at each of the construction sites. This impact **may be significant**.

Mitigation: The Contractor shall identify and provide adequate parking for all construction related employees during the entire length of construction. Vehicles shall not block any roadways and driveways. If necessary, parking and staging areas away from the actual construction site may be needed and the Contractor shall have to transport construction employees. The Contractor shall work with the City to identify possible short term parking and staging locations. After implementation this impact would be **less than significant**.

IMPACT #4 - Potential for Conflicts between Construction Traffic and Local Traffic, Pedestrians, and Bicycles. Construction would add short-term truck traffic on the local roads throughout the project vicinity. This traffic has the potential to create conflicts with local traffic, pedestrians, and bicyclists. This impact **may be significant**.

Mitigation: The Contractor shall implement a Construction Traffic Management Plan to enhance the safety of local traffic, including 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, and other special traffic-control actions. Specific measures contained in the plan shall include the following:

- Distribute or mail flyers to residents in the nearby Country Club 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 flagging personnel at the intersections where trucks may be turning onto major routes and may encroach into opposing lanes or may interfere with pedestrians and bicycle through traffic.
- 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 TCM as needed.

After implementation this impact would be **less than significant**.

IMPACT #5 - Short-term closures to portions of Dad's Point, Louis Park, Atherton Cove and Island and the Stockton Golf and Country Club may be required in order to construct the project. Specifically, these may include partial road closures, full closures to parking areas and closure of trail areas. This **may be a significant impact.**

Mitigation: The Contractor shall prepare Traffic Control Plans that will provide for short term closures along the local roadways, including but not limited to the use of ½ road closures, flagging operations, closure plans for parking areas. Adequate information shall be provided for guidance to alternative parking locations and closure of trail areas with provisions for alternative access routes. All closure plans shall follow MUTCD guidelines for construction zones and should provide for alternative access beyond the closure location where available. Advance notification of closures shall be completed indicating the dates of closure. This shall 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.

Full road closures will apply to through traffic only. Local traffic, including residents, school buses and mail carrier service, and emergency vehicles will shall have access to the roadway at all times. The contractor shall provide full access to emergency vehicles. The Contractor will be allowed to delay local non-emergency traffic in order to allow the Contractor to complete a portion of work. The maximum delay allowed shall be 15 minutes.

After implementation this impact would be **less than significant**.

IMPACT #6 - 1/2 road closures will create delays along roadways. The installation of culverts along Moreing Road will require the road to be closed while construction is completed. Half road closures should be used to allow local traffic, postal and emergency vehicle access during construction. This **may be a significant impact.**

Mitigation: The Contractor shall prepare a Traffic Control Plan similar to that noted in the Mitigation Measure for Impact #5.

After implementation this impact would be **less than significant**.

IMPACT #7 - Construction will disrupt local roadways during construction. Some local roadways away from the actual construction areas will be disrupted throughout the length of the project. These include Moreing Road and Virginia Lane where truck traffic will use these roadways to access the construction sites along Moreing Road and in Atherton Cove. This **may be a significant impact.**

Mitigation: The Contractor shall prepare a Traffic Control Plan similar to that noted in the Mitigation Measure for Impact #5.

After implementation this impact would be **less than significant**.

IMPACT #8 - Local driveway access may be blocked during construction. Construction equipment may block local driveways while queued waiting for access to the construction job site. This **may be a significant impact.**

Mitigation: The Contractor shall prepare a Traffic Control Plan similar to that noted in the Mitigation Measure for Impact #5.

After implementation this impact would be **less than significant**.

IMPACT #9 – Project may reduce available parking for activities at Louis Park and Pixie Woods Amusement Park. The softball fields in Louis Park are used by the City of Stockton for recreational programs while Pixie Woods is an amusement park located between the softball fields and Dad's Point. There are four parking areas in the area, one at Dad's Point which is projected to be used for project staging and three others for park, softball and Pixie Woods uses. The loss of one parking area may result is parking shortfall during construction. This **may be a significant impact.**

Mitigation: The Contractor shall continuously monitor the parking supply for the park activities. When periods of high park use are identified, such as a softball tournament, the Contractor shall work with the City to identify and provide additional near-by parking to meet the short term needs of the activity.

After implementation this impact would be **less than significant**.

IMPACT #10 - Construction traffic may disrupt public access and bus service to Louis Park. Louis Park and its amenities will remain open during project construction. Shimuzu Drive bisects the park with the Monte Diablo Avenue intersection at the entrance to the construction site. This intersection may have recurrent construction traffic based on the delivery of construction materials to the staging areas and the transfer of materials from the staging area to the adjacent work along Dad's Point. Additionally, the SJRTD Route 60 loops from the east side of Louis Park, through the park to this intersection before heading east to the transit mall. The construction activities adjacent occurring adjacent to Louis Park **may be a significant impact.**

Mitigation: The Contractor shall prepare a Traffic Control Plan similar to that noted in the Mitigation Measure for Impact #5.

After implementation this impact would be **less than significant**.

Alternative 2—Atherton Cove Flood Wall with Smith Canal Gate

IMPACT #1 – Increased Traffic on Regional Circulation System. Construction of Alternative 1 would not add traffic to major roads in the project vicinity. The project will add 280 daily truck trips on a temporary basis along I-5. I-5 currently serves about 26,000 trucks on a daily basis. Because no appreciable change to current operating LOS would result at key intersections and construction traffic would be added on a temporary and intermittent basis, this is **less than significant.**

IMPACT #2 – Contribution to Deterioration of Roads. Construction of Alternative 1 will add truck traffic on local roads in the vicinity of the study area. Alternative 1 will contribute to the deterioration of street and bicycle trail pavement sections. This impact **may be significant**.

Mitigation: The Contractor shall prepare a baseline videography survey of the pavement conditions on potential haul routes and use this information as the basis for identifying and installing final repairs to return the routes to "pre-existing" conditions at the end of the job. The project proponents shall also monitor pavement conditions each year and make "interim" improvements as needed to ensure motorist safety.

Because the road will be returned to its pre-existing condition with implementation of this Mitigation Measure Impact #2 would be **less than significant**.

IMPACT #3 - Parking for Construction Employees will need to be provided off the roadways throughout the project area. Adequate parking for employees may not be readily available at each of the construction sites. This impact **may be significant**.

Mitigation: The Contractor shall identify and provide adequate parking for all construction related employees during the entire length of construction. Vehicles shall not block any roadways and driveways. If necessary, parking and staging areas away from the actual construction site may be needed and the Contractor shall have to transport construction employees. The Contractor shall work with the City to identify possible short term parking and staging locations. After implementation this impact would be **less than significant**.

IMPACT #4 - Potential for Conflicts between Construction Traffic and Local Traffic, Pedestrians, and Bicycles. Construction would add short-term truck traffic on the local roads throughout the project vicinity. This traffic has the potential to create conflicts with local traffic, pedestrians, and bicyclists. This impact **may be significant**.

Mitigation: The Contractor shall implement a Construction Traffic Management Plan to enhance the safety of local traffic, including 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, and other special traffic-control actions. Specific measures contained in the plan shall include the following:

- Distribute or mail flyers to residents in the nearby Country Club 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 flagging personnel at the intersections where trucks may be turning onto major routes and may encroach into opposing lanes or may interfere with pedestrians and bicycle through traffic.
- 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 TCM as needed.

After implementation this impact would be **less than significant**.

IMPACT #5 - Short-term closures to portions of Dad's Point, Louis Park, Atherton Cove and Island and the Stockton Golf and Country Club may be required in order to construct the project. Specifically, these may include partial road closures, full closures to parking areas and closure of trail areas. This **may be a significant impact.**

Mitigation: The Contractor shall prepare Traffic Control Plans that will provide for short term closures along the local roadways, including but not limited to the use of ½ road closures, flagging operations, closure plans for parking areas. Adequate information shall be provided for guidance to alternative parking locations and closure of trail areas with provisions for alternative access routes. All closure plans shall follow MUTCD guidelines for construction zones and should provide for alternative access beyond the closure location where available. Advance notification of closures shall be completed indicating the dates of closure. This shall 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.

Full road closures will apply to through traffic only. Local traffic, including residents, school buses and mail carrier service, and emergency vehicles will shall have access to the roadway at all times. The contractor shall provide full access to emergency vehicles. The Contractor will be allowed to delay local non-emergency traffic in order to allow the Contractor to complete a portion of work. The maximum delay allowed shall be 15 minutes.

After implementation this impact would be **less than significant**.

IMPACT #6 - 1/2 road closures will create delays along roadways. The installation of culverts along Moreing Road will require the road to be closed while construction is completed. Half road closures should be used to allow local traffic, postal and emergency vehicle access during construction. This **may be a significant impact.**

Mitigation: The Contractor shall prepare a Traffic Control Plan similar to that noted in the Mitigation Measure for Impact #5.

After implementation this impact would be **less than significant**.

IMPACT #7 - Construction will disrupt local roadways during construction. Some local roadways away from the actual construction areas will be disrupted throughout the length of the project. These include Moreing Road and Virginia Lane where truck traffic will use these roadways to access the construction sites along Moreing Road and in Atherton Cove. This **may be a significant impact.**

Mitigation: The Contractor shall prepare a Traffic Control Plan similar to that noted in the Mitigation Measure for Impact #5.

After implementation this impact would be **less than significant**.

IMPACT #8 - Local driveway access may be blocked during construction. Construction equipment may block local driveways while queued waiting for access to the construction job site. This **may be a significant impact.**

Mitigation: The Contractor shall prepare a Traffic Control Plan similar to that noted in the Mitigation Measure for Impact #5.

After implementation this impact would be **less than significant**.

IMPACT #9 – Project may reduce available parking for activities at Louis Park and Pixie Woods Amusement Park. The softball fields in Louis Park are used by the City of Stockton for recreational programs while Pixie Woods is an amusement park located between the softball fields and Dad's Point. There are four parking areas in the area, one at Dad's Point which is projected to be used for project staging and three others for park, softball and Pixie Woods uses. The loss of one parking area may result is parking shortfall during construction. This **may be a significant impact.**

Mitigation: The Contractor shall continuously monitor the parking supply for the park activities. When periods of high park use are identified, such as a softball tournament, the Contractor shall work with the City to identify and provide additional near-by parking to meet the short term needs of the activity.

After implementation this impact would be **less than significant**.

IMPACT #10 - Construction traffic may disrupt public access and bus service to Louis Park. Louis Park and its amenities will remain open during project construction. Shimuzu Drive bisects the park with the Monte Diablo Avenue intersection at the entrance to the construction site. This intersection may have recurrent construction traffic based on the delivery of construction materials to the staging areas and the transfer of materials from the staging area to the adjacent work along Dad's Point. Additionally, the SJRTD Route 60 loops from the east side of Louis Park, through the park to this intersection before heading east to the transit mall. The construction activities adjacent occurring adjacent to Louis Park **may be a significant impact.**

Mitigation: The Contractor shall prepare a Traffic Control Plan similar to that noted in the Mitigation Measure for Impact #5.

After implementation this impact would be **less than significant**.

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

IMPACT #1 – Increased Traffic on Regional Circulation System. Construction of Alternative 1 would not add traffic to major roads in the project vicinity. The project will add 274 daily truck trips on a temporary basis along I-5. I-5 currently serves about 26,000 trucks on a daily basis. Because no appreciable change to current operating LOS would result at key intersections and construction traffic would be added on a temporary and intermittent basis, this is **less than significant.**

IMPACT #2 – Contribution to Deterioration of Roads. Construction of Alternative 1 will add truck traffic on local roads in the vicinity of the study area. Alternative 1 will contribute to the deterioration of street and bicycle trail pavement sections. This impact **may be significant**.

Mitigation: The Contractor shall prepare a baseline videography survey of the pavement conditions on potential haul routes and use this information as the basis for identifying and installing final repairs to return the routes to "pre-existing" conditions at the end of the job. The project proponents shall also monitor pavement conditions each year and make "interim" improvements as needed to ensure motorist safety.

Because the road will be returned to its pre-existing condition with implementation of this Mitigation Measure Impact #2 would be **less than significant**.

IMPACT #3 - Parking for Construction Employees will need to be provided off the roadways throughout the project area. Adequate parking for employees may not be readily available at each of the construction sites. This impact **may be significant**.

Mitigation: The Contractor shall identify and provide adequate parking for all construction related employees during the entire length of construction. Vehicles shall not block any roadways and driveways. If necessary, parking and staging areas away from the actual construction site may be needed and the Contractor shall have to transport construction employees. The Contractor shall work with the City to identify possible short term parking and staging locations. After implementation this impact would be **less than significant**.

IMPACT #4 - Potential for Conflicts between Construction Traffic and Local Traffic, Pedestrians, and Bicycles. Construction would add short-term truck traffic on the local roads throughout the project vicinity. This traffic has the potential to create conflicts with local traffic, pedestrians, and bicyclists. This impact **may be significant**.

Mitigation: The Contractor shall implement a Construction Traffic Management Plan to enhance the safety of local traffic, including 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, and other special traffic-control actions. Specific measures contained in the plan shall include the following:

- Distribute or mail flyers to residents in the nearby Country Club 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 flagging personnel at the intersections where trucks may be turning onto major routes and may encroach into opposing lanes or may interfere with pedestrians and bicycle through traffic.
- 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 TCM as needed.

After implementation this impact would be **less than significant**.

IMPACT #5 - Short-term closures to portions of Dad's Point, Louis Park, Atherton Cove and Island and the Stockton Golf and Country Club may be required in order to construct the project. Specifically, these may include partial road closures, full closures to parking areas and closure of trail areas. This **may be a significant impact.**

Mitigation: The Contractor shall prepare Traffic Control Plans that will provide for short term closures along the local roadways, including but not limited to the use of ½ road closures, flagging operations, closure plans for parking areas. Adequate information shall be provided for guidance to alternative parking locations and closure of trail areas with provisions for alternative access routes. All closure plans shall follow MUTCD guidelines for construction zones and should provide for alternative access beyond the closure location where available. Advance notification of closures shall be completed indicating the dates of closure. This shall 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.

Full road closures will apply to through traffic only. Local traffic, including residents, school buses and mail carrier service, and emergency vehicles will shall have access to the roadway at all times. The contractor shall provide full access to emergency vehicles. The Contractor will be allowed to delay local non-emergency traffic in order to allow the Contractor to complete a portion of work. The maximum delay allowed shall be 15 minutes.

After implementation this impact would be **less than significant**.

IMPACT #6 - 1/2 road closures will create delays along roadways. The installation of culverts along Moreing Road will require the road to be closed while construction is completed. Half road closures should be used to allow local traffic, postal and emergency vehicle access during construction. This **may be a significant impact.**

Mitigation: The Contractor shall prepare a Traffic Control Plan similar to that noted in the Mitigation Measure for Impact #5.

After implementation this impact would be **less than significant**.

IMPACT #7 - Construction will disrupt local roadways during construction. Some local roadways away from the actual construction areas will be disrupted throughout the length of the project. These include Moreing Road and Virginia Lane where truck traffic will use these roadways to access the construction sites along Moreing Road and in Atherton Cove. This **may be a significant impact.**

Mitigation: The Contractor shall prepare a Traffic Control Plan similar to that noted in the Mitigation Measure for Impact #5.

After implementation this impact would be **less than significant**.

IMPACT #8 - Local driveway access may be blocked during construction. Construction equipment may block local driveways while queued waiting for access to the construction job site. This **may be a significant impact.**

Mitigation: The Contractor shall prepare a Traffic Control Plan similar to that noted in the Mitigation Measure for Impact #5.

After implementation this impact would be **less than significant**.

IMPACT #9 – Project may reduce available parking for activities at Louis Park and Pixie Woods Amusement Park. The softball fields in Louis Park are used by the City of Stockton for recreational programs while Pixie Woods is an amusement park located between the softball fields and Dad's Point. There are four parking areas in the area, one at Dad's Point which is projected to be used for project staging and three others for park, softball and Pixie Woods uses. The loss of one parking area may result is parking shortfall during construction. This **may be a significant impact.**

Mitigation: The Contractor shall continuously monitor the parking supply for the park activities. When periods of high park use are identified, such as a softball tournament, the Contractor shall work with the City to identify and provide additional near-by parking to meet the short term needs of the activity.

After implementation this impact would be **less than significant**.

IMPACT #10 - Construction traffic may disrupt public access and bus service to Louis Park. Louis Park and its amenities will remain open during project construction. Shimuzu Drive bisects the park with the Monte Diablo Avenue intersection at the entrance to the construction site. This intersection may have recurrent construction traffic based on the delivery of construction materials to the staging areas and the transfer of materials from the staging area to the adjacent work along Dad's Point. Additionally, the SJRTD Route 60 loops from the east side of Louis Park, through the park to this intersection before heading east to the transit mall. The construction activities adjacent occurring adjacent to Louis Park **may be a significant impact.**

Mitigation: The Contractor shall prepare a Traffic Control Plan similar to that noted in the Mitigation Measure for Impact #5.

After implementation this impact would be **less than significant**.

APPENDIX

ALL TRAFFIC DATA

3910-02

City of Stockton
(916) 771-8700
orders@atdtraffic.com

All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

File Name : 15-7143-001 Ryde Avenue-Monte Diablo Avenue.ppd
Date : 2/25/2015

Unshifted Count = All Vehicles

	Ryde Avenue Southbound					Monte Diablo Avenue Westbound					Ryde Avenue Northbound					Monte Diablo Avenue Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	8	1	0	0	9	7	15	4	0	26	0	0	7	0	7	0	21	4	0	25	67	0
07:15	16	2	0	0	18	5	29	6	0	40	3	2	9	0	14	0	25	5	0	30	102	0
07:30	11	2	0	0	13	13	19	7	0	39	1	0	5	0	6	0	26	3	0	29	87	0
07:45	13	2	0	0	15	9	27	3	0	39	1	2	5	0	8	0	24	3	0	27	89	0
Total	48	7	0	0	55	34	90	20	0	144	5	4	26	0	35	0	96	15	0	111	345	0
08:00	7	1	1	0	9	5	37	4	0	46	4	0	4	0	8	0	16	4	0	20	83	0
08:15	13	0	1	0	14	7	29	4	0	40	5	0	2	0	7	0	32	2	0	34	95	0
08:30	15	2	0	0	17	8	24	14	0	46	3	0	8	0	11	0	31	4	0	35	109	0
08:45	14	2	0	0	16	5	24	23	0	52	2	4	5	0	11	0	31	1	0	32	111	0
Total	49	5	2	0	56	25	114	45	0	184	14	4	19	0	37	0	110	11	0	121	398	0
16:00	11	1	1	0	13	7	30	18	0	55	5	3	6	0	14	1	15	8	0	24	106	0
16:15	7	4	1	0	12	8	23	10	0	41	8	1	6	0	15	0	35	4	0	39	107	0
16:30	7	4	0	0	11	7	30	10	0	47	3	5	7	0	15	0	31	2	0	33	106	0
16:45	9	1	1	0	11	6	53	6	0	65	7	0	10	0	17	1	31	2	0	34	127	0
Total	34	10	3	0	47	28	136	44	0	208	23	9	29	0	61	2	112	16	0	130	446	0
17:00	13	2	2	0	17	3	30	8	0	41	4	2	12	0	18	1	44	2	0	47	123	0
17:15	8	2	2	0	12	10	26	8	0	44	5	2	8	0	15	0	37	4	0	41	112	0
17:30	7	4	1	0	12	9	39	7	0	55	9	3	5	0	17	0	28	2	0	30	114	0
17:45	13	2	1	0	16	7	31	14	0	52	6	4	4	0	14	4	36	2	0	42	124	0
Total	41	10	6	0	57	29	126	37	0	192	24	11	29	0	64	5	145	10	0	160	473	0
Grand Total	172	32	11	0	215	116	466	146	0	728	66	28	103	0	197	7	463	52	0	522	1662	0
Apprch %	80.0%	14.9%	5.1%	0.0%		15.9%	64.0%	20.1%	0.0%		33.5%	14.2%	52.3%	0.0%		1.3%	88.7%	10.0%	0.0%			
Total %	10.3%	1.9%	0.7%	0.0%	12.9%	7.0%	28.0%	8.8%	0.0%	43.8%	4.0%	1.7%	6.2%	0.0%	11.9%	0.4%	27.9%	3.1%	0.0%	31.4%	100.0%	

AM PEAK HOUR	Ryde Avenue Southbound					Monte Diablo Avenue Westbound					Ryde Avenue Northbound					Monte Diablo Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 08:00 to 09:00																					
Peak Hour For Entire Intersection Begins at 08:00																					
08:00	7	1	1	0	9	5	37	4	0	46	4	0	4	0	8	0	16	4	0	20	83
08:15	13	0	1	0	14	7	29	4	0	40	5	0	2	0	7	0	32	2	0	34	95
08:30	15	2	0	0	17	8	24	14	0	46	3	0	8	0	11	0	31	4	0	35	109
08:45	14	2	0	0	16	5	24	23	0	52	2	4	5	0	11	0	31	1	0	32	111
Total Volume	49	5	2	0	56	25	114	45	0	184	14	4	19	0	37	0	110	11	0	121	398
% App Total	87.5%	8.9%	3.6%	0.0%		13.6%	62.0%	24.5%	0.0%		37.8%	10.8%	51.4%	0.0%		0.0%	90.9%	9.1%	0.0%		
PHF	.817	.625	.500	.000	.824	.781	.770	.489	.000	.885	.700	.250	.594	.000	.841	.000	.859	.688	.000	.864	.896

PM PEAK HOUR	Ryde Avenue Southbound					Monte Diablo Avenue Westbound					Ryde Avenue Northbound					Monte Diablo Avenue Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	9	1	1	0	11	6	53	6	0	65	7	0	10	0	17	1	31	2	0	34	127
17:00	13	2	2	0	17	3	30	8	0	41	4	2	12	0	18	1	44	2	0	47	123
17:15	8	2	2	0	12	10	26	8	0	44	5	2	8	0	15	0	37	4	0	41	112
17:30	7	4	1	0	12	9	39	7	0	55	9	3	5	0	17	0	28	2	0	30	114
Total Volume	37	9	6	0	52	28	148	29	0	205	25	7	35	0	67	2	140	10	0	152	476
% App Total	71.2%	17.3%	11.5%	0.0%		13.7%	72.2%	14.1%	0.0%		37.3%	10.4%	52.2%	0.0%		1.3%	92.1%	6.6%	0.0%		
PHF	.712	.563	.750	.000	.765	.700	.698	.906	.000	.788	.694	.583	.729	.000	.931	.500	.795	.625	.000	.809	.937

ALL TRAFFIC DATA

3910-02

City of Stockton
(916) 771-8700
orders@atdtraffic.com

All Vehicles on Unshifted
Peds & Bikes on Bank 1
Nothing on Bank 2

File Name : 15-7143-002 Ryde Avenue-I-5 SB On-Ramp-Country Club E
Date : 2/25/2015

Unshifted Count = All Vehicles

	Ryde Avenue Southbound					Country Club Boulevard Westbound					I-5 SB On-Ramp Northbound					Country Club Boulevard Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	7	74	24	0	105	28	31	0	0	59	0	0	0	0	0	0	43	60	0	103	267	0
07:15	26	94	27	0	147	33	35	0	0	68	0	0	0	0	0	0	48	77	0	125	340	0
07:30	24	109	24	0	157	51	54	0	0	105	0	0	0	0	0	0	78	113	0	191	453	0
07:45	38	82	16	0	136	55	65	0	0	120	0	0	0	0	0	0	100	115	0	215	471	0
Total	95	359	91	0	545	167	185	0	0	352	0	0	0	0	0	0	269	365	0	634	1531	0
08:00	30	65	29	0	124	22	49	0	0	71	0	0	0	0	0	0	60	56	0	116	311	0
08:15	25	62	19	0	106	35	52	0	0	87	0	0	0	0	0	0	48	54	0	102	295	0
08:30	23	57	25	0	105	14	57	0	0	71	0	0	0	0	0	0	48	30	0	78	254	0
08:45	16	59	26	0	101	27	59	0	0	86	0	0	0	0	0	0	45	51	0	96	283	0
Total	94	243	99	0	436	98	217	0	0	315	0	0	0	0	0	0	201	191	0	392	1143	0
16:00	26	48	48	0	122	22	98	0	0	120	0	0	0	0	0	0	76	39	0	115	357	0
16:15	55	46	42	0	143	24	93	0	0	117	0	0	0	0	0	0	64	33	0	97	357	0
16:30	35	46	42	0	123	15	92	0	0	107	0	0	0	0	0	0	82	45	0	127	357	0
16:45	26	42	44	0	112	21	109	0	0	130	0	0	0	0	0	0	86	44	0	130	372	0
Total	142	182	176	0	500	82	392	0	0	474	0	0	0	0	0	0	308	161	0	469	1443	0
17:00	28	57	47	0	132	25	107	0	0	132	0	0	0	0	0	0	77	37	0	114	378	0
17:15	41	39	51	0	131	24	118	0	0	142	0	0	0	0	0	0	96	54	0	150	423	0
17:30	45	39	44	0	128	34	131	0	0	165	0	0	0	0	0	0	88	42	0	130	423	0
17:45	40	47	47	0	134	26	119	0	0	145	0	0	0	0	0	0	98	56	0	154	433	0
Total	154	182	189	0	525	109	475	0	0	584	0	0	0	0	0	0	359	189	0	548	1657	0
Grand Total	485	966	555	0	2006	456	1269	0	0	1725	0	0	0	0	0	0	1137	906	0	2043	5774	0
Apprch %	24.2%	48.2%	27.7%	0.0%		26.4%	73.6%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	55.7%	44.3%	0.0%			
Total %	8.4%	16.7%	9.6%	0.0%	34.7%	7.9%	22.0%	0.0%	0.0%	29.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	19.7%	15.7%	0.0%	35.4%	100.0%	

AM PEAK HOUR	Ryde Avenue Southbound					Country Club Boulevard Westbound					I-5 SB On-Ramp Northbound					Country Club Boulevard Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
07:15	26	94	27	0	147	33	35	0	0	68	0	0	0	0	0	0	48	77	0	125	340
07:30	24	109	24	0	157	51	54	0	0	105	0	0	0	0	0	0	78	113	0	191	453
07:45	38	82	16	0	136	55	65	0	0	120	0	0	0	0	0	0	100	115	0	215	471
08:00	30	65	29	0	124	22	49	0	0	71	0	0	0	0	0	0	60	56	0	116	311
Total Volume	118	350	96	0	564	161	203	0	0	364	0	0	0	0	0	0	286	361	0	647	1575
% App Total	20.9%	62.1%	17.0%	0.0%		44.2%	55.8%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	44.2%	55.8%	0.0%		
PHF	.776	.803	.828	.000	.898	.732	.781	.000	.000	.758	.000	.000	.000	.000	.000	.000	.715	.785	.000	.752	.836

PM PEAK HOUR	Ryde Avenue Southbound					Country Club Boulevard Westbound					I-5 SB On-Ramp Northbound					Country Club Boulevard Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	28	57	47	0	132	25	107	0	0	132	0	0	0	0	0	0	77	37	0	114	378
17:15	41	39	51	0	131	24	118	0	0	142	0	0	0	0	0	0	96	54	0	150	423
17:30	45	39	44	0	128	34	131	0	0	165	0	0	0	0	0	0	88	42	0	130	423
17:45	40	47	47	0	134	26	119	0	0	145	0	0	0	0	0	0	98	56	0	154	433
Total Volume	154	182	189	0	525	109	475	0	0	584	0	0	0	0	0	0	359	189	0	548	1657
% App Total	29.3%	34.7%	36.0%	0.0%		18.7%	81.3%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	65.5%	34.5%	0.0%		
PHF	.856	.798	.926	.000	.979	.801	.906	.000	.000	.885	.000	.000	.000	.000	.000	.000	.916	.844	.000	.890	.957

Volumes for: Wednesday, February 25, 2015 City: Stockton Project #: 15-7144-001
Location: Monte Diablo Avenue from Occidental Avenue to Ryde Avenue 3910-02

Start	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	3	28			5	28				
12:15	1	28			4	32				
12:30	2	45			1	39				
12:45	3	42	9	143	4	43	14	142	23	285
1:00	2	35			4	41				
1:15	0	26			2	32				
1:30	0	37			1	24				
1:45	1	25	3	123	1	39	8	136	11	259
2:00	1	27			6	33				
2:15	3	22			0	36				
2:30	0	25			3	59				
2:45	0	20	4	94	2	66	11	194	15	288
3:00	0	21			0	54				
3:15	6	24			0	61				
3:30	0	36			0	36				
3:45	2	27	8	108	1	37	1	188	9	296
4:00	2	21			3	31				
4:15	4	35			2	36				
4:30	7	33			2	35				
4:45	5	37	18	126	5	53	12	155	30	281
5:00	1	45			0	36				
5:15	4	38			1	33				
5:30	11	33			2	47				
5:45	9	41	25	157	9	34	12	150	37	307
6:00	22	30			6	46				
6:15	14	23			7	39				
6:30	19	32			10	40				
6:45	16	16	71	101	18	32	41	157	112	258
7:00	25	27			19	21				
7:15	26	16			30	30				
7:30	27	20			18	32				
7:45	27	21	105	84	25	28	92	111	197	195
8:00	18	42			42	18				
8:15	37	12			36	23				
8:30	32	16			27	22				
8:45	31	13	118	83	29	24	134	87	252	170
9:00	22	27			28	12				
9:15	17	11			19	14				
9:30	17	10			34	18				
9:45	17	8	73	56	30	10	111	54	184	110
10:00	25	10			24	13				
10:15	23	16			11	9				
10:30	23	5			28	8				
10:45	24	8	95	39	18	17	81	47	176	86
11:00	24	12			27	7				
11:15	22	7			32	3				
11:30	38	2			29	6				
11:45	25	3	109	24	22	4	110	20	219	44
Total	638	1138	638	1138	627	1441	627	1441	1265	2579
Combined Total	1776		1776		2068		2068		3844	
AM Peak	11:45 AM				8:00 AM					
Vol.	126				134					
P.H.F.	0.700				0.798					
PM Peak		5:00 PM				2:30 PM				
Vol.		157				240				
P.H.F.		0.872				0.909				
Percentage	35.9%	64.1%			30.3%	69.7%				

Volumes for: Tuesday, March 03, 2015 City: Stockton Project #: 15-7144-002
Location: Country Club Boulevard between Oregon Avenue and Gardena Avenue 3910-02

Start	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	1	29			7	33				
12:15	1	33			0	36				
12:30	0	27			2	36				
12:45	1	37	3	126	1	37	10	142	13	268
1:00	1	42			0	43				
1:15	2	56			1	35				
1:30	1	50			1	53				
1:45	2	131	6	279	0	39	2	170	8	449
2:00	0	46			1	40				
2:15	2	36			0	47				
2:30	2	44			3	43				
2:45	2	39	6	165	0	43	4	173	10	338
3:00	3	30			3	44				
3:15	8	34			1	44				
3:30	3	31			0	39				
3:45	5	34	19	129	2	38	6	165	25	294
4:00	5	35			1	41				
4:15	6	27			1	52				
4:30	2	37			10	47				
4:45	6	29	19	128	4	53	16	193	35	321
5:00	4	30			2	43				
5:15	13	34			3	45				
5:30	12	26			6	51				
5:45	16	22	45	112	9	35	20	174	65	286
6:00	19	19			7	35				
6:15	29	24			11	30				
6:30	33	22			11	43				
6:45	46	22	127	87	7	36	36	144	163	231
7:00	84	20			13	34				
7:15	115	22			33	30				
7:30	143	18			40	29				
7:45	77	12	419	72	41	31	127	124	546	196
8:00	28	6			30	26				
8:15	43	13			35	13				
8:30	36	16			28	19				
8:45	35	11	142	46	22	16	115	74	257	120
9:00	30	8			17	18				
9:15	29	5			23	12				
9:30	28	8			30	18				
9:45	28	5	115	26	27	7	97	55	212	81
10:00	28	3			20	8				
10:15	23	5			29	5				
10:30	34	1			30	2				
10:45	22	2	107	11	37	4	116	19	223	30
11:00	35	1			30	5				
11:15	40	3			27	3				
11:30	23	1			52	1				
11:45	17	2	115	7	36	3	145	12	260	19
Total	1123	1188	1123	1188	694	1445	694	1445	1817	2633
Combined Total	2311		2311		2139		2139		4450	
AM Peak	7:00 AM				11:30 AM					
Vol.	419				157					
P.H.F.	0.733				0.755					
PM Peak		1:15 PM				4:15 PM				
Vol.		283				195				
P.H.F.		0.540				0.920				
Percentage	48.6%	51.4%			32.4%	67.6%				

Volumes for: Wednesday, February 25, 2015 City: Stockton Project #: 15-7144-003
Location: Country Club Boulevard from Virginia Lane to Moreing Road

Start	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	9			0	20				
12:15	0	8			3	8				
12:30	0	6			0	8				
12:45	0	10	0	33	0	11	3	47	3	80
1:00	0	21			0	4				
1:15	3	13			1	8				
1:30	0	45			0	6				
1:45	0	12	3	91	0	8	1	26	4	117
2:00	0	9			0	9				
2:15	0	13			0	13				
2:30	0	7			0	19				
2:45	0	16	0	45	0	11	0	52	0	97
3:00	0	17			0	14				
3:15	1	13			0	10				
3:30	1	6			0	9				
3:45	1	6	3	42	0	10	0	43	3	85
4:00	2	5			0	11				
4:15	0	13			1	7				
4:30	0	15			2	11				
4:45	0	16	2	49	5	18	8	47	10	96
5:00	1	13			2	15				
5:15	0	6			1	15				
5:30	1	9			2	12				
5:45	1	19	3	47	2	22	7	64	10	111
6:00	3	7			2	10				
6:15	3	9			1	7				
6:30	4	2			1	10				
6:45	3	6	13	24	7	8	11	35	24	59
7:00	11	7			8	6				
7:15	13	4			7	5				
7:30	11	4			4	4				
7:45	16	10	51	25	7	4	26	19	77	44
8:00	8	7			12	4				
8:15	20	5			6	1				
8:30	3	4			9	2				
8:45	8	10	39	26	6	2	33	9	72	35
9:00	8	7			7	1				
9:15	9	2			4	3				
9:30	3	2			6	3				
9:45	9	2	29	13	11	3	28	10	57	23
10:00	5	1			6	1				
10:15	8	1			6	1				
10:30	9	0			8	1				
10:45	9	3	31	5	9	4	29	7	60	12
11:00	9	0			19	1				
11:15	7	0			11	2				
11:30	4	0			18	0				
11:45	8	1	28	1	31	3	79	6	107	7
Total	202	401	202	401	225	365	225	365	427	766
Combined Total	603		603		590		590		1193	
AM Peak	7:30 AM				11:15 AM					
Vol.	55				80					
P.H.F.	0.688				0.645					
PM Peak		1:00 PM				5:00 PM				
Vol.		91				64				
P.H.F.		0.506				0.727				
Percentage	33.5%	66.5%			38.1%	61.9%				

Volumes for: Wednesday, February 25, 2015 City: Stockton Project #: 15-7144-004
Location: Virginia Avenue south of Country Club Boulevard

Start	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	0			0	0				
12:15	0	0			0	2				
12:30	0	3			0	0				
12:45	0	1	0	4	0	1	0	3	0	7
1:00	0	0			0	1				
1:15	0	1			0	1				
1:30	0	1			0	1				
1:45	0	1	0	3	0	2	0	5	0	8
2:00	0	1			0	0				
2:15	0	1			0	0				
2:30	0	1			0	4				
2:45	0	0	0	3	0	0	0	4	0	7
3:00	1	1			1	3				
3:15	0	0			0	0				
3:30	0	0			0	0				
3:45	0	1	1	2	0	1	1	4	2	6
4:00	0	0			0	0				
4:15	0	0			0	0				
4:30	0	0			0	1				
4:45	0	2	0	2	0	1	0	2	0	4
5:00	0	3			0	0				
5:15	0	0			0	0				
5:30	0	1			0	2				
5:45	0	1	0	5	0	1	0	3	0	8
6:00	0	0			0	0				
6:15	0	0			0	0				
6:30	0	0			0	1				
6:45	0	0	0	0	0	0	0	1	0	1
7:00	0	0			0	0				
7:15	0	0			0	0				
7:30	1	0			0	2				
7:45	0	2	1	2	0	1	0	3	1	5
8:00	0	0			0	1				
8:15	1	1			0	0				
8:30	0	0			0	0				
8:45	1	0	2	1	0	0	0	1	2	2
9:00	0	0			1	0				
9:15	0	0			0	0				
9:30	0	0			0	0				
9:45	0	0	0	0	0	0	1	0	1	0
10:00	1	0			2	0				
10:15	0	0			0	0				
10:30	1	0			0	0				
10:45	0	0	2	0	0	0	2	0	4	0
11:00	1	0			2	0				
11:15	2	0			1	0				
11:30	0	0			0	0				
11:45	0	0	3	0	1	0	4	0	7	0
Total	9	22	9	22	8	26	8	26	17	48
Combined Total	31		31		34		34		65	
AM Peak	10:30 AM				11:00 AM					
Vol.	4				4					
P.H.F.	0.500				0.500					
PM Peak		4:45 PM				2:15 PM				
Vol.		6				7				
P.H.F.		0.500				0.438				
Percentage	29.0%	71.0%			23.5%	76.5%				

Volumes for: Wednesday, February 25, 2015 City: Stockton Project #: 15-7144-005
Location: Moreing Road south of Country Club Avenue

Start	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	5			0	3				
12:15	0	2			0	3				
12:30	0	3			0	2				
12:45	0	3	0	13	0	2	0	10	0	23
1:00	0	1			0	4				
1:15	0	1			0	1				
1:30	0	4			0	3				
1:45	0	6	0	12	0	4	0	12	0	24
2:00	0	1			0	4				
2:15	0	5			0	2				
2:30	0	4			0	4				
2:45	0	4	0	14	0	2	0	12	0	26
3:00	0	2			0	4				
3:15	0	1			0	5				
3:30	0	1			0	4				
3:45	0	3	0	7	1	1	1	14	1	21
4:00	2	4			0	1				
4:15	0	1			0	2				
4:30	0	3			0	1				
4:45	0	2	2	10	0	4	0	8	2	18
5:00	0	1			0	3				
5:15	0	0			0	3				
5:30	0	0			0	3				
5:45	0	5	0	6	0	3	0	12	0	18
6:00	0	3			0	2				
6:15	0	4			0	1				
6:30	1	2			0	5				
6:45	0	4	1	13	0	3	0	11	1	24
7:00	0	1			0	0				
7:15	3	0			0	2				
7:30	3	0			1	1				
7:45	4	0	10	1	4	1	5	4	15	5
8:00	9	1			6	3				
8:15	6	2			3	2				
8:30	5	0			4	0				
8:45	5	0	25	3	2	1	15	6	40	9
9:00	2	2			2	1				
9:15	3	0			3	1				
9:30	3	0			2	1				
9:45	2	0	10	2	0	3	7	6	17	8
10:00	0	0			1	1				
10:15	1	0			2	0				
10:30	1	0			1	0				
10:45	1	0	3	0	5	0	9	1	12	1
11:00	2	0			2	1				
11:15	5	0			2	0				
11:30	3	0			1	0				
11:45	2	0	12	0	2	0	7	1	19	1
Total	63	81	63	81	44	97	44	97	107	178
Combined Total	144		144		141		141		285	
AM Peak	8:00 AM				7:45 AM					
Vol.	25				17					
P.H.F.	0.694				0.708					
PM Peak		1:30 PM				2:30 PM				
Vol.		16				15				
P.H.F.		0.667				0.750				
Percentage	43.8%	56.3%			31.2%	68.8%				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	286	361	161	203	0	0	0	0	118	350	96
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1863	1863	1900
Adj Flow Rate, veh/h	0	340	430	192	242	0				140	417	114
Adj No. of Lanes	0	2	0	1	2	0				1	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	618	545	246	2022	0				463	718	194
Arrive On Green	0.00	0.35	0.35	0.14	0.57	0.00				0.26	0.26	0.26
Sat Flow, veh/h	0	1863	1561	1774	3632	0				1774	2749	744
Grp Volume(v), veh/h	0	340	430	192	242	0				140	267	264
Grp Sat Flow(s),veh/h/ln	0	1770	1561	1774	1770	0				1774	1770	1723
Q Serve(g_s), s	0.0	7.4	11.8	5.0	1.5	0.0				3.0	6.3	6.4
Cycle Q Clear(g_c), s	0.0	7.4	11.8	5.0	1.5	0.0				3.0	6.3	6.4
Prop In Lane	0.00		1.00	1.00		0.00				1.00		0.43
Lane Grp Cap(c), veh/h	0	618	545	246	2022	0				463	462	450
V/C Ratio(X)	0.00	0.55	0.79	0.78	0.12	0.00				0.30	0.58	0.59
Avail Cap(c_a), veh/h	0	704	621	408	2518	0				928	926	902
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	12.5	14.0	19.9	4.7	0.0				14.2	15.4	15.4
Incr Delay (d2), s/veh	0.0	0.8	6.0	5.4	0.0	0.0				0.4	1.1	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.7	5.9	2.8	0.7	0.0				1.5	3.2	3.2
LnGrp Delay(d),s/veh	0.0	13.3	20.0	25.2	4.7	0.0				14.5	16.5	16.6
LnGrp LOS		B	B	C	A					B	B	B
Approach Vol, veh/h		770			434						671	
Approach Delay, s/veh		17.0			13.8						16.1	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			10.6	20.7		16.5		31.3
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			11.0	19.0		25.0		34.0
Max Q Clear Time (g_c+I1), s			7.0	13.8		8.4		3.5
Green Ext Time (p_c), s			0.2	2.9		3.4		8.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.0
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	0	110	11	0	25	114	45	0	14	4	19
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	122	12	0	28	127	50	0	16	4	21
Number of Lanes	0	0	1	0	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	8.4	8.6	7.8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	38%	0%	18%	0%	88%
Vol Thru, %	11%	91%	82%	0%	9%
Vol Right, %	51%	9%	0%	100%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	121	139	45	56
LT Vol	14	0	25	0	49
Through Vol	4	110	114	0	5
RT Vol	19	11	0	45	2
Lane Flow Rate	41	134	154	50	62
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.052	0.166	0.214	0.058	0.085
Departure Headway (Hd)	4.563	4.458	4.98	4.187	4.918
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	786	807	723	857	730
Service Time	2.587	2.477	2.697	1.904	2.94
HCM Lane V/C Ratio	0.052	0.166	0.213	0.058	0.085
HCM Control Delay	7.8	8.4	9.1	7.2	8.4
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.6	0.8	0.2	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	49	5	2
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	54	6	2
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.4
HCM LOS	A

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	359	189	109	475	0	0	0	0	154	182	189
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1863	1863	1900
Adj Flow Rate, veh/h	0	390	205	118	516	0				167	198	205
Adj No. of Lanes	0	2	0	1	2	0				1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	782	404	153	1908	0				458	457	404
Arrive On Green	0.00	0.35	0.35	0.09	0.54	0.00				0.26	0.26	0.26
Sat Flow, veh/h	0	2319	1151	1774	3632	0				1774	1770	1563
Grp Volume(v), veh/h	0	309	286	118	516	0				167	198	205
Grp Sat Flow(s),veh/h/ln	0	1770	1608	1774	1770	0				1774	1770	1563
Q Serve(g_s), s	0.0	5.4	5.6	2.6	3.1	0.0				3.0	3.7	4.4
Cycle Q Clear(g_c), s	0.0	5.4	5.6	2.6	3.1	0.0				3.0	3.7	4.4
Prop In Lane	0.00		0.72	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	622	565	153	1908	0				458	457	404
V/C Ratio(X)	0.00	0.50	0.51	0.77	0.27	0.00				0.36	0.43	0.51
Avail Cap(c_a), veh/h	0	851	773	494	3047	0				1123	1120	989
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	10.1	10.1	17.7	4.9	0.0				12.0	12.2	12.5
Incr Delay (d2), s/veh	0.0	0.6	0.7	7.9	0.1	0.0				0.5	0.6	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	2.6	1.6	1.5	0.0				1.5	1.8	2.0
LnGrp Delay(d),s/veh	0.0	10.7	10.8	25.5	5.0	0.0				12.5	12.9	13.5
LnGrp LOS		B	B	C	A					B	B	B
Approach Vol, veh/h		595			634						570	
Approach Delay, s/veh		10.7			8.8						13.0	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			7.4	17.9		14.2		25.3
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			11.0	19.0		25.0		34.0
Max Q Clear Time (g_c+I1), s			4.6	7.6		6.4		5.1
Green Ext Time (p_c), s			0.1	5.5		2.9		8.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	2	140	10	0	28	148	29	0	25	7	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	152	11	0	30	161	32	0	27	8	38
Number of Lanes	0	0	1	0	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	8.8	9.3	8.2
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	37%	1%	16%	0%	71%
Vol Thru, %	10%	92%	84%	0%	17%
Vol Right, %	52%	7%	0%	100%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	152	176	29	52
LT Vol	25	2	28	0	37
Through Vol	7	140	148	0	9
RT Vol	35	10	0	29	6
Lane Flow Rate	73	165	191	32	57
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.095	0.21	0.269	0.037	0.079
Departure Headway (Hd)	4.688	4.574	5.064	4.281	5.019
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	764	785	710	836	713
Service Time	2.721	2.604	2.792	2.008	3.054
HCM Lane V/C Ratio	0.096	0.21	0.269	0.038	0.08
HCM Control Delay	8.2	8.8	9.7	7.2	8.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.8	1.1	0.1	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	37	9	6
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	40	10	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.5
HCM LOS	A

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	287	368	161	216	0	0	0	0	118	350	101
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1827	1900	1863	1827	0				1863	1863	1900
Adj Flow Rate, veh/h	0	342	438	192	257	0				140	417	120
Adj No. of Lanes	0	2	0	1	2	0				1	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	4	4	2	4	0				2	2	2
Cap, veh/h	0	613	541	245	1991	0				464	710	202
Arrive On Green	0.00	0.35	0.35	0.14	0.57	0.00				0.26	0.26	0.26
Sat Flow, veh/h	0	1827	1531	1774	3563	0				1774	2714	773
Grp Volume(v), veh/h	0	342	438	192	257	0				140	270	267
Grp Sat Flow(s),veh/h/ln	0	1736	1531	1774	1736	0				1774	1770	1718
Q Serve(g_s), s	0.0	7.7	12.6	5.1	1.7	0.0				3.1	6.5	6.6
Cycle Q Clear(g_c), s	0.0	7.7	12.6	5.1	1.7	0.0				3.1	6.5	6.6
Prop In Lane	0.00		1.00	1.00		0.00				1.00		0.45
Lane Grp Cap(c), veh/h	0	613	541	245	1991	0				464	463	449
V/C Ratio(X)	0.00	0.56	0.81	0.78	0.13	0.00				0.30	0.58	0.59
Avail Cap(c_a), veh/h	0	679	599	402	2430	0				913	911	884
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	12.7	14.2	20.2	4.8	0.0				14.4	15.6	15.7
Incr Delay (d2), s/veh	0.0	0.8	7.6	5.4	0.0	0.0				0.4	1.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.7	6.4	2.8	0.8	0.0				1.5	3.3	3.3
LnGrp Delay(d),s/veh	0.0	13.5	21.8	25.6	4.8	0.0				14.7	16.8	16.9
LnGrp LOS		B	C	C	A					B	B	B
Approach Vol, veh/h		780			449						677	
Approach Delay, s/veh		18.2			13.7						16.4	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			10.7	21.1		16.7		31.9
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			11.0	19.0		25.0		34.0
Max Q Clear Time (g_c+I1), s			7.1	14.6		8.6		3.7
Green Ext Time (p_c), s			0.2	2.6		3.4		8.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	0	118	18	0	25	142	45	0	14	4	19
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	2	7	2	2	2	5	2	2	2	2	2
Mvmt Flow	0	0	131	20	0	28	158	50	0	16	4	21
Number of Lanes	0	0	1	0	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	8.7	8.9	8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	38%	0%	15%	0%	88%
Vol Thru, %	11%	87%	85%	0%	9%
Vol Right, %	51%	13%	0%	100%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	136	167	45	56
LT Vol	14	0	25	0	49
Through Vol	4	118	142	0	5
RT Vol	19	18	0	45	2
Lane Flow Rate	41	151	186	50	62
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.053	0.191	0.257	0.059	0.087
Departure Headway (Hd)	4.681	4.558	4.984	4.257	5.035
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	765	789	722	843	712
Service Time	2.711	2.58	2.705	1.978	3.063
HCM Lane V/C Ratio	0.054	0.191	0.258	0.059	0.087
HCM Control Delay	8	8.7	9.4	7.2	8.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.7	1	0.2	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	49	5	2
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	54	6	2
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.5
HCM LOS	A

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	364	194	109	475	0	0	0	0	154	182	189
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1863	1863	1900
Adj Flow Rate, veh/h	0	396	211	118	516	0				167	198	205
Adj No. of Lanes	0	2	0	1	2	0				1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	782	410	153	1913	0				457	456	403
Arrive On Green	0.00	0.35	0.35	0.09	0.54	0.00				0.26	0.26	0.26
Sat Flow, veh/h	0	2307	1161	1774	3632	0				1774	1770	1563
Grp Volume(v), veh/h	0	315	292	118	516	0				167	198	205
Grp Sat Flow(s),veh/h/ln	0	1770	1605	1774	1770	0				1774	1770	1563
Q Serve(g_s), s	0.0	5.6	5.7	2.6	3.1	0.0				3.1	3.7	4.4
Cycle Q Clear(g_c), s	0.0	5.6	5.7	2.6	3.1	0.0				3.1	3.7	4.4
Prop In Lane	0.00		0.72	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	625	567	153	1913	0				457	456	403
V/C Ratio(X)	0.00	0.50	0.51	0.77	0.27	0.00				0.37	0.43	0.51
Avail Cap(c_a), veh/h	0	847	769	492	3033	0				1118	1115	985
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	10.1	10.1	17.7	4.9	0.0				12.1	12.3	12.6
Incr Delay (d2), s/veh	0.0	0.6	0.7	7.9	0.1	0.0				0.5	0.7	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.8	2.6	1.6	1.5	0.0				1.5	1.9	2.0
LnGrp Delay(d),s/veh	0.0	10.7	10.9	25.6	5.0	0.0				12.6	13.0	13.6
LnGrp LOS		B	B	C	A					B	B	B
Approach Vol, veh/h		607			634						570	
Approach Delay, s/veh		10.8			8.8						13.1	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			7.4	18.0		14.2		25.4
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			11.0	19.0		25.0		34.0
Max Q Clear Time (g_c+I1), s			4.6	7.7		6.4		5.1
Green Ext Time (p_c), s			0.1	5.5		2.9		8.7

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	2	160	10	0	28	148	29	0	25	7	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	174	11	0	30	161	32	0	27	8	38
Number of Lanes	0	0	1	0	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	9	9.3	8.3
HCM LOS	A	A	A

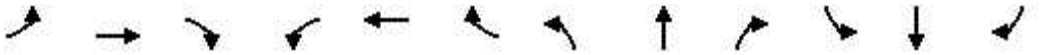
Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	37%	1%	16%	0%	71%
Vol Thru, %	10%	93%	84%	0%	17%
Vol Right, %	52%	6%	0%	100%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	172	176	29	52
LT Vol	25	2	28	0	37
Through Vol	7	160	148	0	9
RT Vol	35	10	0	29	6
Lane Flow Rate	73	187	191	32	57
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.096	0.238	0.27	0.038	0.08
Departure Headway (Hd)	4.737	4.581	5.083	4.3	5.068
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	755	783	706	832	705
Service Time	2.776	2.614	2.815	2.031	3.109
HCM Lane V/C Ratio	0.097	0.239	0.271	0.038	0.081
HCM Control Delay	8.3	9	9.7	7.2	8.6
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.9	1.1	0.1	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	37	9	6
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	40	10	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.6
HCM LOS	A

Lane



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	289	381	161	238	0	0	0	0	118	350	113
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1827	1900	1863	1727	0				1863	1863	1900
Adj Flow Rate, veh/h	0	344	454	192	283	0				140	417	135
Adj No. of Lanes	0	2	0	1	2	0				1	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	4	4	2	10	0				2	2	2
Cap, veh/h	0	617	545	245	1884	0				470	697	223
Arrive On Green	0.00	0.36	0.36	0.14	0.57	0.00				0.26	0.26	0.26
Sat Flow, veh/h	0	1827	1531	1774	3368	0				1774	2632	843
Grp Volume(v), veh/h	0	344	454	192	283	0				140	279	273
Grp Sat Flow(s),veh/h/ln	0	1736	1531	1774	1641	0				1774	1770	1705
Q Serve(g_s), s	0.0	7.9	13.5	5.2	2.0	0.0				3.1	6.8	7.0
Cycle Q Clear(g_c), s	0.0	7.9	13.5	5.2	2.0	0.0				3.1	6.8	7.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		0.49
Lane Grp Cap(c), veh/h	0	617	545	245	1884	0				470	468	451
V/C Ratio(X)	0.00	0.56	0.83	0.78	0.15	0.00				0.30	0.60	0.61
Avail Cap(c_a), veh/h	0	664	586	393	2247	0				893	891	858
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	12.9	14.7	20.7	4.9	0.0				14.6	15.9	16.0
Incr Delay (d2), s/veh	0.0	0.9	9.5	5.5	0.0	0.0				0.4	1.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.9	7.1	2.9	0.9	0.0				1.6	3.5	3.4
LnGrp Delay(d),s/veh	0.0	13.8	24.2	26.2	5.0	0.0				14.9	17.1	17.3
LnGrp LOS		B	C	C	A					B	B	B
Approach Vol, veh/h		798			475						692	
Approach Delay, s/veh		19.7			13.5						16.8	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			10.9	21.7		17.1		32.5
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			11.0	19.0		25.0		34.0
Max Q Clear Time (g_c+I1), s			7.2	15.5		9.0		4.0
Green Ext Time (p_c), s			0.2	2.2		3.5		8.7

Intersection Summary	
HCM 2010 Ctrl Delay	17.2
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	0	121	18	0	25	135	45	0	14	4	19
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	2	8	2	2	2	7	2	2	2	2	2
Mvmt Flow	0	0	134	20	0	28	150	50	0	16	4	21
Number of Lanes	0	0	1	0	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	8.7	8.9	8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	38%	0%	16%	0%	88%
Vol Thru, %	11%	87%	84%	0%	9%
Vol Right, %	51%	13%	0%	100%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	139	160	45	56
LT Vol	14	0	25	0	49
Through Vol	4	121	135	0	5
RT Vol	19	18	0	45	2
Lane Flow Rate	41	154	178	50	62
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.053	0.196	0.246	0.06	0.087
Departure Headway (Hd)	4.673	4.568	4.99	4.294	5.027
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	766	786	722	835	713
Service Time	2.703	2.59	2.711	2.015	3.054
HCM Lane V/C Ratio	0.054	0.196	0.247	0.06	0.087
HCM Control Delay	8	8.7	9.3	7.3	8.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.7	1	0.2	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	49	5	2
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	54	6	2
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.5
HCM LOS	A

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	373	204	109	475	0	0	0	0	154	182	189
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1863	1863	1900
Adj Flow Rate, veh/h	0	405	222	118	516	0				167	198	205
Adj No. of Lanes	0	2	0	1	2	0				1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	780	421	153	1922	0				456	455	402
Arrive On Green	0.00	0.36	0.36	0.09	0.54	0.00				0.26	0.26	0.26
Sat Flow, veh/h	0	2282	1182	1774	3632	0				1774	1770	1563
Grp Volume(v), veh/h	0	326	301	118	516	0				167	198	205
Grp Sat Flow(s),veh/h/ln	0	1770	1601	1774	1770	0				1774	1770	1563
Q Serve(g_s), s	0.0	5.8	5.9	2.6	3.1	0.0				3.1	3.7	4.5
Cycle Q Clear(g_c), s	0.0	5.8	5.9	2.6	3.1	0.0				3.1	3.7	4.5
Prop In Lane	0.00		0.74	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	631	571	153	1922	0				456	455	402
V/C Ratio(X)	0.00	0.52	0.53	0.77	0.27	0.00				0.37	0.44	0.51
Avail Cap(c_a), veh/h	0	841	761	488	3010	0				1110	1107	978
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	10.2	10.2	17.9	4.9	0.0				12.2	12.4	12.7
Incr Delay (d2), s/veh	0.0	0.7	0.8	7.8	0.1	0.0				0.5	0.7	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	2.7	1.6	1.5	0.0				1.5	1.9	2.0
LnGrp Delay(d),s/veh	0.0	10.8	10.9	25.7	5.0	0.0				12.7	13.1	13.7
LnGrp LOS		B	B	C	A					B	B	B
Approach Vol, veh/h		627			634						570	
Approach Delay, s/veh		10.9			8.8						13.2	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			7.5	18.2		14.3		25.7
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			11.0	19.0		25.0		34.0
Max Q Clear Time (g_c+I1), s			4.6	7.9		6.5		5.1
Green Ext Time (p_c), s			0.1	5.5		2.9		8.9

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	2	150	10	0	28	148	29	0	25	7	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	163	11	0	30	161	32	0	27	8	38
Number of Lanes	0	0	1	0	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	8.9	9.3	8.2
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	37%	1%	16%	0%	71%
Vol Thru, %	10%	93%	84%	0%	17%
Vol Right, %	52%	6%	0%	100%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	162	176	29	52
LT Vol	25	2	28	0	37
Through Vol	7	150	148	0	9
RT Vol	35	10	0	29	6
Lane Flow Rate	73	176	191	32	57
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.095	0.224	0.27	0.038	0.079
Departure Headway (Hd)	4.711	4.576	5.072	4.289	5.042
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	759	784	708	834	709
Service Time	2.75	2.608	2.801	2.018	3.082
HCM Lane V/C Ratio	0.096	0.224	0.27	0.038	0.08
HCM Control Delay	8.2	8.9	9.7	7.2	8.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.9	1.1	0.1	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	37	9	6
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	40	10	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.5
HCM LOS	A

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	288	377	161	231	0	0	0	0	118	350	112
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1827	1900	1863	1776	0				1863	1863	1900
Adj Flow Rate, veh/h	0	343	449	192	275	0				140	417	133
Adj No. of Lanes	0	2	0	1	2	0				1	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	4	4	2	7	0				2	2	2
Cap, veh/h	0	615	543	245	1935	0				469	699	221
Arrive On Green	0.00	0.35	0.35	0.14	0.57	0.00				0.26	0.26	0.26
Sat Flow, veh/h	0	1827	1531	1774	3463	0				1774	2642	834
Grp Volume(v), veh/h	0	343	449	192	275	0				140	278	272
Grp Sat Flow(s),veh/h/ln	0	1736	1531	1774	1687	0				1774	1770	1707
Q Serve(g_s), s	0.0	7.9	13.2	5.2	1.9	0.0				3.1	6.8	6.9
Cycle Q Clear(g_c), s	0.0	7.9	13.2	5.2	1.9	0.0				3.1	6.8	6.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		0.49
Lane Grp Cap(c), veh/h	0	615	543	245	1935	0				469	468	451
V/C Ratio(X)	0.00	0.56	0.83	0.78	0.14	0.00				0.30	0.59	0.60
Avail Cap(c_a), veh/h	0	667	589	395	2321	0				898	895	863
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	12.8	14.6	20.6	4.9	0.0				14.5	15.9	15.9
Incr Delay (d2), s/veh	0.0	0.9	8.9	5.5	0.0	0.0				0.4	1.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.9	6.8	2.9	0.8	0.0				1.6	3.4	3.4
LnGrp Delay(d),s/veh	0.0	13.7	23.5	26.0	4.9	0.0				14.9	17.1	17.2
LnGrp LOS		B	C	C	A					B	B	B
Approach Vol, veh/h		792			467						690	
Approach Delay, s/veh		19.3			13.6						16.7	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			10.8	21.5		17.1		32.3
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			11.0	19.0		25.0		34.0
Max Q Clear Time (g_c+I1), s			7.2	15.2		8.9		3.9
Green Ext Time (p_c), s			0.2	2.3		3.5		8.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.0
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	0	126	18	0	25	154	45	0	14	4	19
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	2	12	2	2	2	10	2	2	2	2	2
Mvmt Flow	0	0	140	20	0	28	171	50	0	16	4	21
Number of Lanes	0	0	1	0	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	8.9	9.2	8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	38%	0%	14%	0%	88%
Vol Thru, %	11%	88%	86%	0%	9%
Vol Right, %	51%	12%	0%	100%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	144	179	45	56
LT Vol	14	0	25	0	49
Through Vol	4	126	154	0	5
RT Vol	19	18	0	45	2
Lane Flow Rate	41	160	199	50	62
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.054	0.207	0.276	0.061	0.088
Departure Headway (Hd)	4.744	4.667	4.993	4.356	5.097
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	754	770	722	823	703
Service Time	2.777	2.691	2.714	2.077	3.128
HCM Lane V/C Ratio	0.054	0.208	0.276	0.061	0.088
HCM Control Delay	8	8.9	9.6	7.4	8.6
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.8	1.1	0.2	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	49	5	2
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	54	6	2
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.6
HCM LOS	A

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	371	201	109	475	0	0	0	0	154	182	189
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	0				1863	1863	1900
Adj Flow Rate, veh/h	0	403	218	118	516	0				167	198	205
Adj No. of Lanes	0	2	0	1	2	0				1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	782	417	153	1919	0				456	455	402
Arrive On Green	0.00	0.36	0.36	0.09	0.54	0.00				0.26	0.26	0.26
Sat Flow, veh/h	0	2293	1173	1774	3632	0				1774	1770	1563
Grp Volume(v), veh/h	0	323	298	118	516	0				167	198	205
Grp Sat Flow(s),veh/h/ln	0	1770	1603	1774	1770	0				1774	1770	1563
Q Serve(g_s), s	0.0	5.7	5.9	2.6	3.1	0.0				3.1	3.7	4.5
Cycle Q Clear(g_c), s	0.0	5.7	5.9	2.6	3.1	0.0				3.1	3.7	4.5
Prop In Lane	0.00		0.73	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	629	570	153	1919	0				456	455	402
V/C Ratio(X)	0.00	0.51	0.52	0.77	0.27	0.00				0.37	0.44	0.51
Avail Cap(c_a), veh/h	0	843	764	489	3017	0				1112	1109	980
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	10.1	10.2	17.8	4.9	0.0				12.1	12.4	12.7
Incr Delay (d2), s/veh	0.0	0.7	0.7	7.8	0.1	0.0				0.5	0.7	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	2.7	1.6	1.5	0.0				1.5	1.9	2.0
LnGrp Delay(d),s/veh	0.0	10.8	10.9	25.7	5.0	0.0				12.6	13.0	13.7
LnGrp LOS		B	B	C	A					B	B	B
Approach Vol, veh/h		621			634						570	
Approach Delay, s/veh		10.9			8.8						13.1	
Approach LOS		B			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			7.4	18.2		14.3		25.6
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			11.0	19.0		25.0		34.0
Max Q Clear Time (g_c+I1), s			4.6	7.9		6.5		5.1
Green Ext Time (p_c), s			0.1	5.5		2.9		8.8

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	2	164	10	0	28	148	29	0	25	7	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	178	11	0	30	161	32	0	27	8	38
Number of Lanes	0	0	1	0	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	9.1	9.3	8.3
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	37%	1%	16%	0%	71%
Vol Thru, %	10%	93%	84%	0%	17%
Vol Right, %	52%	6%	0%	100%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	176	176	29	52
LT Vol	25	2	28	0	37
Through Vol	7	164	148	0	9
RT Vol	35	10	0	29	6
Lane Flow Rate	73	191	191	32	57
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.096	0.244	0.27	0.038	0.08
Departure Headway (Hd)	4.748	4.584	5.089	4.306	5.08
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	753	782	706	831	704
Service Time	2.787	2.614	2.819	2.035	3.12
HCM Lane V/C Ratio	0.097	0.244	0.271	0.039	0.081
HCM Control Delay	8.3	9.1	9.7	7.2	8.6
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	1	1.1	0.1	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	37	9	6
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	40	10	7
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.6
HCM LOS	A

Lane

Appendix D

Air Quality and GHG Analysis Data Technical Appendix

Appendix D

Air Quality and GHG Analysis Data Technical Appendix

Appendix D.1

Personnel and Equipment Schedule

Alternative 1

Construction Task	2017												2018												2019												Main Components	Equipment
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D		
Mobilization and Staging				4	4	4																																
Gate Structure																																						
Coffer Dam Installation							8																														300 LF Sheet Pile	Barge, 40T crawler crane, vibratory hammer + generator
Structure Construction										11	11	11	11	11																							80 piles, 915 CY RC	Barge, 40T crawler crane, vibratory hammer + generator
Gate installation															6																						Gate	Barge, 40T crawler crane
Gate Functional Testing																2																						
Sheet Pile for Fixed Wall, South of Gate								8	8																												1000 LF Sheet Pile	40T crawler crane, vibratory hammer + generator
Between Fixed Wall Work, South of Gate																																						
Place Fill Material										6	6	6	6	6	6																						10000 CY granular fill	5T roller
Install Culverts with Slide Gates											4																										5 slide gates, 5-25 FT culverts	Loader
Sheet Pile for Fixed Wall, North of Gate																			8																		400 LF Sheet Pile	40T crawler crane, vibratory hammer + generator
Between Fixed Wall Work, North of Gate																																						
Place Fill Material																				8	8	8															4000 CY granular fill	5T roller
Install Culverts with Slide Gates																					4																2 slide gates, 2-25 FT culverts	Barge, 40T crawler crane
Dad's Point Improvements																																						
Raise Grade/Install All-Weather Road																10	10	10																				
Fishing Access Sheet Pile/Grading/Paving																					8	6															300 LF sheet pile, 1000 CY granular fill	Barge, 40T crawler crane, 5T roller
Remove Invasive Plants/Landscape																					4	4																
Environmental Improvements																					4	4																
Spoils hauling																					4	4															4978 CY spoils	
Control Building (reinforced concrete)										5	5	5	5	5	5																							
Moreing Road Culverts																																						
Coffer Dam Installation																				8																	200 LF Sheet Pile	Barge, 40T crawler crane, vibratory hammer + generator
Culvert Installation																					4																3-50 FT culverts	Loader
Boat Access Limitations																																						
100 ft Opening North of Gate Structure							-	-	-	-	-	-	-	-	-	-	-																					
Project Closeout																							4	4														
Workers on site			0	4	4	4	8	8	8	22	26	22	22	22	23	12	10	10	8	16	36	26	4	4	0	0	0	0										
Total workers on site			4	8	8	8	12	12	12	26	30	26	26	26	27	16	14	14	12	20	40	30	8	8	4	4	4	4									Assumes 4 additional personnel	
TOTAL WORKER-DAYS	**8060**																																					

Alternative 2

Construction Task	2017												2018												2019												Main Components	Equipment
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D		
Mobilization and Staging			4	4	4	4																																
Gate Structure																																						
Coffer Dam Installation							8																														300 LF Sheet Pile	Barge, 40T crawler crane, vibratory hammer + generator
Structure Construction									11	11	11	11	11																								80 piles, 915 CY RC	
Gate Installation														6																								
Gate Functional Testing															2																							
Sheet Pile for Fixed Wall, North of Gate								8																													200 LF Sheet Pile	Barge, 40T crawler crane, vibratory hammer + generator
Between Wall Work, North of Gate																																						
Place Fill Material										6	6																										2000 CY granular fill	
Install Culvert with Slide Gate										4																											1 slide gate, 1-25 FT culvert	Loader
Sheet Pile for Fixed Wall, South of Gate																			8																		200 LF Sheet Pile	Barge, 40T crawler crane, vibratory hammer + generator
Between Wall Work, South of Gate																																						
Place Fill Material																				6	6																2000 CY granular fill	
Install Culvert with Slide Gate																				4																	1 slide gate, 1-25 FT culvert	Loader
Atherton Cove Flood Wall, West																																						
Remove Docks/Piers							4																														5 docks	
Install Sheet Pile							16	16	8																												2000 LF Sheet Pile	2x (Barge, 40T crawler crane, vibratory hammer + generator)
Place Fill Material										6	6	6	6	6	6	6	6																				9500 CY granular fill, 14500 CY engineered fill	Barge, 5T roller
Reinstall Docks/Piers																			4																		5 docks	
Atherton Cove Flood Wall, East																																						
Remove Docks/Piers																			4																		5 docks	
Install Sheet Pile																			16	16	8																2200 LF Sheet Pile	2x (Barge, 40T crawler crane, vibratory hammer + generator)
Place Fill Material																						6	6	6	6	6	6	6	6								10000 CY granular fill, 15500 CY engineered fill	Barge, 5T roller
Reinstall Docks/Piers																															4						5 docks	
Dad's Point Improvements																																						
Fishing Access Sheet Pile/Grading/Paving									5	5																											300 LF sheet pile, 1000 CY granular fill	30 HP Skidsteer Loader
Remove Invasive Plants/Landscape											4	4																										
Environmental Improvements											4	4																										
Spoils hauling											4	4																									9470 CY spoils	
Control Building										5	5	5	5	5	5																							
Moreing Road Culverts																																						
Coffer Dam Installation									8																												200 LF Sheet Pile	
Culvert Installation										4																											3-50 FT culverts	
Boat Access Limitations																																						
30 ft Opening South of Gate Structure							-	-	-	-	-	-	-	-	-	-																						
No boat docks - Atherton Cove West							-	-	-	-	-	-	-	-	-	-	-	-	-																			
No boat docks - Atherton Cove East																			-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Project Closeout																																4	4					
Workers on site			4	4	4	4	28	24	32	41	40	34	22	17	13	6	6	0	32	26	14	6	6	6	6	6	6	6	6	6	0	4	4	4	0	0	0		
Total workers on site			8	8	8	8	32	28	36	45	44	38	26	21	17	10	10	4	36	30	18	10	10	10	10	10	10	10	10	4	8	8	8	4	4	4		Assumes 4 additional personnel
TOTAL WORKER-DAYS	**11740**																																					

Alternative 3

Construction Task	2017												2018												2019												Main Components	Equipment
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D		
Mobilization and Staging			4	4	4	4																																5T roller
Gate Structure, Smith Canal																																						
Coffer Dam Installation							8																														300 LF Sheet Pile	Barge, 40T crawler crane, vibratory hammer + generator
Structure Construction										11	11	11	11	11																							80 piles, 915 CY RC	
Gate Installation															6																							
Gate Functional Testing																2																						
Sheet Pile for Fixed Wall, North of Gate								8																													200 LF Sheet Pile	Barge, 40T crawler crane, vibratory hammer + generator
Between Wall Work, North of Gate																																						
Place Fill Material										6	6																										2000 CY granular fill	5T roller
Install Culvert with Slide Gate										4																											1 slide gate, 1-25 FT culvert	
Sheet Pile for Fixed Wall, South of Gate																			8																		200 LF Sheet Pile	
Between Wall Work, South of Gate																																						
Place Fill Material																						6	6														2000 CY granular fill	5T roller
Install Culvert with Slide Gate																						4															1 slide gate, 1-25 FT culvert	
Gate Structure, Atherton Cove																																						
Coffer Dam Installation								8																													300 LF Sheet Pile	Barge, 40T crawler crane, vibratory hammer + generator
Structure Construction											11	11	11	11	11																						80 piles,915 CY RC	
Gate Installation																6																						
Gate Functional Testing																	2																					
Sheet Pile for Fixed Wall, North of Gate									8																												200 LF Sheet Pile	Barge, 40T crawler crane, vibratory hammer + generator
Between Wall Work, North of Gate																																						
Place Fill Material												6	6																								2000 CY granular fill	5T roller
Install Culvert with Slide Gate												4																									1 slide gate, 1-25 FT culvert	
Sheet Pile for Fixed Wall, South of Gate																				8																	200 LF Sheet Pile	Barge, 40T crawler crane, vibratory hammer + generator
Between Wall Work, South of Gate																																						
Place Fill Material																						6	6														2000 CY granular fill	5T roller
Install Culvert with Slide Gate																						4															1 slide gate, 1-25 FT culvert	
Atherton Island Gate Access																																						
Install Sheet Pile									8																												400 LF Sheet Pile	Barge, 40T crawler crane, vibratory hammer + Generator
Place Fill Material										6	6																										4000 CY granular fill	Barge, 5T roller
Dad's Point Improvements																																						
Fishing Access Sheet Pile/Grading/Paving																					6	6															300 LF sheet pile, 1000 CY granular fill	5T roller
Remove Invasive Plants/Landscape																						4	4															30 HP Skidsteer Loader
Spoils hauling																						4	4														5290 CY	
Environmental Improvements																						4	4															
Control Building, Atherton Cove Gate											5	5	5	5	5	5																						
Control Building, Smith Canal Gate										5	5	5	5	5	5																							
Boat Access Limitations																																						
30 ft Opening South of Smith Canal Gate							-	-	-	-	-	-	-	-	-	-	-																					
100 ft Opening South of Atherton Island Gate								-	-	-	-	-	-	-	-	-	-	-																				
Project Closeout																							4	4														
Workers on site			4	4	4	4	8	16	16	32	44	42	38	32	27	13	2	0	8	14	18	32	16	4	0	0	0	0										
Total workers on site			8	8	8	8	12	20	20	36	48	46	42	36	31	17	6	4	12	18	22	36	20	8	4	4	4	4									Assumes 4 additional personnel	
TOTAL WORKER-DAYS	**9640**																																					

Appendix D.2

Haul Schedule

FILL HAULING

Truck type: 15 CY Dump Truck
Haul Route: Stockton Quarry to Project Site

Parameter	Alternative 1	Alternative 2	Alternative 3
Total fill material (CY)	15,000	54,500	9,000
Roundtrip haul truck trips to be made*	1,000	3,633	600
Average Maximum haul truck trip (mi round trip)	40	40	40

SHEET PILE HAULING

Truck type: Semi truck with flat bed
Haul Route: Port of Oakland to Port of Stockton/Project Site

Parameter	Alternative 1	Alternative 2	Alternative 3
Total sheet pile (LF)	2,200	5,400	2,100
Roundtrip haul truck trips to be made*	5	13	5
Average Maximum haul truck trip (mi round trip)	150	150	150

CONCRETE HAULING

Truck type: 9 CY mixer
Haul Route: Stockton Concrete Yard to Project Site

Parameter	Alternative 1	Alternative 2	Alternative 3
Total concrete (CY)	915	915	1,830
Roundtrip haul truck trips to be made	102	102	203
Average Maximum haul truck trip (mi round trip)	40	40	40

WATER TRANSPORT

Assume 1 water truck per day when fill is placed or during grading activities

Truck type: Water truck
Haul Route: Local Water Source to Project Site

Parameter	Alternative 1	Alternative 2	Alternative 3
Trucking days	240	440	240
Average Maximum haul truck trip (mi round trip)	5	5	5

SPOILS HAULING

Truck type: 15 CY Dump truck
Haul Route: Project Site to Dump

Parameter	Alternative 1	Alternative 2	Alternative 3
Volume of spoils exported using haul trucks (CY)	4,978	9,470	5,290
Roundtrip haul truck trips to be made*	332	631	353
Average Maximum haul truck trip (mi round trip)	40	40	40

ADDITIONAL TRUCKS

Gate transport (trips)	1	1	2	Truck type:	Semi truck with flat bed
round trip distance	150	150	150	Haul Route:	Port of Oakland to Port of Stockton / project site
Pile (trips to be made)	4	4	8	Truck type:	Semi truck with flat bed
round trip distance	40	40	40	Haul Route:	Stockton concrete yard to project site
Landscaping truck loads (pickup)	4	4	4	Truck type:	Pick up truck
round trip distance	40	40	40	Haul Route:	Landscaper to project site
Culverts (trips)	2	2	2	Truck type:	Semi truck with flat bed
round trip distance	40	40	40	Haul Route:	Culvert yard to project site
Pavement (trips)	15	108	5	Truck type:	15CY Dump truck
round trip distance	40	40	40	Haul Route:	Stockton site to project site

TOTAL TRUCK-MILES

15 CY Dump trucks	53881	174920	38292
9 CY Concrete trucks	4067	4067	8133
Semi trucks with flat bed trailers	1140	2340	1450
Water trucks (5500 gal expected, ~2000 gal required)	1200	2200	1200
Pickup trucks	160	160	160

Appendix D.3

Materials and Trucking

Alternative 1

Construction Task	Delivery Item	2017												2018												2019											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Mobilization and Staging																																					
Gate Structure																																					
Coffer Dam Installation	300 LF Sheet Pile																																				
Structure Construction	80 piles, 915 CY RC																																				
Gate installation	Gate																																				
Gate Functional Testing																																					
Sheet Pile for Fixed Wall, South of Gate	1000 LF Sheet Pile																																				
Between Fixed Wall Work, South of Gate																																					
Place Fill Material	10000 CY granular fill																																				
Install Culverts with Slide Gates	5 slide gates, 5-25 FT culverts																																				
Sheet Pile for Fixed Wall, North of Gate	400 LF Sheet Pile																																				
Between Fixed Wall Work, North of Gate																																					
Place Fill Material	4000 CY granular fill																																				
Install Culverts with Slide Gates	2 slide gates, 2-25 FT culverts																																				
Dad's Point Improvements																																					
Raise Grade/Install All-Weather Road	1000 CY granular fill																																				
Fishing Access Sheet Pile/Grading/Paving	300 LF sheet pile, 1000 CY g. fill, 160 CY asphalt																																				
Remove Invasive Plants/Landscape																																					
Environmental Improvements																																					
Spoils hauling	4978 CY spoils																																				
Control Building (reinforced concrete)																																					
Moreing Road Culverts																																					
Coffer Dam Installation	200 LF Sheet Pile																																				
Culvert Installation	3-50 FT culverts																																				
Boat Access Limitations																																					
100 ft Opening North of Gate Structure																																					
Project Closeout																																					

Alternative 2

Construction Task	Main Components	2017												2018												2019											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Mobilization and Staging																																					
Gate Structure																																					
Coffer Dam Installation	300 LF Sheet Pile																																				
Structure Construction	80 piles,915 CY RC																																				
Gate Installation																																					
Gate Functional Testing																																					
Sheet Pile for Fixed Wall, North of Gate	200 LF Sheet Pile																																				
Between Wall Work, North of Gate																																					
Place Fill Material	2000 CY granular fill																																				
Install Culvert with Slide Gate	1 slide gate, 1-25 FT culvert																																				
Sheet Pile for Fixed Wall, South of Gate	200 LF Sheet Pile																																				
Between Wall Work, South of Gate																																					
Place Fill Material	2000 CY granular fill																																				
Install Culvert with Slide Gate	1 slide gate, 1-25 FT culvert																																				
Atherton Cove Flood Wall, West																																					
Remove Docks/Piers	5 docks																																				
Install Sheet Pile	2000 LF Sheet Pile																																				
Place Fill Material	9500 CY granular fill, 14500 CY engineered fill																																				
Reinstall Docks/Piers	5 docks																																				
Atherton Cove Flood Wall, East																																					
Remove Docks/Piers	5 docks																																				
Install Sheet Pile	2200 LF Sheet Pile																																				
Place Fill Material	10000 CY granular fill, 15500 CY engineered fill																																				
Reinstall Docks/Piers	5 docks																																				
Dad's Point Improvements																																					
Fishing Access Sheet Pile/Grading/Paving	300 LF sheet pile, 1000 CY g. fill, 160 CY asphalt																																				
Remove Invasive Plants/Landscape																																					
Environmental Improvements																																					
Spoils hauling	9470 CY spoils																																				
Control Building																																					
Moreing Road Culverts																																					
Coffer Dam Installation	200 LF Sheet Pile																																				
Culvert Installation	3-50 FT culverts																																				
Boat Access Limitations																																					
30 ft Opening South of Gate Structure																																					
No boat docks - Atherton Cove West																																					
No boat docks - Atherton Cove East																																					
Project Closeout																																					

Alternative 3

Construction Task	Main Components	2017												2018												2019											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Mobilization and Staging																																					
Gate Structure, Smith Canal																																					
Coffer Dam Installation	300 LF Sheet Pile																																				
Structure Construction	80 piles, 915 CY RC																																				
Gate Installation																																					
Gate Functional Testing																																					
Sheet Pile for Fixed Wall, North of Gate	200 LF Sheet Pile																																				
Between Wall Work, North of Gate																																					
Place Fill Material	2000 CY granular fill																																				
Install Culvert with Slide Gate	1 slide gate, 1-25 FT culvert																																				
Sheet Pile for Fixed Wall, South of Gate	200 LF Sheet Pile																																				
Between Wall Work, South of Gate																																					
Place Fill Material	2000 CY granular fill																																				
Install Culvert with Slide Gate	1 slide gate, 1-25 FT culvert																																				
Gate Structure, Atherton Cove																																					
Coffer Dam Installation	300 LF Sheet Pile																																				
Structure Construction	80 piles, 915 CY RC																																				
Gate Installation																																					
Gate Functional Testing																																					
Gate Open																																					
Sheet Pile for Fixed Wall, North of Gate	200 LF Sheet Pile																																				
Between Wall Work, North of Gate																																					
Place Fill Material	2000 CY granular fill																																				
Install Culvert with Slide Gate	1 slide gate, 1-25 FT culvert																																				
Sheet Pile for Fixed Wall, South of Gate	200 LF Sheet Pile																																				
Between Wall Work, South of Gate																																					
Place Fill Material	2000 CY granular fill																																				
Install Culvert with Slide Gate	1 slide gate, 1-25 FT culvert																																				
Atherton Island Gate Access																																					
Install Sheet Pile	400 LF Sheet Pile																																				
Place Fill Material	4000 CY granular fill																																				
Dad's Point Improvements																																					
Fishing Access Sheet Pile/Grading/Paving	300 LF sheet pile, 1000 CY g. fill, 160 CY asphalt																																				
Remove Invasive Plants/Landscape																																					
Spoils hauling	5290 CY																																				
Environmental Improvements																																					
Control Building, Atherton Cove Gate																																					
Control Building, Smith Canal Gate																																					
Boat Access Limitations																																					
30 ft Opening South of Smith Canal Gate																																					
100 ft Opening South of Atherton Island Gate																																					
Project Closeout																																					

Appendix D.4
Other

Paved Square Footage Per Build Alternative

Phase	ft^2 Paved		
	Alternative 1	Alternative 2	Alternative 3
	6142	43875	1875
	Dad's Point, Moreing Rd.	Sheet Pile Wall, Moreing Rd.	Moreing Rd.

Graded Square Footage Per Build Alternative

Phase	ft^2 graded		
	Alternative 1	Alternative 2	Alternative 3
	30519	76680	59850

Electricity for Gate Structure Dewatering

Parameter	Alt 1	Alt 2	Alt 3
Equipment	Pump	Pump	Pump
Horsepower	5	5	5
Number	1	1	2
Daily hours	8	8	8
Months	6	6	6
Schedule	7/2018-12/2018	7/2018-12/2018	7/2018-12/2018
Total Electricity (kWh)	3,579	3,579	7,159
Monthly Electricity (kWh)	597	597	1,193

kWh_hp	0.746
Days per week	5
Weeks per month	4

Appendix E

Vegetation and Wetlands Technical Appendix

Appendix E
Vegetation and Wetlands Technical Appendix

Table E-1. Plant Species Observed in the Study Area

Scientific Name	Common Name	Native/Introduced*
Acacia melanoxylon	Blackwood acacia	I*
Ailanthus altissima	Tree of heaven	I*
Arundo donax	Giant reed	I*
Carex barbarae	Santa Barbara sedge	N
Carya illinoensis	Pecan	I
Celtis sinensis	Chinese hackberry	I
Cephalanthus occidentalis	Buttonwillow	N
Cirsium vulgare	Bull thistle	I*
Convolvulus arvensis	Field bindweed	I
Cortaderia selloana	Pampas grass	I*
Cynodon dactylon	Bermuda grass	I*
Cyperus eragrostis	Tall flatsedge	N
Eichhornia crassipes	Water hyacinth	I*
Egeria densa	Brazilian waterweed	I*
Erigeron canadensis	Canadian horseweed	N
Eucalyptus nicholii	Willowleafed peppermint gum	I
Festuca idahoensis	Idaho fescue	N
Ficus carica	Edible fig	I*
Foeniculum vulgare	Sweet fennel	I*
Fraxinus latifollia	Oregon ash	N
Fraxinum velutina	Arizona ask	N
Gleditsia tricanthos	Honeylocust	I
Helminthotheca echioides	Bristly ox-tongue	I*
Hordeum murinum	Foxtail barley	I*
Juglans hindsii	Northern California black walnut	N
Juglans regia	English walnut	I
Juncus sp.	Rush	--
Lactuca saligna	Willowleaf lettuce	I
Lactuca serriola	Prickly lettuce	I
Lemna minor	Common duckweed	N
Leontodon taraxicoides ssp. *taraxicoides*	Lesser hawkbit	I
Ligustrum japonicum	Japanese privet	I
Lonicera japonica	Japanese honeysuckle	I
Ludwigia hexapetala	Six petal water primrose	I*
Magnolia grandiflora	Southern magnolia	I
Malvella leprosa	Alkali mallow	N
Morus alba	White mulberry	I

Scientific Name	Common Name	Native/Introduced*
Myriophyllum sp.	Water-milfoil	I*
Parthenocissus quinquefolia	Virginia creeper	I
Paspalum dilatatum	Dallisgrass	I
Persicaria punctata	Dotted smartweed	N
Phoradendron serotinum	Mistletoe	N
Pistacia chinensis	Chinese pistache	I
Pittosporum tobira	Mock orange	I
Plantago major	Common plantain	I
Platanus x *acerifolia*	London plane tree	I
Polygonum aviculare	Prostrate knotweed	I
Populus fremontii ssp. *fremontii*	Fremont cottonwood	N
Pseudotsuga menziesii	Douglas-fir	N
Quercus ilex	Holly oak	I
Quercus lobata	Valley oak	N
Quercus suber	Cork oak	I
Robinia pseudoacacia	Black locust	I*
Rosa californica	California wildrose	N
Rubus armeniacus	Himalayan blackberry	I*
Rumex conglomeratus	Clustered dock	I
Salix babylonica	Weeping willow	I
Salix exigua	Sandbar willow	N
Salix gooddingii	Black willow	N
Salix lasiolepis	Arroyo willow	N
Salsola tragus	Russian thistle	I*
Schoenoplectus acutus	Hardstem bulrush	N
Sequoia sempervirens	Coast redwood	N
Setaria parviflora	Marsh bristlegrass	N
Sonchus asper	Spiny sowthistle	I
Sorghum halepense	Johnsongrass	I
Trifolium sp.	Clover	–
Typha latifolia	Broad-leaved cattail	N
Ulmus pumila	Siberian elm	I
Verbena bonariensis	Purpletop vervain	I
Washingtonia filifera	California fan palm	N

* Invasive species.

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Table E-2. Special-Status Plant Species with Known or Potential Occurrence in the Study Area and Surrounding Region

Common Name *Scientific Name*	Status[a] Federal/State/CNPS	Geographic Distribution	General Habitat Description	Blooming Period	Rationale
Alkali milk-vetch *Astragalus tener* var. *tener*	–/–/1B.2	Historically found in western San Joaquin Valley, San Francisco Bay Area, and Monterey County; likely extirpated from all historical occurrences except those in Merced, Solano, and Yolo Counties.	Playas and grasslands with adobe clay soils and alkaline vernal pools; below 60 meters.	Mar–Jun	No suitable habitat or soils in the study area. Nearest recorded occurrence is on Smith Canal mudflats, but habitat has been developed and modified and occurrence is extirpated (CDFW 2014).
Heartscale *Atriplex cordulata* var. *cordulata*	–/–/1B.2	Western Central Valley and valleys of adjacent foothills.	Alkali grasslands, alkali meadows, alkali scrublands; below 375 meters.	May–Oct	Degraded potential habitat in the study area, within the proposed staging area adjacent to the San Joaquin River. Nearest recorded occurrence is in Stockton, approximately 3 miles west of the study area, but habitat has been developed and modified and occurrence is extirpated (CDFW 2014).
San Joaquin spearscale (saltbush) *Atriplex joaquinana*	–/–/1B.2	West margin of Central Valley from Glenn to Tulare Counties.	Alkali grasslands, alkali scrublands, alkali meadows, saltbush scrublands; below 835 meters.	Apr–Sep	Degraded potential habitat in the study area, within the proposed staging area adjacent to the San Joaquin River. Nearest recorded occurrence is in Stockton, approximately 3 miles west of the project area, but habitat has been developed and modified and occurrence is extirpated (CDFW 2014).
Big tarplant *Blepharizonia plumosa* ssp. *plumosa*	–/–/1B.1	Interior Coast Ranges foothills in Alameda, Contra Costa, San Joaquin, Stanislaus[b] and Solano[b] Counties.	Dry hills and plains in annual grasslands; 30–505 meters.	Jul–Oct	No suitable habitat in the study area. Nearest recorded occurrence is in Stockton, approximately 3 miles west of the project area (CDFW 2014).

Common Name *Scientific Name*	Status[a] Federal/State/CNPS	Geographic Distribution	General Habitat Description	Blooming Period	Rationale
Watershield *Brasenia schreberi*	–/–/2B.3	Scattered occurrences in northern and central California; widespread across U.S.	Freshwater marshes; 30–2,200 meters.	Jun–Sep	Potential for presence at drainage edges in the study area. Nearest recorded occurrence is in Stockton approximately 3 miles west of the study area (CDFW 2014).
Round-leaved filaree *California macrophylla*	–/–/1B.1	Scattered occurrences in the Central Valley, southern North Coast Ranges, San Francisco Bay Area, South Coast Ranges, Channel Islands, Transverse Ranges, and Peninsular Ranges.	Cismontane woodland, valley and foothill grassland on clay soils; 15–1,200 meters.	Mar–May	No suitable habitat or soils in the study area. Nearest recorded occurrence is in Stockton, approximately 3 miles west of the study area (CDFW 2014).
Bristly sedge *Carex comosa*	–/–/2B.1	Scattered occurrences throughout California; Oregon, Washington, and elsewhere.	Coastal prairie, marshes and swamps at lake margins, valley and foothill grassland; below 625 meters.	May–Sep	No suitable habitat in the study area. Nearest recorded occurrence is approximately 4.2 miles southwest of the study area and may be extirpated (CDFW 2014).
Palmate-bracted bird's-beak *Chloropyron palmatum*	E/E/1B.1	Livermore Valley and scattered locations in the Central Valley from Colusa County to Fresno County.	Alkaline sites in grassland and chenopod scrub; 5-155 meters.	May–Oct	Degraded potential habitat in the study area, within the proposed staging area adjacent to the San Joaquin River. Nearest recorded occurrence is in Stockton approximately 3 miles west of the study area and may be extirpated (CDFW 2014).
Slough thistle *Cirsium crassicaule*	–/–/1B.1	San Joaquin Valley: San Joaquin, Kings and Kern Counties.	Chenopod scrub, riparian scrub, sloughs in swamps and marshes; 3-100 meters.	May–Aug	Potential for presence at drainage edges and in riparian habitat in the study area. Nearest recorded occurrence is on San Joaquin River bank, approximately_10 miles south of the study area, and may be extirpated (CDFW 2014).

Common Name *Scientific Name*	Status[a] Federal/State/CNPS	Geographic Distribution	General Habitat Description	Blooming Period	Rationale
Recurved larkspur *Delphinium recurvatum*	–/–/1B.2	Central Valley from Colusa[b] to Kern Counties.	Alkaline soils in valley and foothill grassland, saltbush scrub, cismontane woodland; 3–750 meters.	Mar–Jun	Degraded potential habitat in the study area, within the proposed staging area adjacent to the San Joaquin River. Nearest recorded occurrence is approximately_10 miles southeast of the study area (CDFW 2014).
Delta button-celery *Eryngium racemosum*	–/E/1B.1	Sacramento–San Joaquin River Delta, floodplains, and adjacent Sierra Nevada foothills; Calaveras, Contra Costa, Merced, San Joaquin,[b] and Stanislaus Counties.	Riparian scrub in seasonally inundated depressions on clay soils; 3–30 meters.	Jun–Oct	No suitable riparian habitat with depressions in the study area; all riparian habitat is on levee slopes adjacent to drainages. Nearest recorded occurrence is more than_10 miles from the study area (CDFW 2014).
Woolly rose-mallow *Hibiscus lasiocarpos* var. *occidentalis*	–/–/1B.2	Scattered locations in central California in the central and southern Sacramento Valley, deltaic Central Valley, from Butte to San Joaquin County.	Freshwater marshes and swamps along rivers and sloughs; below 120 meters.	Jun–Sep	Potential for presence at drainage edges in the study area; can occur in riprap. Nearest recorded occurrence is on Calaveras River banks, approximately_0.7 mile north of the study area (CDFW 2014).
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	–/–/1B.2	San Francisco Bay region, also part of Central Valley in Alameda, Contra Costa, Napa, Santa Clara,[b] San Joaquin, Solano, and Sonoma Counties.	Coastal and estuarine marshes (freshwater and brackish); below 4 meters.	May–Jul (Sep)	Potential for presence at drainage edges in the study area. Nearest recorded occurrence is across the San Joaquin River on Rough and Ready Island, approximately 0.1 mile southwest of the study area, and may be extirpated (CDFW 2014).

Common Name *Scientific Name*	Status[a] Federal/State/CNPS	Geographic Distribution	General Habitat Description	Blooming Period	Rationale
Mason's lilaeopsis *Lilaeopsis masonii*	–/R/1B.1	Southern Sacramento Valley, Sacramento–San Joaquin River Delta, northeast San Francisco Bay Area in Alameda, Contra Costa, Marin, Napa, Sacramento, San Joaquin, Solano, and Yolo Counties.	Freshwater or brackish marsh, riparian scrub, in tidal zone below 10 meters.	Apr–Nov	Low potential for presence at drainage edges in the study area; all levee banks have riprap; no mudflats present. Nearest recorded occurrence is on San Joaquin River bank, approximately_2.4 miles northwest of the study area (CDFW 2014).
Delta mudwort *Limosella australis*	–/–/2B.1	Deltaic Central Valley: Contra Costa, Sacramento, San Joaquin, and Solano Counties; Oregon.	Muddy or sandy intertidal flats and marshes, streambanks in riparian scrub generally at sea level, 0–3 meters.	May–Aug	Low potential for presence at drainage edges in the study area; all levee banks have riprap; no mudflats present. Nearest recorded occurrence is on San Joaquin River bank approximately_9 miles northwest of the study area (CDFW 2014).
Sanford's arrowhead *Sagittaria sanfordii*	–/–/1B.2	Scattered locations in Central Valley and Coast Ranges.	Freshwater marshes, sloughs, canals, and other slow-moving water habitats; below 650 meters.	May–Oct	Potential for presence at drainage edges in the study area. Nearest recorded occurrence is in Stockton approximately 3 miles west of the study area (CDFW 2014). Not observed in the study area during October 2014 surveys.
Side-flowering skullcap *Scutellaria lateriflora*	–/–/2B.2	Known in California from only three occurrences in northern San Joaquin Valley and east of the Sierra Nevada in Inyo, Sacramento, and San Joaquin Counties; New Mexico, Oregon, and elsewhere.	Mesic meadows, freshwater marshes and swamps; below 500 meters.	Jul–Sep	No suitable habitat in the study area. Nearest recorded occurrence is on Middle River, approximately_9.2 miles southwest of the study area (CDFW 2014).

Common Name *Scientific Name*	Status[a] Federal/State/CNPS	Geographic Distribution	General Habitat Description	Blooming Period	Rationale
Suisun Marsh aster *Symphyotrichum lentum*	–/–/1B.2	Sacramento–San Joaquin Delta, Suisun Marsh, Suisun Bay; Contra Costa, Napa, Sacramento, San Joaquin, and Solano Counties.	Brackish and freshwater marshes and swamps; below 3 meters.	May–Nov	Potential for presence at drainage edges in the study area; can occur in riprap. Nearest recorded occurrence is on Calaveras River banks, approximately_1 mile north of the study area (CDFW 2014). Not observed in the study area during October 2014 surveys.
Saline clover *Trifolium hydrophilum*	–/–/1B.2	Sacramento Valley, central western California.	Salt marsh, mesic alkaline areas in valley and foothill grasslands, vernal pools, marshes and swamps; below 300 meters.	Apr–Jun	No suitable alkaline marsh microhabitat in the study area. Nearest recorded occurrence is in Stockton approximately 3 miles west of the study area (CDFW 2014).
Caper-fruited tropidocarpum *Tropidocarpum capparideum*	–/–/1B.1	Historically known from the northwest San Joaquin Valley and adjacent Coast Ranges foothills; currently known from Fresno, Monterey, and San Luis Obispo Counties.	Grasslands on alkaline hills; below 455 meters.	Mar–Apr	No suitable habitat in the study area. Nearest recorded occurrence is more than 10 miles from the study area (CDFW 2014).

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Sources:

California Department of Fish and Wildlife (CDFW). 2014. California Natural Diversity Database, RareFind 5, Version 5, October, 2014 update. Records search of the Stockton West, Stockton East, Holt, Terminous, Lodi South, Waterloo, Manteca, Lathrop, and Union Island USGS 7.5-minute quadrangles. Sacramento, CA. Accessed October 7, 2014.

California Native Plant Society (CNPS). 2014. *Inventory of Rare and Endangered Plants* (online edition, v7-14sep). Records search of the Stockton West, Terminous, Lodi South, Stockton East, Manteca, Waterloo, Holt, Union Island, and Lathrop USGS 7.5-minute quadrangles. Last revised: September 9, 2014. Available: http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi. Accessed: October 7, 2014.

[a] Status explanations:

Federal

E = listed as endangered under ESA.
– = no listing.

State

E = listed as endangered under CESA.
R = listed as rare under CESA.
– = no listing.

California Native Plant Society (CNPS) California Rare Plant Rank

1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
2B = List 2B species: plants rare, threatened, or endangered in California, but more common elsewhere.

CNPS Code Extensions

0.1 = seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat).
0.2 = fairly endangered in California (20–80% of occurrences threatened).
0.3 = not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known).

[b] Populations uncertain or extirpated in the county.

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Appendix F

Fish and Aquatic Resources Technical Appendix

Appendix F
Fish and Aquatic Resources Technical Appendix

Table F-1. Fish Species Potentially Occurring in Study Area

Common Name—Origin	*Scientific Name*
American shad—nonnative	*Alosa sapidissima*
Bigscale logperch—nonnative	*Percina macrolepida*
Black crappie—nonnative	*Pomoxis nigromaculatus*
Blue catfish—nonnative	*Ictalurus furcatus*
Bluegill—nonnative	*Lepomis macrochirus*
Brown bullhead—nonnative	*Ictalurus nebulosus*
Carp—nonnative	*Cyprinus carpio*
Channel catfish—nonnative	*Ictalurus punctatus*
Chinook salmon (winter-, fall-, and late fall–runs)—native	*Oncorhynchus tshawytscha*
Delta smelt—native	*Hypomesus transpacificus*
Green sturgeon	*Acipenser medirostris*
Hardhead—native	*Mylopharodon conocephalus*
Inland silverside—nonnative	*Menidia audena*
Lamprey (two species)—native	*Lampetra* spp.
Longfin smelt–native	*Spirinchus thaleichthys*
Pacific staghorn sculpin—native	*Leptocottus amatus*
Prickly sculpin—native	*Cottus asper*
Sacramento blackfish—native	*Orthodon microlepidotus*
Sacramento splittail—native	*Pogonichthys macrolepidotus*
Sacramento sucker—native	*Catostomus occidentalis*
Shimofuri goby —nonnative	*Tirdentiger bifasciatus*
Shokihaze goby—nonnative	*Tridentiger barbatus*
Starry flounder—native	*Platichthys stellatus*
Steelhead/rainbow trout—native	*Oncorhynchus mykiss*
Striped bass—nonnative	*Morone saxatilis*
Threadfin shad—nonnative	*Dorosoma petenense*
Tule perch—native	*Hysterocarpus traski*
Wakasagi—nonnative	*Hypomesus nipponensis*
Warmouth—nonnative	*Lepomis gulosus*
White catfish—nonnative	*Ictalurus catus*
White sturgeon—native	*Acipenser transmontanus*
Yellowfin goby—nonnative	*Acanthogobius flavimanus*

Table F-2. Special-Status Fish Species with Potential to Occur in the Study Area

Common Name *Scientific Name*	Status[a] Federal/State	California Distribution	Habitats	Occurrence in the Study Area
Delta smelt *Hypomesus transpacificus*	T/E	Primarily in the Sacramento–San Joaquin River Delta but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay.	Occurs in low salinity waters defined by high turbidity and relatively cool water temperatures (< 25°C) (77°F). Spawning takes place in freshwater areas of the upper estuary (Moyle 2002).	Low—seasonal
Longfin smelt *Spirinchus thaleichthys*	–/T	San Francisco estuary, Humboldt Bay, Eel River estuary, and Klamath River estuary.	Occurs in open waters of estuaries and seasonally migrates to spawn in fresh and brackish waters of the estuary.	Low—seasonal
Sacramento splittail *Pogonichthys macrolepidotus*	–/SSC	Occurs throughout the year in low-salinity waters and freshwater areas of the Sacramento–San Joaquin River delta, Yolo Bypass, Suisun Marsh, Napa River, and Petaluma River (Moyle 2002).	Rearing habitat includes tidal marsh and adjacent shallow waters. Spawning occurs in floodplains and submerged vegetative habitats.	High—seasonal
Central Valley steelhead *Oncorhynchus mykiss*	T/–	Sacramento River, San Joaquin River, and adjacent tributaries in the Central Valley.	Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 7.8 (46°F) to 18°C (64.4°F) (Moyle 2002). Habitat types are riffles, runs, and pools.	High—migration
Central Valley fall-/late fall–run Chinook salmon *Oncorhynchus tshawytscha*	SC/SSC	Sacramento River, San Joaquin River, and adjacent tributaries in the Central Valley.	Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 8.0 (46°F) to 12.5°C (54°F). Habitat types are riffles, runs, and pools (Moyle 2002).	High—migration
Green sturgeon (southern DPS) *Acipenser medirostris*	T/SSC	Sacramento, Klamath and Trinity Rivers (Moyle 2002).	Spawn in large river systems with well-oxygenated water, with temperatures from 8.0 (46°F) to 14°C (57°F).	Low—few occurrences documented in the San Joaquin River

Common Name *Scientific Name*	Status[a] Federal/State	California Distribution	Habitats	Occurrence in the Study Area
River lamprey *Lampetra ayresi*	–/SSC	Sacramento, San Joaquin, and Napa Rivers; tributaries of San Francisco Bay (Moyle 2002; Moyle et al. 1995).	Adults live in the ocean and migrate into fresh water to spawn.	High—migration

Sources:

Moyle, P. B. 2002. *Inland Fishes of California*. 2nd ed. Davis, CA: University of California Press.

Moyle, P. B., R. M. Yoshiyama, J. E. Williams, and E. D. Wikramanayake. 1995. *Fish Species of Special Concern of California.* Rancho Cordova, CA: California Department of Fish and Game.

[a] Status Definitions

Federal

E = endangered under the Federal Endangered Species Act.
T = threatened under the Federal Endangered Species Act.
SC = species of concern.
– = no listing.

State

E = endangered under the California Endangered Species Act.
T = threatened under the California Endangered Species Act.
SSC = species of special concern.
– = no listing.

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Appendix G

Wildlife Technical Appendix

Appendix G.1
Species Tables

Appendix G.1
Species Tables

Table G.1-1. Wildlife Species Observed in the Study Area

Common Name	*Scientific Name*
Birds	
Acorn woodpecker	*Melanerpes formicivorus*
Anna's hummingbird	*Calypte anna*
Belted kingfisher	*Ceryle alcyon*
Black phoebe	*Sayornis nigricans*
Brewer's blackbird	*Euphagus cyanocephalus*
European starling	*Sturnus vulgaris*
Great blue heron	*Ardea herodias*
Green heron	*Butorides virescens*
Red-shouldered hawk	*Buteo lineatus*
Red-tailed hawk	*Buteo jamaicensis*
Rock pigeon	*Columba livia*
Western scrub-jay	*Aphelocoma californica*
Reptiles	
Unidentified lizard	
Mammals	
Domestic dog	*Canis lupus familiaris*
Domestic/feral cat	*Felis catus*
California sea lion	*Zalophus californianus*

Table G.1-2. Special-Status Wildlife Species with Potential to Occur in the Study Area and Surrounding Region

Common Name *Scientific Name*	Status[a] Fed/State/Other	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study area and Surrounding Region
Invertebrates				
Vernal pool fairy shrimp *Branchinecta lynchi*	T/–/–	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County; isolated populations also in Riverside County.	Vernal pools; also found in sandstone rock outcrop pools.	None. No suitable habitat in the study area.
Vernal pool tadpole shrimp *Lepidurus packardi*	E/–/–	Shasta County south to Merced County.	Vernal pools and ephemeral stock ponds.	None. No suitable habitat in the study area.
Moestan blister beetle *Lytta moesta*	–/–/–	Most records from San Joaquin Valley (Kern, Tulare and Stanislaus Counties); a few specimens collected from Santa Cruz County.	Little is known about this beetle. (CDFW 2014a). Beetles from this family feed on flowers in the summer and fall, mostly composites.	Low. One historic record from an unknown date in the 1900s near Manteca, San Joaquin County (CDFW 2014b).
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/–/–	Streamside habitats below 3,000 feet throughout the Central Valley.	Riparian and oak savanna habitats with elderberry shrubs. Elderberries are the host plant.	None. No elderberry shrubs found in the study area which includes a 100' boundary during reconnaissance field surveys in fall 2014.
Amphibians				
California tiger salamander *Ambystoma californiense*	T/T/–	Central Valley, including Sierra Nevada foothills, up to approximately 1,500 feet, and coastal region from Butte County south to northeastern San Luis Obispo County.	Small ponds, lakes, or vernal pools in grasslands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy.	None. No suitable aquatic or upland habitat in the study area. There are 3 golf course ponds, 1 pond in Louis Park, and 1 pond north of the housing. All of these ponds are artificial, heavily managed, and surrounded by development.

Common Name *Scientific Name*	Status[a] Fed/State/Other	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study area and Surrounding Region
California red-legged frog *Rana draytonii*	T/SSC/–	Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County.	Permanent and semi-permanent aquatic habitats, such as creeks and coldwater ponds, with emergent and submergent vegetation; may estivate in rodent burrows or cracks during dry periods.	None. The study area is outside of this species' current known range. This species is believed to be extirpated from the valley floor.
Reptiles				
Giant garter snake *Thamnophis gigas*	T/T/–	Central Valley from the vicinity of Burrel in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno.	Sloughs, canals, low gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.	Low. CNDDB (CDFW 2014b) documents six occurrences within 10 miles of the study area. The nearest occurrence is near Rough and Ready Island from 1880. 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 habitat but are outside the study area.
Western pond turtle *Emys marmorata*	–/SSC/–	From the Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through the Sacramento Valley, and on the western slope of Sierra Nevada.	Ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests.	High. There are four CNNDB (CDFW 2014b) records within 10 miles of the study area. One western pond turtle was observed in aquatic habitat in Atherton Cove during reconnaissance field surveys in fall 2014. Suitable aquatic and basking habitat present in study area.

Common Name *Scientific Name*	Status[a] Fed/State/Other	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study area and Surrounding Region
Birds				
White-tailed kite *Elanus leucurus*	–/FP/–	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border.	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	Low. Three CNDDB (CDFW 2014b) nesting records within 10 miles of the study area. Suitable nesting habitat in study area.
Swainson's hawk *Buteo swainsoni*	–/T/–	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley.	Nests in riparian cottonwoods and oaks and isolated trees in agricultural fields, as well as in tall exotic landscape trees in suburban and rural residential areas. Forages in grasslands, irrigated pastures, and agricultural fields.	Moderate. There are approximately 140 CNDDB (CDFW 2014b) nesting records within 10 miles of the study area. Suitable nesting habitat is present in the study area.
California black rail *Laterallus jamaicensis coturniculus*	–/T/–	Permanent resident in the San Francisco Bay Area and eastward through the Sacramento–San Joaquin River Delta into Sacramento and San Joaquin Counties; small populations in Marin, Santa Cruz, San Luis Obispo, Orange, Riverside, and Imperial Counties.	Tidal salt marshes associated with heavy growth of pickleweed; also in brackish marshes or freshwater marshes with dense stands of vegetation at low elevations.	None. No suitable habitat in study area.
Western burrowing owl *Athene cunicularia*	–/SSC/–	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast.	Level, open, dry, heavily grazed or low-stature grassland or desert vegetation with available burrows.	Low. There are 27 CNDDB (CDFW 2014b) nesting records within 10 miles of the study area. Could nest or winter in open areas located within developed/landscaped and ditch habitat in the study area.

Common Name *Scientific Name*	Status[a] Fed/State/Other	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study area and Surrounding Region
Tricolored blackbird *Agelaius tricolor*	–/E/–	Permanent resident in the Central Valley from Butte County to Kern County; breeds at scattered coastal locations from Marin County south to San Diego County and at scattered locations in Lake, Sonoma, and Solano Counties; rare nester in Siskiyou, Modoc, and Lassen Counties.	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grain fields; habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony.	None. Patches of suitable nesting habitat in study area are too limited in size to provide space for nesting colonies.
Least Bell's vireo *Vireo bellii pusillus*	E/E/–	Small populations remain in southern Inyo, southern San Bernardino, Riverside, San Diego, Orange, Los Angeles, Ventura, and Santa Barbara Counties. Single nest sites documented in 2005 and 2006 from Stanislaus County.	Riparian thickets either near water or in dry portions of river bottoms; nests along margins of bushes and forages low to the ground; may also be found using mesquite and arrow weed in desert canyons.	Low. Species has been extirpated from this section of historic range. Project area has limited fragments of suitable habitat. Riparian habitat corridors are narrow and structurally non-complex. The site is within the historical range for the species, but only two nesting events have been documented north of Santa Barbara County since prior to 1970s, in Stanislaus County (Howell et al. 2010). Two recent male sightings have been reported in Yolo County in 2010 and 2011 (CDFW 2014b) but no nesting has been confirmed.
Song sparrow (Modesto population) *Melospiza melodia*	–/SSC/–	Restricted to California. Locally numerous in the Sacramento Valley, Sacramento–San Joaquin River Delta, and northern San Joaquin Valley.	Historically associated with suitable freshwater wetlands and early successional riparian thickets. Current associations include moderately dense vegetation in riparian corridors for nesting, with accessible ground foraging areas (Gardali 2008)	Moderate. Historic records from Stockton, but riparian habitat within the study area may not be of sufficient density and structure for nest sites.

Common Name *Scientific Name*	Status[a] Fed/State/Other	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study area and Surrounding Region
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	–/SSC/–	Locally numerous in the Klamath Basin, Modoc Plateau, Great Basin desert, and large mountain valleys in northeastern California and in the San Joaquin Valley; common breeders in the Colorado River valley, Salton Sink, and the western Mojave Desert; scarce in the Sacramento Valley and along the southern coast in Los Angeles, Riverside, and San Bernardino Counties.	Nests in fresh emergent wetland with dense vegetation and deep water, frequently along the borders of lakes and ponds. Forages in emergent wetland and moist, open areas, especially croplands and muddy shores of lakes.	Low. No suitable nesting habitat in study area.
Mammals				
American badger *Taxidea taxus*	–/SSC/–	Occurs throughout California except in humid coastal northwestern forests in Del Norte and Humboldt Counties.	Occurs in a wide variety of open, arid habitats but are most commonly associated with grasslands, savannas, mountain meadows, and open areas of desert scrub; the principal habitat requirements for the species appear to be sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground.	None. No suitable habitat in study area.
California sea lion *Zalophus californianus*	–/–/ MMPA	California sea lions range from the Pacific coast of Central Mexico north to British Columbia, Canada. Their primary breeding range is from the Channel Islands in Southern California to Central Mexico. There is one stock of California sea lions in U.S. waters that ranges from the U.S./Mexico border and extends to Canada.	California sea lions reside in the Eastern North Pacific Ocean in shallow coastal and estuarine waters. Sandy beaches are preferred for haul out sites. In California, they haul out on marina docks as well as jetties and buoys.	High. Sea lions observed basking on the edge of Rough and Ready Island and in aquatic habitat in the San Joaquin River adjacent to the study area during reconnaissance field surveys in fall 2014. Suitable aquatic and basking habitat present in the study area.

Common Name *Scientific Name*	Status[a] Fed/State/Other	Geographic Distribution	Habitat Requirements	Potential Occurrence in Study area and Surrounding Region
Riparian brush rabbit *Sylvilagus bachmani riparius*	E/E/–	Limited to San Joaquin County at Caswell State Park near the confluence of the Stanislaus and San Joaquin Rivers and Paradise Cut area on Union Pacific right-of-way lands.	Native valley riparian habitats with large clumps of dense shrubs, low-growing vines, and some tall shrubs and trees.	None. Study area is outside known population sites. No suitable habitat in study area.
Pallid bat *Antrozous pallidus*	–/SSC/WBWG: H	Throughout California except the high Sierra from Shasta to Kern County and the northwest coast, primarily at lower and mid-level elevations. May occur in atypical habitat during seasonal movements.	Occurs in a variety of habitats from desert to coniferous forest; most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. Micro-habitat requirements include open areas for ground foraging, day roosts in crevices, also caverns or hollows, in trees, buildings, bridges, rock outcrops and caves.	Moderate. No CNDDB (CDFW 2014b) occurrences within 10 miles of the study area, though this is likely due to a lack of surveys in the area. Suitable roosting and foraging habitat occurs in the study area.
Western red bat *Lasiurus blossevillii*	–/SSC/WBWG-H	Scattered throughout much of California at lower elevations. Maternity records generally constrained to valley floor. Migratory species. May occur in atypical habitat during seasonal movements.	Found primarily in riparian and wooded habitats; occurs at least seasonally in urban areas; day roosts in trees within the foliage; found in fruit orchards, oak, eucalyptus and sycamore riparian habitats in the Central Valley.	High. No CNDDB (CDFW 2014b) occurrences within 10 miles of the study area, though this is likely due to a lack of surveys in the area. Suitable roosting and foraging habitat in the study area.

1

Sources:

California Department of Fish and Wildlife (CDFW). 2014a. Species account for *Lytta moesta.* Available: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects_-_Coleoptera/Lytta_moesta.pdf. Accessed: October 25, 2014.

California Department of Fish and Wildlife (CDFW). 2014b. *California Natural Diversity Database, RareFind 5*, Version 5, October, 2014 update. Records search of the Stockton West, Stockton East, Holt, Terminous, Lodi South, Waterloo, Manteca, Lathrop, and Union Island USGS 7.5-minute quadrangles. Sacramento, CA. Accessed October 7, 2014.

Gardali, T. 2008. Song Sparrow "Modesto" Population (*Melospiza melodia*). *In* Shuford, W.D., and Gardali, T., editors. 2008. *California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1*. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Hansen, Eric C. Wildlife Biologist-giant garter snake expert. Sacramento, CA, February 24, 2015. Email echansen@sbcglobal.net to Stephanie Myers, Wildlife biologist, ICF International, Sacramento, CA regarding the habitat suitability and potential for giant garter snake in the study area.

Howell, C. A., J. K. Wood, M. D. Dettling, K. Griggs, C. C. Otte, L. Lina, and T. Gardali. 2010. Least Bell's Vireo Breeding Records in the Central Valley Following Decades of Extirpation. *Western North American Naturalist* 70(1):105–113.

Western Bat Working Group. 2014. *Regional Bat Species Priority Matrix*. Available: http://www.wbwg.org/speciesinfo/species_matrix/spp_matrix.pdf. Accessed: October 23, 2014.

[a] Status explanations:

Federal

E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
PT = proposed for listing as threatened under the federal Endangered Species Act.
– = no listing.

State

E = listed as endangered under the California Endangered Species Act.
T = listed as threatened under the California Endangered Species Act.
FP = fully protected under the California Fish and Game Code.
SSC = species of special concern in California.
– = no listing.
MMPA = 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, 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.

Western Bat Working Group 2014.

H = High priority. Species are imperiled or at high risk of imperilment.

1

Appendix G.2

CNDDB and FWS Species Lists

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Taxonomic Group is (Fish or Amphibians or Reptiles or Birds or Mammals or Mollusks or Arachnids or Crustaceans or Insects) and Quad is (Stockton West (3712183) or Stockton East (3712182) or Holt (3712184) or Terminous (3812114) or Lodi South (3812113) or Waterloo (3812112) or Manteca (3712172) or Lathrop (3712173) or Union Island (3712174))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	None	G2G3	S1S2	SSC
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	SSC
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Hypomesus transpacificus Delta smelt	AFCHB01040	Threatened	Endangered	G1	S1	
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G4T1	S1	FP
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G3	S2S3	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Lytta moesta moestan blister beetle	IICOL4C020	None	None	G2	S2	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Oncorhynchus mykiss irideus steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Perognathus inornatus San Joaquin Pocket Mouse	AMAFD01060	None	None	G2G3	S2S3	
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Sylvilagus bachmani riparius riparian brush rabbit	AMAEB01021	Endangered	Endangered	G5T1	S1	
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Thamnophis gigas giant garter snake	ARADB36150	Threatened	Threatened	G2	S2	
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	
Xanthocephalus xanthocephalus yellow-headed blackbird	ABPBXB3010	None	None	G5	S3	SSC

Record Count: 22

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

October 15, 2014

Document Number: 141015042817

Lisa Webber
ICF International
630 K Street
Suite 400
Sacramento, CA 95814

Subject: Species List for Smith Canal Gate Project

Dear: Ms. Webber

We are sending this official species list in response to your October 15, 2014 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be January 13, 2015.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found http://www.fws.gov/sacramento/es/Branch-Contacts/es_branch-contacts.htm.

Endangered Species Division

TAKE PRIDE IN AMERICA

U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 141015042817

Current as of: October 15, 2014

Quad Lists

Listed Species

Invertebrates

Branchinecta lynchi
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Lepidurus packardi
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus mykiss
Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)

Rana draytonii
California red-legged frog (T)

Reptiles

Thamnophis gigas
giant garter snake (T)

Mammals

Sylvilagus bachmani riparius
riparian brush rabbit (E)

Plants

Cordylanthus palmatus
palmate-bracted bird's-beak (E)

Quads Containing Listed, Proposed or Candidate Species:

STOCKTON WEST (462A)

County Lists

San Joaquin County

Listed Species

Invertebrates

Branchinecta conservatio
Conservancy fairy shrimp (E)
Critical habitat, Conservancy fairy shrimp (X)

Branchinecta longiantenna
longhorn fairy shrimp (E)

Branchinecta lynchi
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Elaphrus viridis
delta green ground beetle (T)

Lepidurus packardi
Critical habitat, vernal pool tadpole shrimp (X)
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus mykiss
Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

Rana draytonii
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

Masticophis lateralis euryxanthus

Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

Thamnophis gigas
giant garter snake (T)

Birds

Rallus longirostris obsoletus
California clapper rail (E)

Vireo bellii pusillus
Least Bell's vireo (E)

Mammals

Neotoma fuscipes riparia
riparian (San Joaquin Valley) woodrat (E)

Sylvilagus bachmani riparius
riparian brush rabbit (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Amsinckia grandiflora
Critical habitat, large-flowered fiddleneck (X)
large-flowered fiddleneck (E)

Arctostaphylos myrtifolia
Ione manzanita (T)

Castilleja campestris ssp. succulenta
Critical habitat, succulent (=fleshy) owl's-clover (X)
succulent (=fleshy) owl's-clover (T)

Cordylanthus palmatus
palmate-bracted bird's-beak (E)

Lasthenia conjugens
Critical habitat, Contra Costa goldfields (X)

Orcuttia viscida
Critical habitat, Sacramento Orcutt grass (X)
Sacramento Orcutt grass (E)

Tuctoria greenei
Greene's tuctoria (=Orcutt grass) (E)

Candidate Species

Birds

Coccyzus americanus occidentalis

Western yellow-billed cuckoo (C)

Key:

(E) *Endangered* - Listed as being in danger of extinction.
(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.
Critical Habitat - Area essential to the conservation of a species.
(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
(C) *Candidate* - Candidate to become a proposed species.
(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

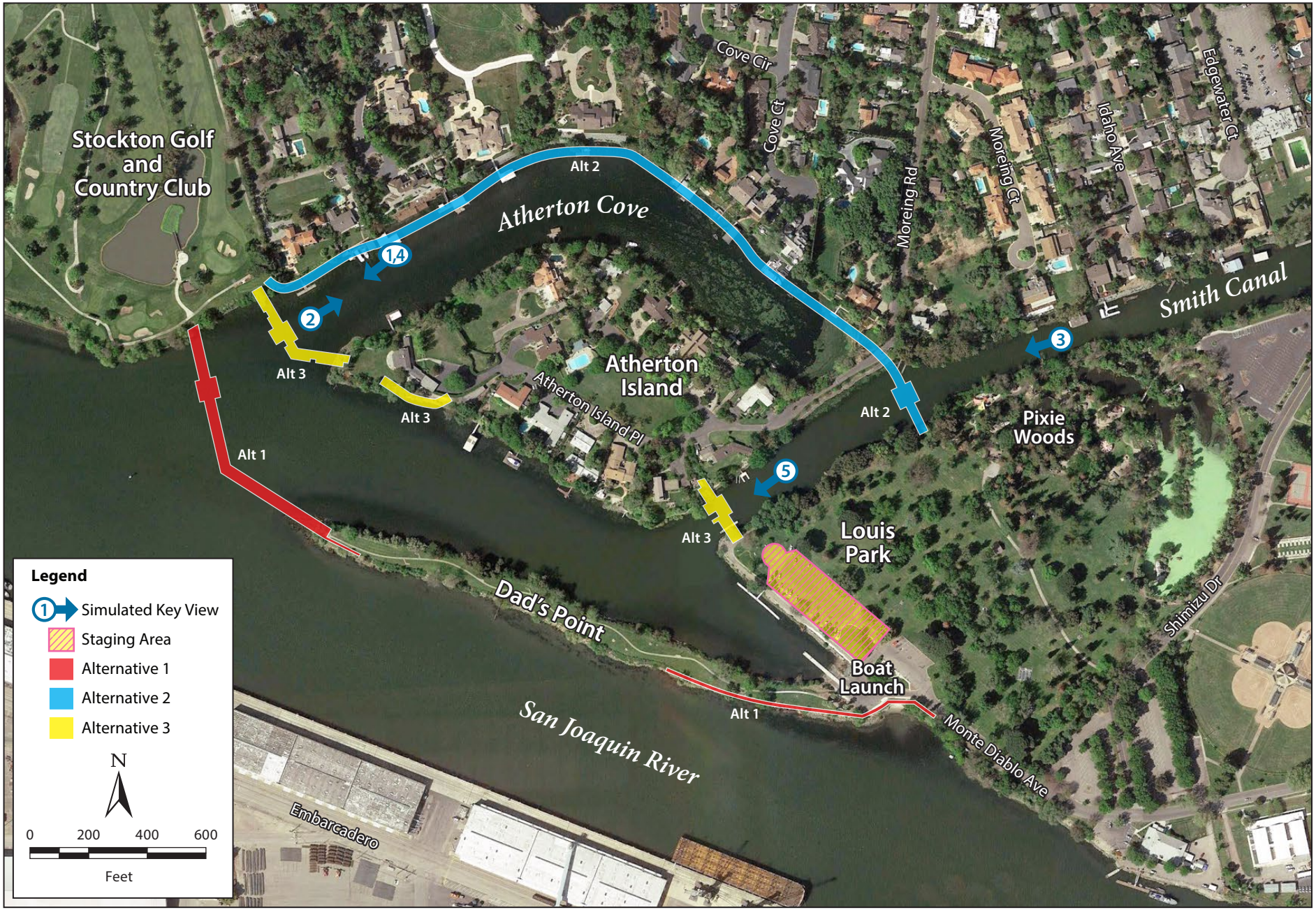
Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be January 13, 2015.

Appendix H

Visual Resources Technical Appendix

Appendix H.1

Visual Simulation Locations



Graphics ... 00150.14 (6-22-2015)

ICF INTERNATIONAL

Smith Canal Gate Project

Plate H-1
Visual Simulation Locations

Appendix H.2

Simulated Key View 1: Alternative 1, Atherton Cove Gate

Existing View



Simulated View



Graphics ... 00150.14 (6-15-2015) tm

ICF INTERNATIONAL

Smith Canal Gate Project

Plate H-2
Simulated Key View 1: Alternative 1, Atherton Cove Gate

Appendix H.3a

Simulated Key View 1: Alternative 1, Atherton Cove Gate with Mitigation—Option 1, Green





Graphics ... 00150.14 (6-15-2015) tm

ICF INTERNATIONAL

Smith Canal Gate Project

Plate H-3a
Simulated Key View 1: Alternative 1, Atherton Cove Gate with Mitigation—Option 1, Green

Appendix H.3b

Simulated Key View 1: Alternative 1, Atherton Cove Gate with Mitigation—Option 2, Blue





Graphics ... 00150.14 (6-16-2015) tm

ICF INTERNATIONAL

Smith Canal Gate Project

Plate H-3b
Simulated Key View 1: Alternative 1, Atherton Cove Gate with Mitigation—Option 2, Blue

Appendix H.4

Simulated Key View 2: Alternative 2, Atherton Cove Floodwall





Graphics ... 00150.14 (6-16-2015) tm

ICF INTERNATIONAL

Smith Canal Gate Project

Plate H-4
Simulated Key View 2: Alternative 2, Atherton Cove Floodwall

Appendix H.5

Simulated Key View 2: Alternative 2, Atherton Cove Floodwall with Mitigation





Graphics ... 00150.14 (6-22-2015) tm

ICF INTERNATIONAL

Smith Canal Gate Project

Plate H-5
Simulated Key View 2: Alternative 2, Atherton Cove Floodwall with Mitigation

Appendix H.6

Simulated Key View 3: Alternative 2, Smith Canal Gate





Graphics ... 00150.14 (6-22-2015) tm

ICF INTERNATIONAL

Smith Canal Gate Project

Plate H-6
Simulated Key View 3: Alternative 2, Smith Canal Gate

Appendix H.7

Simulated Key View 4: Alternative 3, Atherton Cove Gate





Graphics ... 00150.14 (6-16-2015) tm

ICF INTERNATIONAL

Smith Canal Gate Project

Plate H-7
Simulated Key View 4: Alternative 3, Atherton Cove Gate

Appendix H.8

Simulated Key View 5: Alternative 3, Smith Canal Gate





Graphics ... 00150.14 (6-16-2015).tm

ICF INTERNATIONAL

Smith Canal Gate Project

Plate H-8
Simulated Key View 5: Alternative 3, Smith Canal Gate

Appendix I

Cultural Resources Technical Appendix

July 8, 2014

Katy Sanchez
California Native American Heritage Commission
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691

Subject: Smith Canal Closure Structure Project – Sacred Lands File Search Request

Dear Ms. Sanchez:

This letter is a request for review of the Sacred Lands File for the location of the Smith Canal Closure Structure Project (Project). Any information you can provide is appreciated, and ICF International will contact appropriate tribal members whose names and addresses you provide.

The San Joaquin Area Flood Control Agency (SJAFCA), in partnership with Reclamation Districts (RD) 1614 and 828, is proposing to build, operate, and maintain a closure structure at the mouth of the Smith Canal adjacent to the San Joaquin River at the Stockton Deep Water Ship Channel, in the city of Stockton, County of San Joaquin. Presently, Smith Canal levees do not meet the Federal Emergency Management Agency (FEMA) minimum level of flood protection or the State's Urban Levee Design Criteria. Therefore, improvements are necessary to meet FEMA's minimum acceptable level of performance (commonly referred to as the 100-year flood) as specified by the National Flood Insurance Program. To address this risk, SJAFCA is proposing a fixed wall structure with a gated opening that would close only during flood events and maintenance, remaining open at other times to allow boat passage. The proposed closure device would provide flood protection at the Base Flood Elevation of 9.9 feet, resulting in 100-year flood protection to the community.

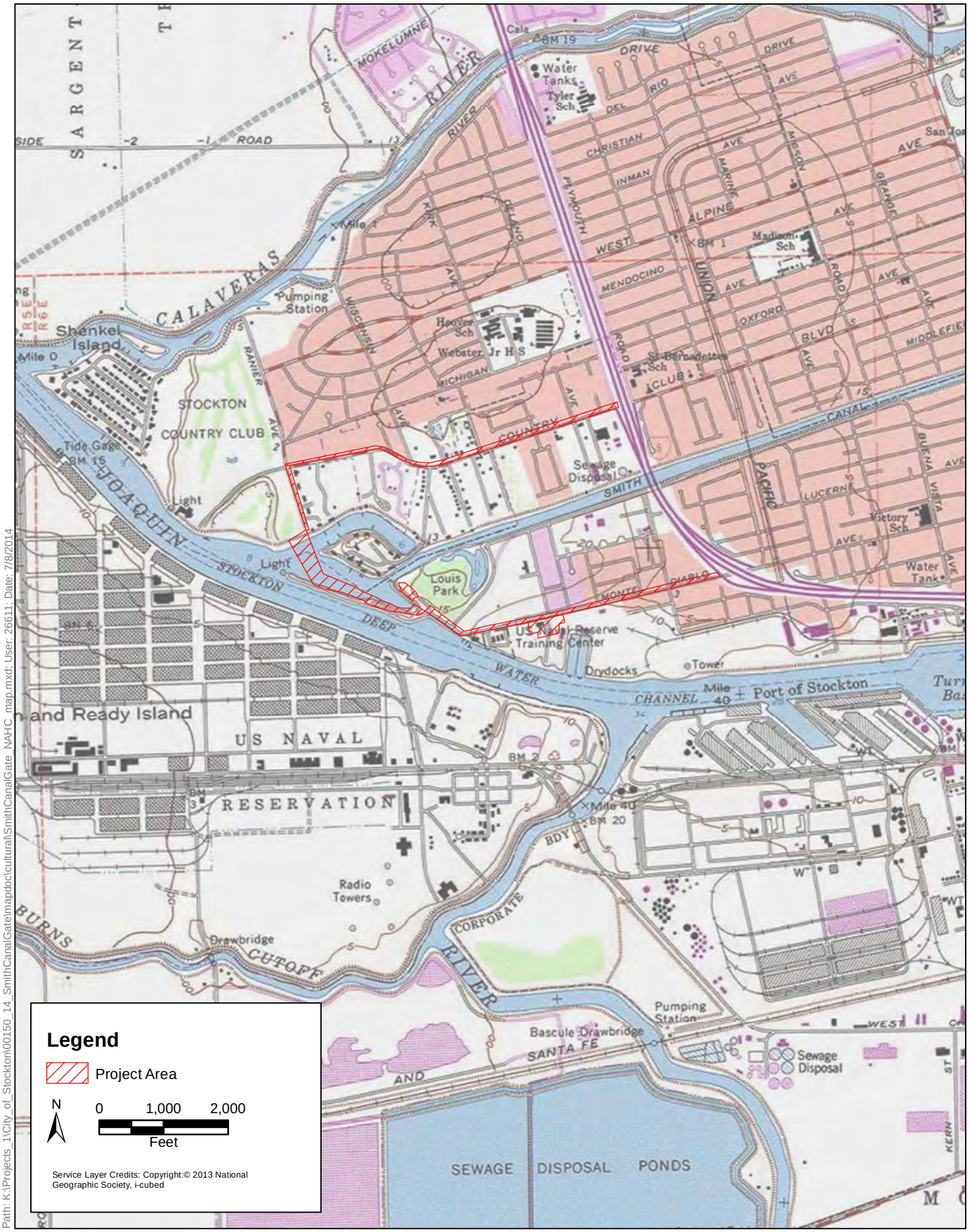
Specifically, the Project is located in an unsectioned portion of Township 1N, Range 6E, MDBM, as depicted on the Stockton West, California 7.5' USGS quadrangle. The attached map illustrates the Project Area.

If you have any questions please feel free to contact me by telephone at 916.231.7684 or e-mail at robin.hoffman@icfi.com. My fax number is 916.737.3030.

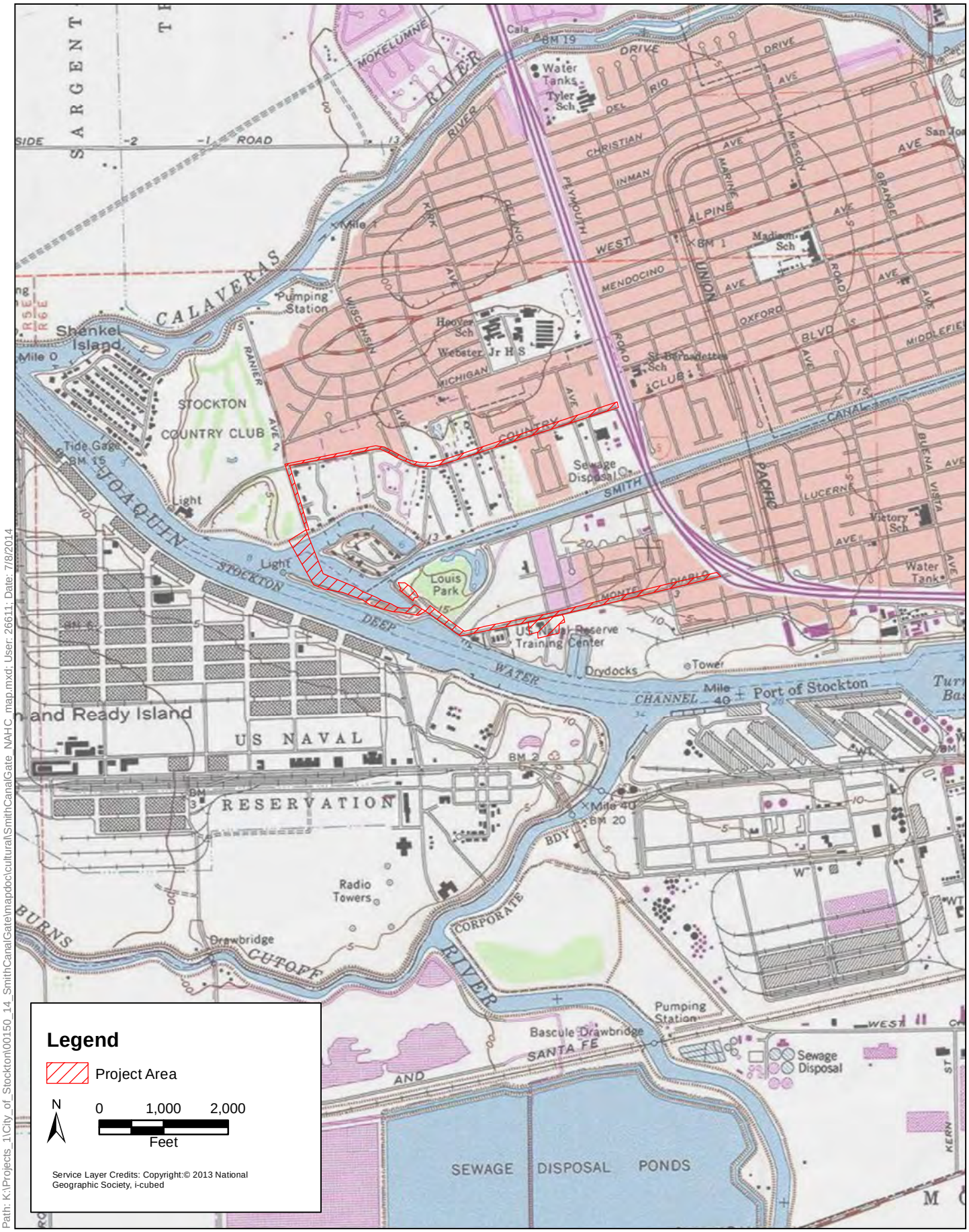
Sincerely,

Robin D. Hoffman
Archaeologist, MA, RPA

Attachments – Project Area Map



NAHC Sacred Lands File Search Request
Smith Canal Closure Structure Project



NAHC Sacred Lands File Search Request
Smith Canal Closure Structure Project

From: Hoffman, Robin
To: katy.sanchez@nahc.ca.gov
Bcc: Scantlebury, Meg
Subject: Sacred Lands File search request for Smith Canal Closure Structure Project
Date: Tuesday, July 08, 2014 2:55:00 PM
Attachments: NAHC_request_SmithCanalGateProject_Jul082014.pdf

---

Katy,

I would like to request a Sacred Lands File search and list of Native American contacts for our Smith Canal Closure Structure Project. The formal request is attached. If you have any questions please let me know.

Thank you,
-Robin

Robin D. Hoffman, MA, RPA | Senior Consultant – Archaeologist | 916.231.7684 (w) | **707.494.3349 (c)** | 916.737.3030 (f) | robin.hoffman@icfi.com | icfi.com
ICF INTERNATIONAL | 630 K Street, Suite 400, Sacramento, CA 95814 | 916.737.3000
Please consider the environment before printing this e-mail.

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

July 16, 2014

Robin D. Hoffman
ICF International
630 K Street, Suite 400
Sacramento, CA 95814

Sent by Fax: 916 737-3030
Number of Pages: 2

Re: Smith Canal Closure Structure Project, San Joaquin County.

Dear Ms. Hoffman,

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3712.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Government Program Analyst

Native American Contact List
San Joaquin County
July 16, 2014

Katherine Erolinda Perez
P.O. Box 717
Linden , CA 95236
canutes@verizon.net
(209) 887-3415

Ohlone/Costanoan
Northern Valley Yokuts
Bay Miwok

North Valley Yokuts Tribe
Katherine Erolinda Perez
P.O. Box 717
Linden , CA 95236
canutes@verizon.net
(209) 887-3415

Ohlone/Costanoan
Northern Valley Yokuts
Bay Miwok

Southern Sierra Miwuk Nation
Lois Martin, Chairperson
P.O. Box 186
Mariposa , CA 95338
(209) 742-6867 Office

Miwok
Pauite
Northern Valley Yokut

Southern Sierra Miwuk Nation
Les James, Spiritual Leader
P.O. Box 1200
Mariposa , CA 95338
(209) 966-3690

Miwok
Pauite
Northern Valley Yokut

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.
This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Smith Canal Closure Structure Project, San Joaquin County.

July 20, 2014

Southern Sierra Miwok Nation
Les James, Spiritual Leader
P. O. Box 1200
Mariposa, CA 95338

Subject: Smith Canal Closure Structure Project

Dear Mr. James:

The San Joaquin Area Flood Control Agency (SJAFCA), in partnership with Reclamation Districts (RD) 1614 and 828, is proposing to build, operate, and maintain a closure structure at the mouth of the Smith Canal adjacent to the San Joaquin River at the Stockton Deep Water Ship Channel, in the city of Stockton, County of San Joaquin. Presently, Smith Canal levees do not meet the Federal Emergency Management Agency (FEMA) minimum level of flood protection or the State's Urban Levee Design Criteria. Therefore, improvements are necessary to meet FEMA's minimum acceptable level of performance (commonly referred to as the 100-year flood) as specified by the National Flood Insurance Program. To address this risk, SJAFCA is proposing a fixed wall structure with a gated opening that would close only during flood events and maintenance, remaining open at other times to allow boat passage. The proposed closure device would provide flood protection at the Base Flood Elevation of 9.9 feet, resulting in 100-year flood protection to the community.

ICF International (ICF) has been retained to conduct a cultural resources survey and inventory of the Project Area. As part of this study, ICF contacted the Native American Heritage Commission (NAHC) in request of information about any cultural resources on file in the NAHC Sacred Lands File. The NAHC did not identify any resources of concern in the Project Area, but did identify you as a person who may have concerns or knowledge of cultural resources at the locality. We are writing to invite you to participate in cultural resource studies for the Project. Any information you might be able to share about the Project Area and vicinity would enhance the overview and be most appreciated.

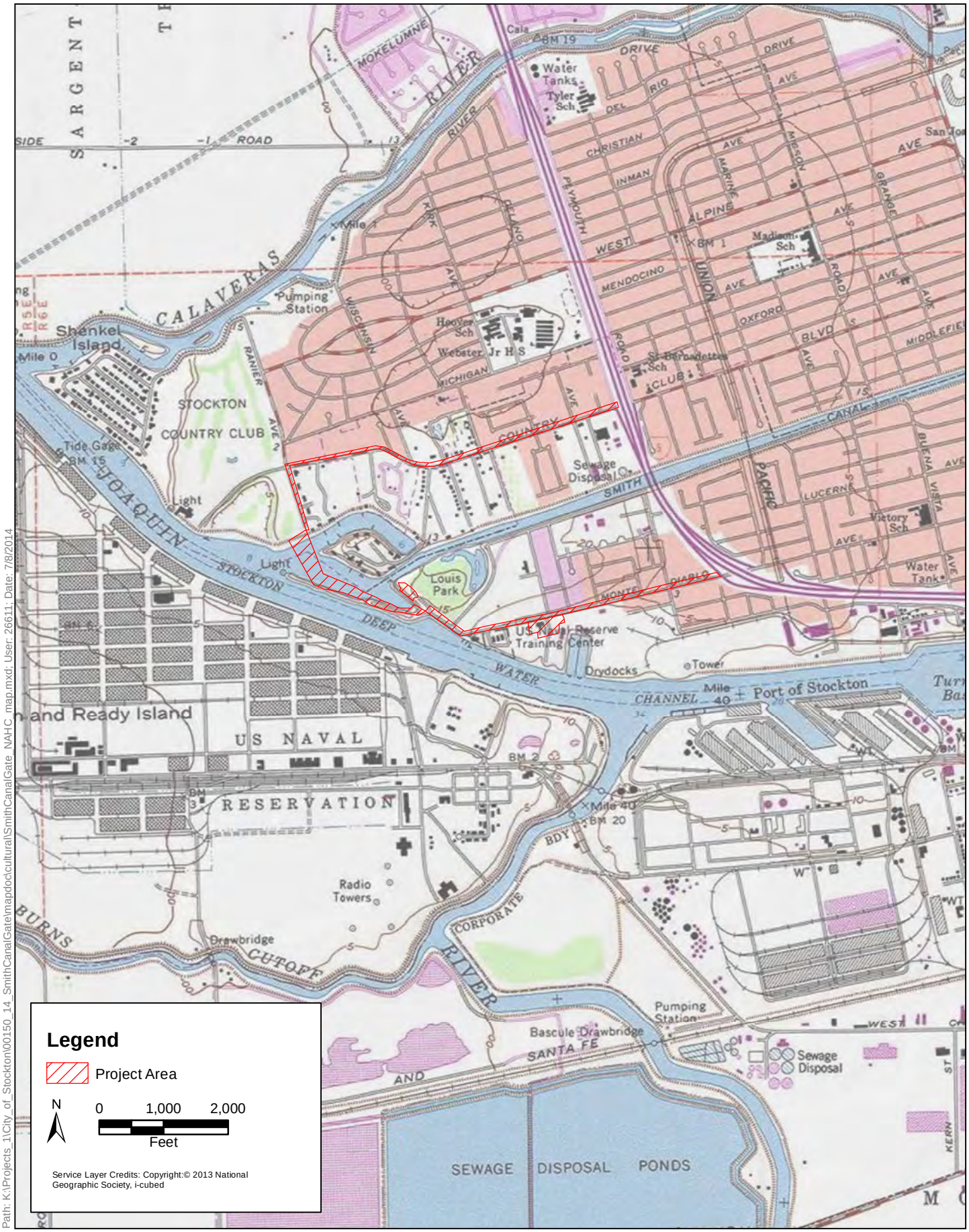
If you would like to participate in the consultation process, or have any recommendations regarding the Project, please address them to me for inclusion in our draft report. Per State law, all culturally sensitive information will be kept strictly confidential. If you have any questions please contact me by telephone at 916.231.7684 or e-mail at robin.hoffman@icfi.com. Our fax number is 916.737.3030.

Sincerely,

Robin D Hoffman

Robin D. Hoffman
Archaeologist, MA, RPA

Enclosure
Figure 1 – Project Area Map



Project Area
Smith Canal Closure Structure Project

July 20, 2014

Southern Sierra Miwok Nation
Lois Martin, Chairperson
P. O. Box 186
Mariposa, CA 95338

Subject: Smith Canal Closure Structure Project

Dear Ms. Martin:

The San Joaquin Area Flood Control Agency (SJAFCA), in partnership with Reclamation Districts (RD) 1614 and 828, is proposing to build, operate, and maintain a closure structure at the mouth of the Smith Canal adjacent to the San Joaquin River at the Stockton Deep Water Ship Channel, in the city of Stockton, County of San Joaquin. Presently, Smith Canal levees do not meet the Federal Emergency Management Agency (FEMA) minimum level of flood protection or the State's Urban Levee Design Criteria. Therefore, improvements are necessary to meet FEMA's minimum acceptable level of performance (commonly referred to as the 100-year flood) as specified by the National Flood Insurance Program. To address this risk, SJAFCA is proposing a fixed wall structure with a gated opening that would close only during flood events and maintenance, remaining open at other times to allow boat passage. The proposed closure device would provide flood protection at the Base Flood Elevation of 9.9 feet, resulting in 100-year flood protection to the community.

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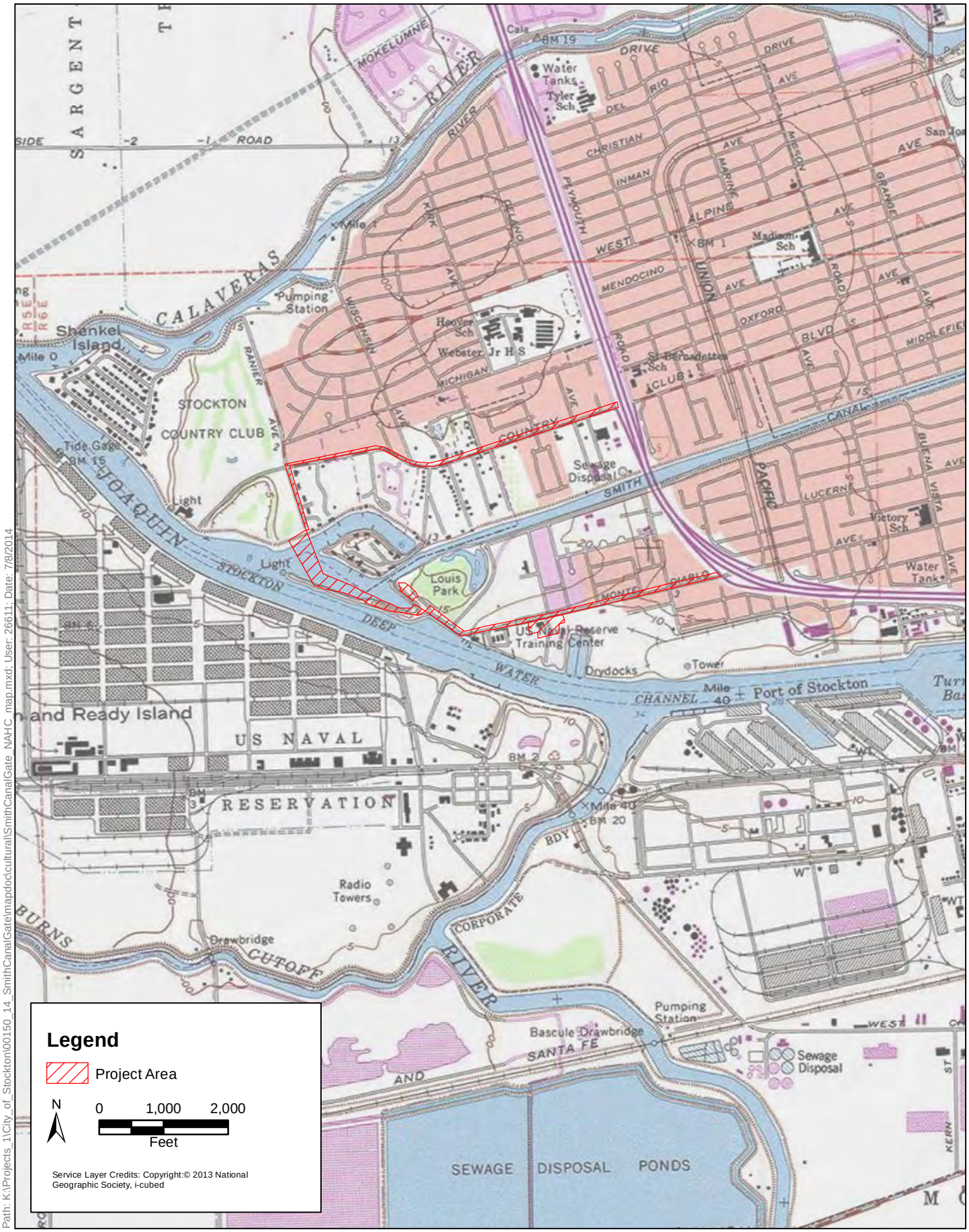
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Robin D Hoffman

Robin D. Hoffman
Archaeologist, MA, RPA

Enclosure
Figure 1 – Project Area Map



Project Area
Smith Canal Closure Structure Project

July 20, 2014

North Valley Yokuts Tribe
Katherine Erolinda Perez
P. O. Box 717
Linden, CA 95236

Subject: Smith Canal Closure Structure Project

Dear Ms. Perez:

The San Joaquin Area Flood Control Agency (SJAFCA), in partnership with Reclamation Districts (RD) 1614 and 828, is proposing to build, operate, and maintain a closure structure at the mouth of the Smith Canal adjacent to the San Joaquin River at the Stockton Deep Water Ship Channel, in the city of Stockton, County of San Joaquin. Presently, Smith Canal levees do not meet the Federal Emergency Management Agency (FEMA) minimum level of flood protection or the State's Urban Levee Design Criteria. Therefore, improvements are necessary to meet FEMA's minimum acceptable level of performance (commonly referred to as the 100-year flood) as specified by the National Flood Insurance Program. To address this risk, SJAFCA is proposing a fixed wall structure with a gated opening that would close only during flood events and maintenance, remaining open at other times to allow boat passage. The proposed closure device would provide flood protection at the Base Flood Elevation of 9.9 feet, resulting in 100-year flood protection to the community.

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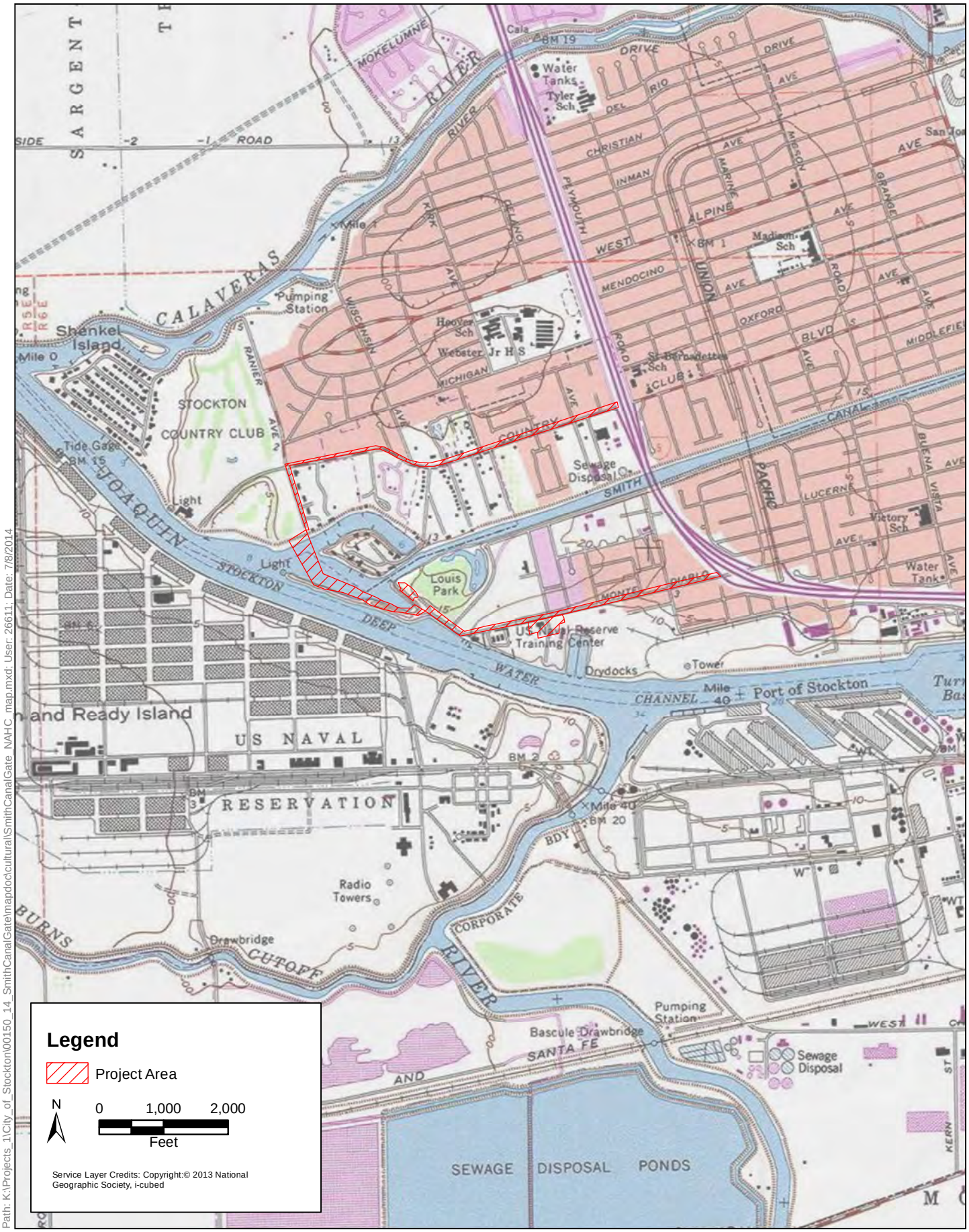
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Sincerely,

Robin D Hoffman

Robin D. Hoffman
Archaeologist, MA, RPA

Enclosure
Figure 1 – Project Area Map



Project Area
Smith Canal Closure Structure Project

October 1, 2014

Cesar Chavez Central Library
Special Collections
605 N. El Dorado street
Stockton, CA 95202

Subject: Smith Canal Closure Structure Project

To whom it may concern:

ICF International is conducting a cultural resources study for the San Joaquin Area Flood Control Agency (SJAFCA), which is proposing the Smith Canal Closure Structure Project (project). SJAFCA proposes to design and construct a gate-type closure structure at the mouth of the Smith Canal adjacent to the San Joaquin River/Stockton Deep Water Channel in and adjacent to the city of Stockton (see enclosed maps).

The proposed project is needed because 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. Consequently, approximately 8,000 properties and approximately 24,000 people face an increased flood risk.

Implementing this project will achieve removal of the affected region from the 100-year floodplain (a "100-year flood event" is one that has a 1% chance of occurring in any given year). It will also contribute toward 200-year protection, in combination with other projects, and secure FEMA accreditation and eliminate mandatory flood insurance for property owners.

As part of our study, we are consulting all regional historical organizations to determine if there are any known historic or cultural resources within the study area that may be affected by the proposed project. Your efforts in this process will provide invaluable information for the proper identification and treatment of such resources.

If you have any questions or comments regarding cultural resources in the proposed project area, please feel free to call me at (916) 231-9544 or send an email to me at Monte.Kim@icfi.com. All comments and letters received will be included in the reports generated by this study. Thank you very much for your time regarding our request.

Sincerely,

Monte Kim, Ph.D.
Architectural Historian

630 K Street, Suite 400 — Sacramento, CA 95814 — 916.737.3000 — 916.737.3030 fax — icfi.com


Lower Calaveras Canal
Stockton
San Joaquin River
Smith Canal
Project Site
Rough & Ready Island
4


N Ryde Ave
Plymouth Rd
Country Club Blvd
Stockton Golf & Country Club
Smith Canal
Atherton Is
Study Area
Louis Park
5
West Side Fwy
San Joaquin River

October 1, 2014

Haggin Museum
1201 N. Pershing Avenue
Stockton, CA 95203

Subject: Smith Canal Closure Structure Project

To whom it may concern:

ICF International is conducting a cultural resources study for the San Joaquin Area Flood Control Agency (SJAFCA), which is proposing the Smith Canal Closure Structure Project (project). SJAFCA proposes to design and construct a gate-type closure structure at the mouth of the Smith Canal adjacent to the San Joaquin River/Stockton Deep Water Channel in and adjacent to the city of Stockton (see enclosed maps).

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Stockton Golf & Country Club
Smith Canal
Atherton Is
Study Area
Louis Park
5
West Side Fwy
San Joaquin River

October 1, 2014

Jedediah Smith Society
P.O. Box 7937
Stockton, CA 95203

Subject: Smith Canal Closure Structure Project

To whom it may concern:

ICF International is conducting a cultural resources study for the San Joaquin Area Flood Control Agency (SJAFCA), which is proposing the Smith Canal Closure Structure Project (project). SJAFCA proposes to design and construct a gate-type closure structure at the mouth of the Smith Canal adjacent to the San Joaquin River/Stockton Deep Water Channel in and adjacent to the city of Stockton (see enclosed maps).

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San Joaquin River

October 1, 2014

San Joaquin County Historical Society and Museum
11793 N. Micke Grove Road
Lodi, CA 95240

Subject: Smith Canal Closure Structure Project

To whom it may concern:

ICF International is conducting a cultural resources study for the San Joaquin Area Flood Control Agency (SJAFCA), which is proposing the Smith Canal Closure Structure Project (project). SJAFCA proposes to design and construct a gate-type closure structure at the mouth of the Smith Canal adjacent to the San Joaquin River/Stockton Deep Water Channel in and adjacent to the city of Stockton (see enclosed maps).

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N Ryde Ave
Plymouth Rd
Country Club Blvd
Stockton Golf & Country Club
Smith Canal
Atherton Is
Study Area
Louis Park
5
West Side Fwy
San Joaquin River

October 1, 2014

Stockton Corral of Westerners
P.O. Box 1315
Stockton, CA 95201

Subject: Smith Canal Closure Structure Project

To whom it may concern:

ICF International is conducting a cultural resources study for the San Joaquin Area Flood Control Agency (SJAFCA), which is proposing the Smith Canal Closure Structure Project (project). SJAFCA proposes to design and construct a gate-type closure structure at the mouth of the Smith Canal adjacent to the San Joaquin River/Stockton Deep Water Channel in and adjacent to the city of Stockton (see enclosed maps).

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Appendix J

Public Comment Period Summary Report

Memorandum

Date:	October 5, 2015
To:	Juan Neira, SJAFCA Dave Peterson, PBI
Cc:	Kim Floyd, Floyd Communication
From:	Megan Smith, ICF International Stefanie Lyster, ICF International
Subject:	**Smith Canal Gate Project Draft EIR** **Public Comment Period Summary Report**

Introduction

To comply with the California Environmental Quality Act (CEQA), the San Joaquin Area Flood Control Agency (SJAFCA) has prepared a Draft Environmental Impact Report (Draft EIR) for the Smith Canal Gate Project (project). The Draft EIR analyzes and discloses the potential effects the project may have on the natural and human environment and identifies mitigation measures and alternatives to avoid significant effects. SJAFCA is the project proponent and lead agency under CEQA.

Per State CEQA Guidelines Section 15082, SJAFCA prepared and filed 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. The NOP contained a brief description of the project and its probable environmental effects; the date, time, and place of the public scoping meeting; and lead agency contact information. On the afternoon of June 24, 2014, the NOP was hand-delivered to the State Clearinghouse and filed with the County of San Joaquin Clerk/Recorder's Office. The 30-day comment period began on June 25, 2014, and ended on July 25, 2014. On June 26, 2014, the NOP was mailed by certified mail directly to 18 responsible, trustee, and interested agencies, as well as parties who had previously submitted written requests for information concerning the project. Receipt of all copies was confirmed by USPS return receipt.

After considering all comments received during the scoping period, SJAFCA completed and released the Draft EIR on June 24, 2015. The 45-day CEQA public comment period to receive public input on the document was conducted from June 25, 2015 to August 10, 2015. This memorandum summarizes the public outreach effort associated with the release of the Draft EIR and comment period. It also includes a high-level summary of comments received during that period.

Noticing

All public notices prepared in support of the Draft EIR are available for review as attachments to this report.

Notice of Availability (NOA)

In compliance with the requirements set forth in CEQA, 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 24, 2015, SJAFCA mailed the NOA directly to responsible and trustee agencies, cooperating Federal agencies, and other interested parties that had previously requested notice of the Draft EIR's release in writing, A copy of the NOA is included as part of Attachment A.

Notice of Completion (NOC) and Draft EIR Distribution

On June 24, 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. On June 24, 2015, SJAFCA also directly distributed Draft EIRs to responsible and trustee agencies, as well as cooperating Federal agencies, by USPS.

On June 25, 2015, following discovery of an omission in the Draft EIR, compact discs containing revisions to the Draft EIR were sent to Responsible and Trustee Agencies and involved Federal agencies by USPS. SJAFCA refiled the NOC with the State Clearinghouse, along with 15 revised copied of the Draft EIR on compact disc for State Clearinghouse distribution to responsible and trustee agencies. A copy of the NOCs are included as part of Attachment A.

On June 24, 2015, hard copies of the Draft EIR were made available for review at the San Joaquin County Public Library, Chavez Central, 605 N. El Dorado Street, Stockton, California, 95202, and Stockton City Hall, 425 N. El Dorado Street, Stockton, California, 95202, as well as at the SJAFCA offices.

Legal Notice

A legal notice briefly introducing the lead agency, describing the proposed project, publicizing the release of the Draft EIR, and announcing public meetings was published in the *Stockton Record* newspaper on June 24, 2015. 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. A copy of the legal notice is included as part of Attachment A.

Mailings

SJAFCA mailed approximately 9,000 postcards to residents on June 24, 2015, to make them aware of the availability of the document and the public meeting on July 8, 2015. The document was sent to all property owners that are a part of SJAFCA's assessment district, and to anyone who had previously attended a scoping meeting, commented during a scoping period, or otherwise inquired about the project. A copy of the postcard is provided as Attachment B.

Website

SJAFCA has maintained a project website to publicize the project and alert the public when project-related documentation is available for public review. To publicize the public meetings and release of the Draft EIR in advance of the public meeting, the Draft EIR and NOA were posted on the SJAFCA website at: http://www.sjafca.com/smith_canal_closure.php. The materials presented at the meetings, discussed below, were also posted on SJAFCA's project website after the meetings to serve as a public record of the event and for the review of those unable to attend the meeting. A screenshot of the webpage is included as Attachment C.

Public Meetings

Meeting Format and Materials

A public meeting was held to inform the public about the proposed project and the conclusions of the Draft EIR analysis. The meeting was held on July 8, 2015, from 5 to 7 p.m. at the Stockton Civic Auditorium, South Hall, located at 525 North Center Street in Stockton. The meeting time was chosen to accommodate the widest variety of interested members of the public as well as public agency staff members.

A 25-minute presentation was given approximately 30 minutes after the meeting started to briefly introduce the agency and its role, the project, objectives, schedule, the CEQA process, the public comment period, alternatives analyzed, and next steps.

The meeting was held in an open-house style, in which attendees could view information about the proposed project and the Draft EIR on poster boards displayed throughout the meeting room, review information in the Draft EIR, and interact with project staff, including SJAFCA and consultant staff from Peterson Brustad, Inc., ICF International, and Kim Floyd Communications.

Approximately 14 graphic displays were available for attendees to view. The boards described and illustrated the project purpose, need, and objectives, alternatives analyzed, environmental considerations, and the CEQA process. Several visual simulations of the proposed project

alternatives were also displayed. Project staff were stationed at the display boards to provide additional detail and answer questions.

A display board with the 3 project alternatives compared side-by-side was displayed and meeting participants were asked to place a sticker on their preferred alternative. This exercise was conducted to gauge public sentiment on the alternatives. Meeting participants were expressly informed that their placing a sticker on the display board was not a "vote" for the project that would be used to make a decision, but an exercise in understanding public preferences toward the alternatives.

A fact sheet was available for attendees to read and take with them. The fact sheet provided information related to the Smith Canal Gate Project and its objectives, the purpose and content of the Draft EIR, and the public comment period.

Comment cards were offered so that meeting attendees could provide feedback on the project. These cards could be filled out during the meeting and given to a project team member or filled out after the meeting and sent to SJAFCA representatives by the close of the comment period. Additionally, a court reporter was present at the meeting to record verbal public comments.

Attachment D contains copies of the following materials.

- PowerPoint presentation at meetings
- Display boards
- Fact sheet
- Comment card
- Public comment transcript

Meeting Attendance and Comment Received

A total of 53 people attended the public meeting. All written comments received will be included in the Final EIR. Below is a summary of recurring topics expressed in the comments received at the meeting and throughout the comment period.

- Project construction and implementation will 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 was 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.

Generally, commenters expressed concern or requested more information about the following issues.

- The necessity of the proposed project, stating that the area around Smith Canal has not flooded previously.
- Whether or not the gate design meets Urban Levee Design Criteria.
- Greater detail on cost and funding mechanisms for proposed mitigation measures.
- Whether construction of the gates will result in flooding in upstream portions of Smith Canal.

Next Steps and Recommendations

SJAFCA will consider all written and oral comments in deciding which alternative(s) to select and implement. SJAFCA will respond to all comments through preparation of a Final EIR for release in fall of 2014. SJAFCA will document its alternative selection in a CEQA Notice of Determination. SJAFCA will continue its outreach efforts to landowners and other stakeholders through its cooperation with its outreach consultant, Kim Floyd Communications.

Attachment A

- Notice of Availability for Public Review
- Notice of Completion & Environmental Document Transmittal
- *Stockton Record* legal notice

FILED

ASSESSOR RECORDER
COUNTY CLERK
KENNETH W. BLAKEMORE

2015 JUN 23 AM 11:58

SAN JOAQUIN COUNTY

BY Amy M. Rivera
DEPUTY

Notice of Availability for Public Review

To: ☒ Interested Individuals
State Clearinghouse
Responsible Agencies
Trustee Agencies

From: San Joaquin Area Flood Control Agency
22 East Weber Avenue, Room 301
Stockton, CA 95202
(Lead Agency and Address)
Contact: Roger Churchwell, (209) 937-7900

☒ County Clerk, County of San Joaquin
44 North San Joaquin Street
Second Floor, Suite 260
Stockton, CA 95202

Subject: **NOTICE OF AVAILABILITY FOR PUBLIC REVIEW OF THE SJAFCA SMITH CANAL GATE PROJECT DRAFT ENVIRONMENTAL IMPACT REPORT**

This is to advise that San Joaquin Area Flood Control Agency *(Lead Agency)* has prepared a(n)

☐ Negative Declaration or Mitigated Negative Declaration ☒ Environmental Impact Report

for the project described below. As mandated by state law, the public review period for this document is:

Negative Declaration	EIR
☐ 21 days (Negative Declaration was not submitted to the State Clearinghouse for review)	☐ 30 days (Draft EIR was not submitted to the State Clearinghouse for review)
☐ 30 days (Negative Declaration was submitted to the State Clearinghouse for review)	☒ 45 days (Draft EIR was submitted to the State Clearinghouse for a normal 45-day review)
☐ 21 days (State Clearinghouse granted a shortened review period for the Negative Declaration)	☐ 30 days (State Clearinghouse granted a shortened review period for the Draft EIR)

The Draft EIR can be viewed online at http://www.sjafca.com/smith_canal_closure.php.

It is also available for review at:
- San Joaquin County Public Library, Chavez Central, 605 N. El Dorado Street, Stockton, California, 95202
- Stockton City Hall, 425 N. El Dorado Street, Stockton, California, 95202

The comment period for this EIR is **Wednesday, June 24, 2015 through Monday, August 10, 2015**.

A public hearing has been scheduled by San Joaquin Area Flood Control Agency to receive comments on the document.

Date: July 8, 2015
Time: 5:00 p.m. – 7:00 p.m.
Place: Stockton Memorial Civic Auditorium, 525 North Center Street, Stockton, CA 95202

Notice of Availability for Public Review, continued
SJAFCA Smith Canal Gate Project

Comment can also be provided in writing via mail or email to the address below, postmarked or emailed no later than 5:00 p.m. on August 10, 2015. If commenting on behalf of a public agency or non-governmental organization, please include the name of a contact person.

Contact:
Megan Smith, Project Manager
ICF International
630 K Street, Suite 400
Sacramento, CA 95814
Email: megan.smith@icfi.com

Project Title: Smith Canal Gate Project

Project Location – Specific: 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.

Project Description – Brief: The San Joaquin Area Flood Control Agency is proposing the Smith Canal Gate 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.

Significant Environmental Impacts: The Draft Enivornmental Impact Report (DEIR) analyzes the project's potential environmental effects and proposes mitigation measures that may reduce those effects. The proposed project may result in significant environmental effects to water quality and groundwater resources; transportation and navigation; air quality; noise; vegetation and wetlands; fish and aquatic resources; wildlife; visual resources; recreation; utilities and public services; public health and environmental hazards; and cultural resources. Effects are described in greater detail in Table 1, attached.

Listed Toxic Site: ☐ Yes ☒ No **Explanation:**

Signature: Roger Churchwell Date: 6/23/15

Title: Deputy Executive Director Telephone: 937-7900

Table 1. Summary of Impacts and Mitigation Measures for the Smith Canal Gate Project

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
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
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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Water Quality and Groundwater Resources, con't.			
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
	Transportation and Navigation			
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
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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Transportation and Navigation, con't.			
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
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
	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-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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Air Quality, con't.			
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
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
	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
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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Noise, con't.			
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
	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 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
1	Impact VEG-2: Loss of Nonnative Riparian 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 Loss of Nonnative Riparian Habitat	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands, con't.			
1	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 Mitigation Measure VEG -MM-3: Compensate for Loss of Tidal Emergent Wetland	less than significant
1	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
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 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, con't.			
1	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
1	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
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 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, con't.			
2	Impact VEG-2: Loss of Nonnative Riparian 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 Loss of Nonnative Riparian Habitat	less than significant
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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands, con't.			
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
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, con't.			
3	Impact VEG-2: Loss of Nonnative Riparian 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 Loss of Nonnative Riparian Habitat	less than significant
3	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
3	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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands, con't.			
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, con't.			
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, con't.			
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-6: 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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Wildlife, con't.			
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, con't.			
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 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
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 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
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 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
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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Wildlife, con't.			
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 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
3	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, con't.			
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

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, con't.			
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, con't.			
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-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
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
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
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

Table 1. Summary of Impacts and Mitigation Measures for the Smith Canal Gate Project

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
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
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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Water Quality and Groundwater Resources, con't.			
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
	Transportation and Navigation			
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
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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Transportation and Navigation, con't.			
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
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
	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-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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Air Quality, con't.			
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
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
	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
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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Noise, con't.			
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
	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 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
1	Impact VEG-2: Loss of Nonnative Riparian 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 Loss of Nonnative Riparian Habitat	less than significant

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands, con't.			
1	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 Mitigation Measure VEG -MM-3: Compensate for Loss of Tidal Emergent Wetland	less than significant
1	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
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 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, con't.			
1	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
1	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
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 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, con't.			
2	Impact VEG-2: Loss of Nonnative Riparian 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 Loss of Nonnative Riparian Habitat	less than significant
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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands, con't.			
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
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, con't.			
3	Impact VEG-2: Loss of Nonnative Riparian 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 Loss of Nonnative Riparian Habitat	less than significant
3	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
3	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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Vegetation and Wetlands, con't.			
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, con't.			
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, con't.			
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-6: 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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Wildlife, con't.			
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, con't.			
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 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
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 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
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 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
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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Wildlife, con't.			
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 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
3	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, con't.			
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

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, con't.			
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, con't.			
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-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
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
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
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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Recreation, con't.			
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
	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-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-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-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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Recreation, con't.			
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
	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-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-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-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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	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
	Cultural Resources			
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

Alt	Impact	Level of Significance	Mitigation Measure	Significance after Mitigation
	Cultural Resources, con't.			
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-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

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Smith Canal Gate Project

Lead Agency: San Joaquin Area Flood Control Agency | Contact Person: Roger Churchwell
Mailing Address: 22 E Weber Avenue, Room 301 | Phone: (209) 937-7900
City: Stockton | Zip: 95202 | County: San Joaquin

Project Location: County: San Joaquin | City/Nearest Community: Stockton
Cross Streets: Monte Diablo, Moreing Road, Virginia Ln | Zip Code: 95203
Longitude/Latitude (degrees, minutes and seconds): 37 ° 57 ′ 23 ″ N / 121 ° 20 ′ 59 ″ W | Total Acres:
Assessor's Parcel No.: 133-060-09, 133-060-01 | Section: 6 | Twp.: 1N | Range: 6E | Base: Mt. Diablo
Within 2 Miles: State Hwy #: 5 | Waterways: San Joaquin River, Smith Canal,
Airports: N/A | Railways: N/A | Schools: See below.

Document Type:

CEQA: ☐ NOP ☒ Draft EIR ☐ Supplement/Subsequent EIR (Prior SCH No.) ☐ Early Cons ☐ Neg Dec ☐ Mit Neg Dec Other:
NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI
Other: ☐ Joint Document ☐ Final Document ☐ Other:

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Local Action Type:

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan
☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan
☐ Rezone ☐ Prezone ☐ Use Permit ☐ Land Division (Subdivision, etc.)
☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☒ Other: Board Approval

Development Type:

☐ Residential: Units ____ Acres ____
☐ Office: Sq.ft. ____ Acres ____ Employees ____
☐ Commercial: Sq.ft. ____ Acres ____ Employees ____
☐ Industrial: Sq.ft. ____ Acres ____ Employees ____
☐ Educational: ____
☐ Recreational: ____
☐ Water Facilities: Type ____ MGD ____
☐ Transportation: Type ____
☐ Mining: Mineral ____
☐ Power: Type ____ MW ____
☐ Waste Treatment: Type ____ MGD ____
☐ Hazardous Waste: Type ____
☒ Other: Flood Risk Reduction Project - Gate Structure

Project Issues Discussed in Document:

☒ Aesthetic/Visual
☐ Agricultural Land
☒ Air Quality
☒ Archeological/Historical
☒ Biological Resources
☐ Coastal Zone
☒ Drainage/Absorption
☐ Economic/Jobs
☐ Fiscal
☒ Flood Plain/Flooding
☐ Forest Land/Fire Hazard
☒ Geologic/Seismic
☐ Minerals
☒ Noise
☐ Population/Housing Balance
☒ Public Services/Facilities
☒ Recreation/Parks
☐ Schools/Universities
☐ Septic Systems
☐ Sewer Capacity
☒ Soil Erosion/Compaction/Grading
☒ Solid Waste
☒ Toxic/Hazardous
☒ Traffic/Circulation
☒ Vegetation
☒ Water Quality
☒ Water Supply/Groundwater
☒ Wetland/Riparian
☒ Growth Inducement
☒ Land Use
☒ Cumulative Effects
☒ Other: Climate Change

Present Land Use/Zoning/General Plan Designation:

General Industrial, Public Facilities/Commercial, Parks and Recreation

Project Description: *(please use a separate page if necessary)*

The San Joaquin Area Flood Control Agency is proposing the Smith Canal Gate 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. Schools: Commodore Stockton Skills School, Claudia Landeen School, Tyler Elementary, Brookside School, and Madison School.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

____	Air Resources Board	X	Office of Historic Preservation
S	Boating & Waterways, Department of	____	Office of Public School Construction
X	California Emergency Management Agency	X	Parks & Recreation, Department of
____	California Highway Patrol	____	Pesticide Regulation, Department of
S	Caltrans District # 10	____	Public Utilities Commission
____	Caltrans Division of Aeronautics	S	Regional WQCB # 5
____	Caltrans Planning	____	Resources Agency
S	Central Valley Flood Protection Board	____	Resources Recycling and Recovery, Department of
____	Coachella Valley Mtns. Conservancy	____	S.F. Bay Conservation & Development Comm.
____	Coastal Commission	____	San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
____	Colorado River Board	X	San Joaquin River Conservancy
____	Conservation, Department of	____	Santa Monica Mtns. Conservancy
____	Corrections, Department of	S	State Lands Commission
X	Delta Protection Commission	____	SWRCB: Clean Water Grants
____	Education, Department of	X	SWRCB: Water Quality
____	Energy Commission	____	SWRCB: Water Rights
S	Fish & Game Region # 3	____	Tahoe Regional Planning Agency
____	Food & Agriculture, Department of	____	Toxic Substances Control, Department of
____	Forestry and Fire Protection, Department of	S	Water Resources, Department of
____	General Services, Department of		
____	Health Services, Department of	S	Other: SJ Valley Air Pollution Control District
____	Housing & Community Development	S	Other: SJ County Mosquito and Vector Control District
S	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date June 24, 2015 Ending Date August 10, 2015

Lead Agency (Complete if applicable):

Consulting Firm: ICF International
Address: 630 K Street, Suite 400
City/State/Zip: Sacramento, CA 95814
Contact: Megan Smith
Phone: (916) 231-7677

Applicant: San Joaquin Area Flood Control Agency
Address: 22 East Weber Avenue, Suite 301
City/State/Zip: Stockton, CA 95202-2317
Phone: (209) 937-7900

Signature of Lead Agency Representative: _____ **Date:** _____

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #2014062079

Project Title: Smith Canal Gate Project

Lead Agency: San Joaquin Area Flood Control Agency | Contact Person: Roger Churchwell
Mailing Address: 22 E Weber Avenue, Room 301 | Phone: (209) 937-7900
City: Stockton | Zip: 95202 | County: San Joaquin

Project Location: County: San Joaquin | City/Nearest Community: Stockton
Cross Streets: Monte Diablo, Moreing Road, Virginia Ln | Zip Code: 95203
Longitude/Latitude (degrees, minutes and seconds): 37 ° 57 ′ 23 ″ N / 121 ° 20 ′ 59 ″ W Total Acres:
Assessor's Parcel No.: 133-060-09, 133-060-01 | Section: 6 | Twp.: 1N | Range: 6E | Base: Mt. Diablo
Within 2 Miles: State Hwy #: 5 | Waterways: San Joaquin River, Smith Canal,
Airports: N/A | Railways: N/A | Schools: See below.

Document Type:

CEQA: ☐ NOP ☒ Draft EIR ☐ NEPA: ☐ NOI ☐ Other: ☐ Joint Document
☐ Early Cons ☐ Supplement/Subsequent EIR ☐ EA ☐ Final Document
☐ Neg Dec (Prior SCH No.) ☐ Draft EIS ☐ Other:
☐ Mit Neg Dec Other: ☐ FONSI

RECEIVED
JUN 25 2015
2:22 PM
STATE CLEARING HOUSE

Local Action Type:

☐ General Plan Update ☐ Specific Plan ☐ Rezone ☐ Annexation
☐ General Plan Amendment ☐ Master Plan ☐ Prezone ☐ Redevelopment
☐ General Plan Element ☐ Planned Unit Development ☐ Use Permit ☐ Coastal Permit
☐ Community Plan ☐ Site Plan ☐ Land Division (Subdivision, etc.) ☒ Other: Board Approval

Development Type:

☐ Residential: Units _____ Acres _____
☐ Office: Sq.ft. _____ Acres _____ Employees _____
☐ Commercial: Sq.ft. _____ Acres _____ Employees _____
☐ Industrial: Sq.ft. _____ Acres _____ Employees _____
☐ Educational:
☐ Recreational:
☐ Water Facilities: Type _____ MGD _____
☐ Transportation: Type
☐ Mining: Mineral
☐ Power: Type _____ MW
☐ Waste Treatment: Type _____ MGD
☐ Hazardous Waste: Type
☒ Other: Flood Risk Reduction Project - Gate Structure

Project Issues Discussed in Document:

☒ Aesthetic/Visual ☐ Fiscal ☒ Recreation/Parks ☒ Vegetation
☐ Agricultural Land ☒ Flood Plain/Flooding ☐ Schools/Universities ☒ Water Quality
☒ Air Quality ☐ Forest Land/Fire Hazard ☐ Septic Systems ☒ Water Supply/Groundwater
☒ Archeological/Historical ☒ Geologic/Seismic ☐ Sewer Capacity ☒ Wetland/Riparian
☒ Biological Resources ☐ Minerals ☒ Soil Erosion/Compaction/Grading ☒ Growth Inducement
☐ Coastal Zone ☒ Noise ☒ Solid Waste ☒ Land Use
☒ Drainage/Absorption ☐ Population/Housing Balance ☒ Toxic/Hazardous ☒ Cumulative Effects
☐ Economic/Jobs ☒ Public Services/Facilities ☒ Traffic/Circulation ☒ Other: Climate Change

Present Land Use/Zoning/General Plan Designation:

General Industrial, Public Facilities/Commercial, Parks and Recreation

Project Description: *(please use a separate page if necessary)*

The San Joaquin Area Flood Control Agency is proposing the Smith Canal Gate 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. Schools: Commodore Stockton Skills School, Claudia Landeen School, Tyler Elementary, Brookside School, and Madison School.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

____	Air Resources Board	S	Office of Historic Preservation
S	Boating & Waterways, Department of	____	Office of Public School Construction
X	California Emergency Management Agency	S	Parks & Recreation, Department of
____	California Highway Patrol	____	Pesticide Regulation, Department of
S	Caltrans District #10	____	Public Utilities Commission
____	Caltrans Division of Aeronautics	S	Regional WQCB #5
____	Caltrans Planning	____	Resources Agency
S	Central Valley Flood Protection Board	____	Resources Recycling and Recovery, Department of
____	Coachella Valley Mtns. Conservancy	____	S.F. Bay Conservation & Development Comm.
____	Coastal Commission	____	San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
____	Colorado River Board	X	San Joaquin River Conservancy
S	Conservation, Department of	____	Santa Monica Mtns. Conservancy
____	Corrections, Department of	S	State Lands Commission
S	Delta Protection Commission	____	SWRCB: Clean Water Grants
____	Education, Department of	X	SWRCB: Water Quality
____	Energy Commission	____	SWRCB: Water Rights
S	Fish & Game Region #3	____	Tahoe Regional Planning Agency
____	Food & Agriculture, Department of	____	Toxic Substances Control, Department of
____	Forestry and Fire Protection, Department of	S	Water Resources, Department of
____	General Services, Department of		
____	Health Services, Department of	S	Other: SJ Valley Air Pollution Control District
____	Housing & Community Development	S	Other: SJ County Mosquito and Vector Control District
S	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date June 25, 2015 Ending Date August 10, 2015

Lead Agency (Complete if applicable):

Consulting Firm: ICF International
Address: 630 K Street, Suite 400
City/State/Zip: Sacramento, CA 95814
Contact: Megan Smith
Phone: (916) 231-7677

Applicant: San Joaquin Area Flood Control Agency
Address: 22 East Weber Avenue, Suite 301
City/State/Zip: Stockton, CA 95202-2317
Phone: (209) 937-7900

Signature of Lead Agency Representative: _____ **Date:** 6/25/15

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

THE RECORD
PROOF OF PUBLICATION

STATE OF CALIFORNIA
COUNTY OF SAN JOAQUIN

THE UNDERSIGNED SAYS:

I am a citizen of the United States and a resident of San Joaquin County; I am over the age of 18 years and not a part to or interested in the above-entitled matter. I am the principal clerk of the printer of THE RECORD, a newspaper of general publication, printed and published daily in the City of Stockton, County of San Joaquin by the Superior Court of the County of San Joaquin, State of California, under the date of February 26, 1952, File No. 52857, San Joaquin County Records; that the notice of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published each regular and entire issue of said newspaper and not in any supplement thereof on the following dates,
To wit, June 24 2015

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 24, 2015 In Stockton California

Carlette Schnell,
The Record

0001042119

Notice of Availability of Draft Environmental Impact Report for the Smith Canal Gate Project
June 24, 2015

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. A Draft Environmental Impact Report (EIR) has been prepared that analyzes the project's potential environmental effects and proposes mitigation measures that may reduce those effects. The Draft EIR is available for public review and comment effective June 24, 2015 through August 10, 2015.

Project Description and 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 the Stockton Golf and Country Club is located in unincorporated San Joaquin County. Louis Park, including Dad's Point, is in the city of Stockton.

Significant Effects. Implementation of the project may result in significant environmental effects to water quality and groundwater resources; transportation and navigation; air quality; noise; vegetation and wetlands; fish and aquatic resources; wildlife; visual resources; recreation; utilities and public services; public health and environmental hazards; and cultural resources.

Comments Solicited. SJAFCA is taking public comments on the project's Draft EIR. The public comment period begins June 24, 2015 and is open through August 10, 2015. The Draft EIR can be viewed online at http://www.sjafca.com/smith_canal_closure.php. It is also available for review at the San Joaquin County Public Library, Chavez Central, 605 N. El Dorado Street, Stockton, California, 95202 and Stockton City Hall, 425 N. El Dorado Street, Stockton, California, 95202. Members of the public may meet with SJAFCA representatives and provide comments on the Draft EIR by attending a public meeting on **July 8, 2015, from 5:00-7:00 p.m. at the Stockton Civic Auditorium, South Hall, 525 N. Center St, Stockton, California, 95202**. A presentation will start 30 minutes after the meeting begins. Interested parties are also invited to comment in writing during the comment period. **Send comments via mail or email to the address below, postmarked or emailed no later than 5:00 p.m. on August 10, 2015.** If commenting on behalf of a public agency or non-governmental organization, please include the name of a contact person.

Contact:
Megan Smith, Project Manager
ICF International
630 K Street, Suite 400
Sacramento, CA 95814
Email: megan.smith@icfi.com

#1042119

Attachment B

- Postcard to residents

5.8 x 4 in (Front)

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Join us to make comments on the Smith Canal Gate Project Draft EIR!

The San Joaquin Area Flood Control Agency (SJAFCA) is proposing the **Smith Canal Gate Project**, near the mouth of Smith Canal, to reduce area flooding. The proposed project would construct a fixed wall with a gate structure to isolate the canal from the San Joaquin River, reducing flood risk for approximately 8,000 properties and 24,000 people.

Join Us! SJAFCA has released a Draft Environmental Impact Report (EIR) that is available for public review and comment. The Draft EIR analyzes the impacts of the proposed project and its alternatives on resources including water quality, recreation, fish, wildlife and air quality. A public meeting will be held so interested parties can learn about likely environmental impacts and mitigation measures; ask questions of staff during an open house session; and make comments on the Draft EIR.

PUBLIC MEETING | **Wednesday, July 8, 2015, 5 p.m. –7 p.m.**
Stockton Civic Auditorium – South Hall, 525 N. Center Street, Stockton, CA

Anyone who is interested in making a public comment on the Draft EIR can do so by attending the public meeting or submitting a comment in writing to Megan Smith, Project Manager, ICF International, 630 K Street, Suite 400, Sacramento, CA 95814 or *megan.smith@icfi.com*. Comments must be received by Monday, August 10, 2015. Visit *http://www.sjafca.com/smith_canal_closure.php* to learn more about the project and download a copy of the Draft EIR.

Reasonable accommodations will be made for persons with disabilities attending the public meeting. Please contact Stefanie Lyster at *stefanie.lyster@icfi.com* 72 hours prior to the meeting.

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Join us to make comments on the Smith Canal Gate Project Draft EIR!

The San Joaquin Area Flood Control Agency (SJAFCA) is proposing the Smith Canal Gate Project, near the mouth of Smith Canal, to reduce area flooding. The proposed project would construct a fixed wall with a gate structure to isolate the canal from the San Joaquin River, reducing flood risk for approximately 8,000 properties and 24,000 people.

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Reasonable accommodations will be made for persons with disabilities attending the public meeting. Please contact Stefanie Lyster at stefanie.lyster@icfi.com 72 hours prior to the meeting.

5.8 x 4 in (Back)

ICF International
630 K Street, Suite 400
Sacramento, CA 95814
Attn: Stefanie Lyster

Smith Canal Gate Project Draft EIR available for public review.

ICF International
630 K Street, Suite 400
Sacramento, CA 95814
Attn: Stefanie Lyster

Smith Canal Gate Project Draft EIR available for public review.

Attachment C

- SJAFCA webpage screenshot

Search

Search

Home | SJAFCA History | News | Projects ▸ | Maps | Finances

- Board of Directors
- Staff
- Board Meetings
- Contact Us
- Related Links

Home > Projects > Smith Canal Gate Structure

PROJECTS - Smith Canal Gate Structure

The Draft Environmental Impact Report for Smith Canal Gate Project Available for Review and Comment

The Smith Canal Gate Project Draft EIR was uploaded for public review on June 24, 2015, and updated on June 25, 2015. The comment period will conclude on August 10, 2015, as originally noted, exceeding the 45-day CEQA-required public comment period.

SJAFCA is proposing the Smith Canal Gate Project to design and construct a gate structure at the mouth of Smith Canal adjacent to the San Joaquin River in and adjacent to the city of Stockton. The proposed project is needed because 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), placing approximately 8,000 properties and approximately 24,000 people at increased risk from flooding. The proposed project would close off Smith Canal during high flow and tide events, allowing existing Smith Canal levees to function as a secondary risk-reduction measure.

SJAFCA, as the lead agency under the California Environmental Quality Act (CEQA), determined that an Environmental Impact Report (EIR) should be prepared to analyze the impacts of the project on resources such as water quality, recreation, fish, wildlife, aesthetics, and air quality. The Draft EIR is available for public review and comment beginning June 24, 2015 through August 10, 2015. The following files are available to download for review:

- CEQA Notice of Availability
- Smith Canal Gate Project Draft EIR - UPDATED JUNE 25, 2015 with Technical Appendices

SJAFCA invites the public to review the Draft EIR and provide input on the alternatives considered and analyzed for the project. Anyone who is interested in commenting on the Draft EIR can do so by attending the public meeting or submitting a comment in writing to Megan Smith, Project Manager, ICF International, 630 K Street, Suite 400, Sacramento, CA 95814 or megan.smith@icfi.com. Comments must be received or postmarked by Monday, August 10, 2015.

A public meeting was held on July 8, 2015, to inform the public about likely environmental impacts and mitigation measures, and make comments on the Draft EIR. The materials presented and distributed at the meeting are available for information by clicking on the links below.

- Meeting Presentation
- Informational Display Boards
- Informal Polling - Smith Canal Alternatives
- Fact Sheet
- Comment Card

Related Documents

- July 8, 2015 Community Meeting
- Scoping Meeting Comment Card
- Scoping Meeting
- Potential Alternatives
- Smith Canal NOP
- EIP Funding Request
- Funding Agreement for Design
- Construction Grant (UFRR)
- Quarterly Reports
- Appeals Process
- Archives

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Attachment D

- PowerPoint presentation at meetings
- Display boards
- Fact sheet
- Comment card
- Transcript of July 8, 2015 public meeting oral comments

Smith Canal Gate Project

Draft Environmental Impact Report Public Meeting

Wednesday, July 8, 2015

Meeting Purpose

- Provide summary of Draft Environmental Impact Report (DEIR)
- Take public comment on DEIR
- Provide update on overall program

Meeting Groundrules

- Comments will be addressed in the Final EIR, not directly answered tonight
- Public comment limited to 3 minutes
- Comments will be transcribed by a court reporter
- Stations set up around room to provide more information

Kim Floyd – Public Outreach Manager

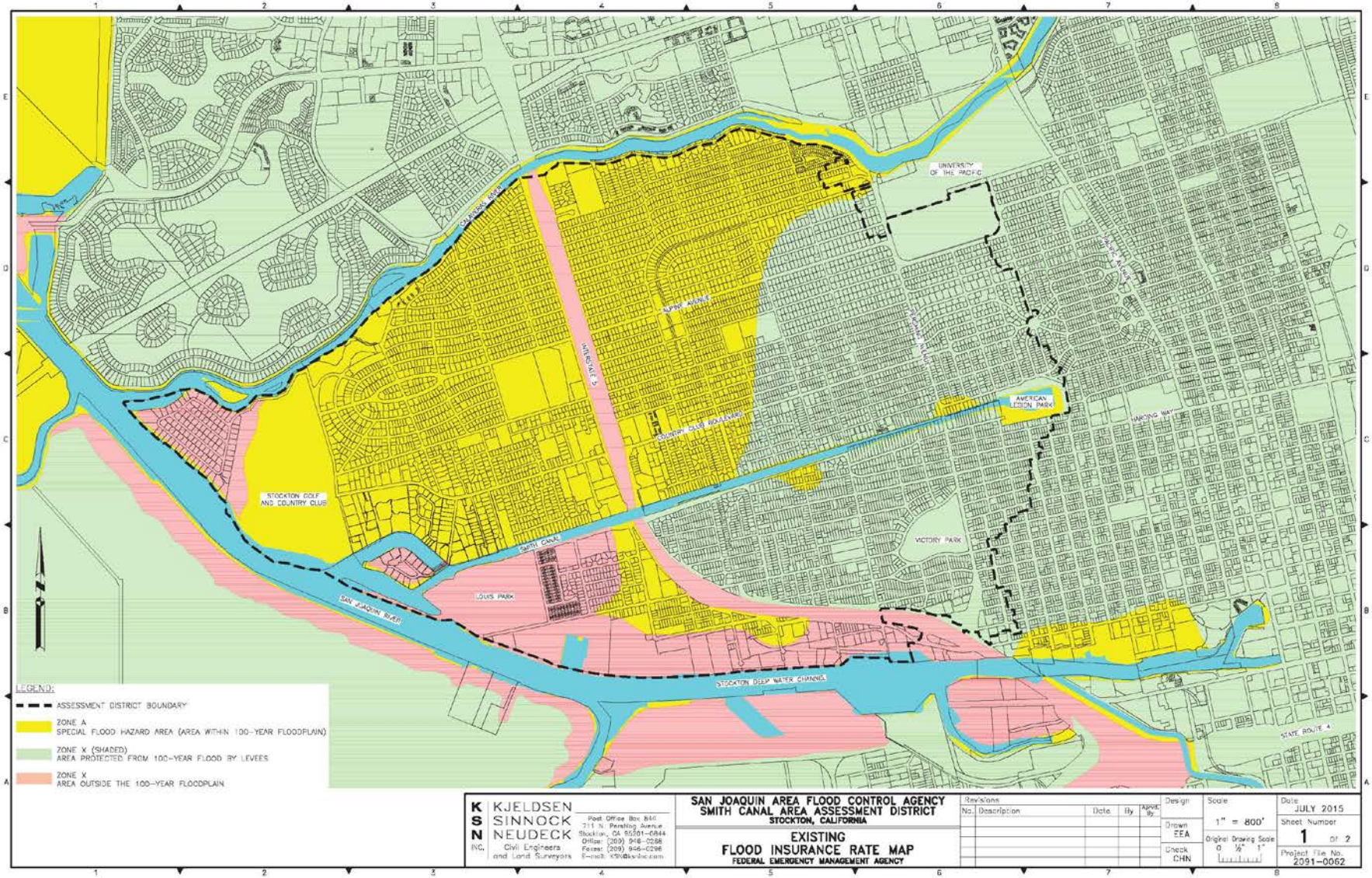
PROJECT OVERVIEW

Why the Smith Canal Gate Project?

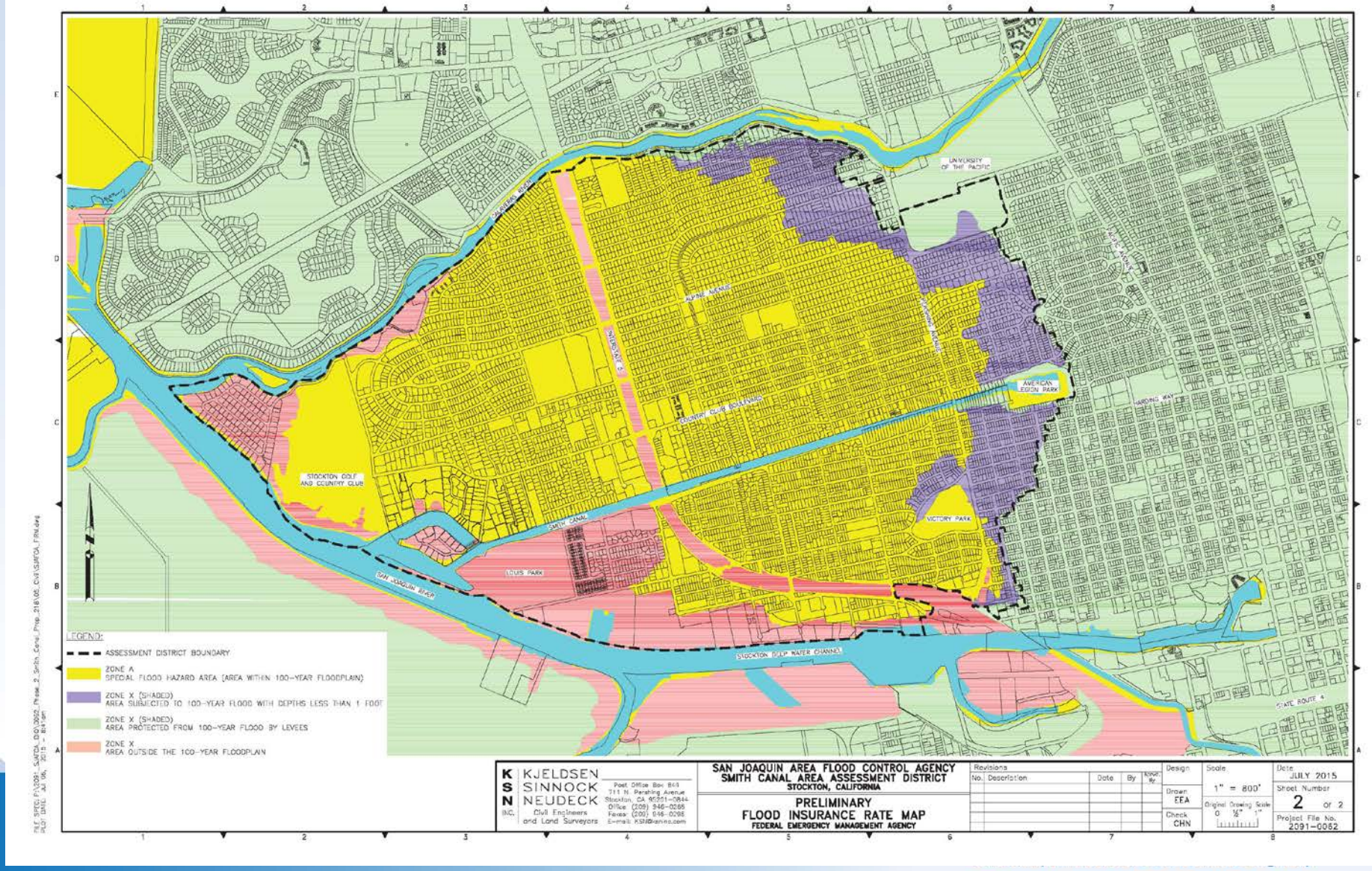
- Smith Canal levees do not meet Federal Emergency Management Agency (FEMA) standards
  - Levee encroachments
- FEMA Special Flood Hazard Area
  - First properties “mapped” in 2009
  - Additional properties to be mapped
  - Requires mandatory flood insurance
  - Building restrictions
    - Elevation for new/replacement construction and significant repairs/remodels



Existing FEMA Map



Proposed FEMA Map



Solution: Isolate Smith Canal from Delta

Floodwall with Operable Gate

- Meets FEMA standards
- Closed when high water is predicted and as needed for gate testing
- Open all other times
- Meets state standards (Urban Levee Design Criteria)

Comparison of Project Alternatives

	Alternative 1 Single Gated Wall to Dad's Point (Proposed Project)	Alternative 2 Atherton Cove floodwall with Smith Canal Gate	Alternative 3 Dual Gated Walls to Atherton Cove and Smith Canal
Cost	$29 million to construct	**Cost:** $51 million to construct	**Cost:** $42 million to construct
Funding	• Received conditional approval from DWR for $22.3 million • Existing property assessment is sufficient for local share of project cost	• Received conditional approval from DWR for $22.3 million • Existing property assessment is insufficient for local share of project cost, which necessitates a new property assessment to cover increased cost	• Received conditional approval from DWR for $22.3 million • Existing property assessment is insufficient for local share of project cost, which necessitates a new property assessment to cover increased cost
Benefits	• FEMA approved CLOMR • Climate change resiliency for Atherton Island • Shortest construction schedule • Can be constructed within limits of current property assessment	• Reduced aesthetic impacts for Atherton Cove residents • Visual and recreational connectivity with San Joaquin River maintained	• Reduced aesthetic impacts for Atherton Cove residents • Visual and recreational connectivity with San Joaquin River maintained

Project Funding

- State grant: $2.4 million for design and environmental work
- Assessment District adopted to pay local cost share of design, construction and O&M (July 2013)
- Board authorized $3.5 million contract with PBI (Nov. 2013)
  - Task Order 1 ($1.4 million): Environmental Impact Report and public outreach
  - *Future task orders for design, permitting and right of way*
- $22.3 million state grant for construction conditionally approved (May 15, 2015)

State Funding Limits

- Department of Water Resources funding for the project will be based on the least costly alternative (Alternative 1)
- If a more costly alternative is selected (either Alternative 2 or Alternative 3), another Prop 218 would be required to fund the increased costs

Project Schedule

- **November 2015**: EIR complete; selection of the preferred alternative and design authorization
- **December 2016**: Design complete
- **March 2017**: Permitting complete
- **April 2017**: Construction begins
- **December 2018**: Construction complete

Questions

Visit us at **www.sjafca.com**
for the latest project information

Call the hotline to speak to a
project team member
(209) 487-1387

Megan Smith – Project Manager

DRAFT ENVIRONMENTAL IMPACT REPORT (DEIR)

CEQA Process

- SJAFCA conducting environmental review for Smith Canal Gate Project because undertaking a project that requires governmental approvals
- DEIR analyzes significant impacts on built and human environment as well as avoidance/ mitigation measures
- SJAFCA seeking public comment on DEIR
  - 45-day comment period closes August 10, 2015
  - Public encouraged to provide substantive comments on alternatives analyzed and impacts on environmental resources

CEQA Timeline

- Scoping process (Solicit public input to be considered in EIR)
- Prepare DEIR
- Circulate DEIR for public review ***(we are here)***
- Respond to comments and prepare Final EIR
- SJAFCA Board selects alternative, adopts project, and certifies the Final EIR
- SJAFCA Board authorizes design

Alternatives Analyzed in DEIR

- Three alternatives analyzed in DEIR
- All 3 alternatives:
  - address flood risk
  - intend to remove the area from the 100-year floodplain
  - aim to meet FEMA's minimum acceptable level of performance of withstanding a 100-year
- Each alternative includes:
  - variations of a gated fixed wall structure
  - recreational and habitat improvements to Dad's Point
  - installation of culverts under Moreing Road to improve water circulation in that area

Alternatives Analyzed in DEIR

Alternative 1

- Fixed-wall structure with an opening gate, extending from Dad's Point to golf course

Alternative 2

- Fixed-wall structure with an opening gate, extending across Smith Canal
- 2,300-foot floodwall along the existing levee between Moreing Road and the golf course

Alternative 3

- Two fixed-wall structures, each with an opening gate
  - One wall extending from Louis Park to Atherton Island
  - One wall extending from the northwestern side of Atherton Island to the golf course

Resources Analyzed

The DEIR examines the impacts the project could have on:

- Flood Risk, Hydrology and Geomorphology
- Water Quality
- Transportation and Navigation
- Air Quality
- Greenhouse Gases and Climate Change
- Noise
- Vegetation and Wetlands
- Fish and Aquatic Resources
- Wildlife
- Visual Resources
- Recreation
- Public Services and Utilities
- Public Health and Hazards
- Cultural Resources

DEIR Public Comment Period

- Provides opportunity for public and agency comment on the project, the alternatives analysis in the DEIR, and associated mitigation
- Informs the design element of the project
- Comments due August 10, 2015
- All comments on environmental issues (per CEQA Guidelines sec. 15088) will be reviewed and responded to in the Final EIR (November 2015)

We Want to Hear from You

- Fill out a comment card and turn it in tonight
- Submit a verbal comment tonight to court reporter
- Mail us a self-addressed comment card
  by August 10, 2015
- Send written comments to:

  Megan Smith, ICF International
  630 K Street, Suite 400, Sacramento, CA 95814
- Send comments via email to megan.smith@icfi.com

All comments must be received or postmarked by Monday, August 10, 2015

Kim Floyd – Public Outreach Manager

PUBLIC INPUT AND NEXT STEPS

Dot Voting Exercise

- SJAFCA would like feedback on your preferred project alternative
- Please review the “Dot Voting” board at the back of the room that compares the 3 alternatives side-by-side
- Place a dot under your preferred alternative
  - The number of dots under each alternative will assist SJAFCA in understanding the public’s preferred alternative
  - This exercise is not an official “vote;” for informational purposes for SJAFCA only

Next Steps

- Respond to comments
- Prepare Final EIR
- Select alternative, adopt project, record Notice of Determination

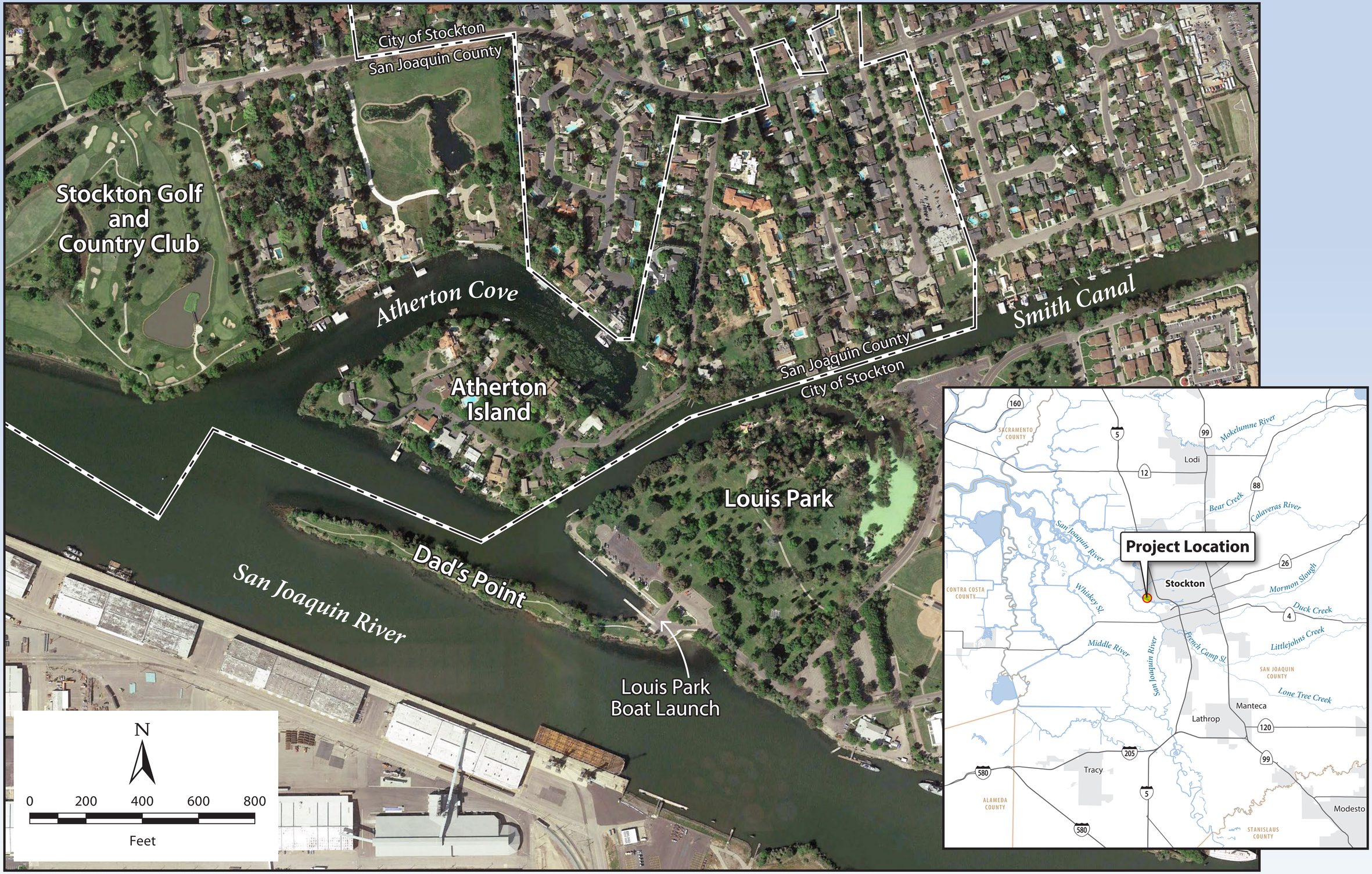
If Alternative 1 is selected:	If Alternative 2 or 3 is selected:
Initiate design	Hold Prop 218 election

If Prop 218 passes:
Initiate design

Meeting Groundrules

- Comments will be addressed in the Final EIR, not directly answered tonight
- Public comment limited to 3 minutes
- Comments will be transcribed by a court reporter
- Stations set up around room to provide more information

Smith Canal Gate Project Location

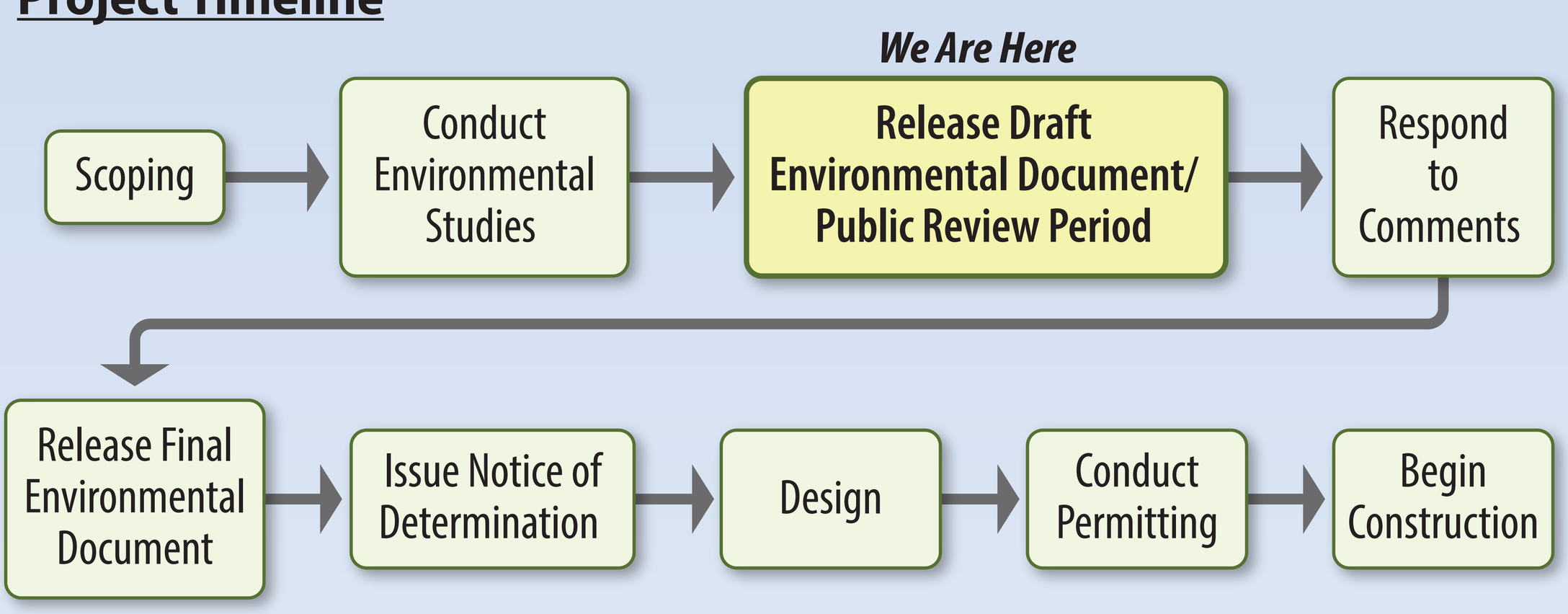


Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

The California Environmental Quality Act

Project Timeline



California Environmental Quality Act

The California Environmental Quality Act (CEQA) is a state law enacted to ensure a proposed activity's (project) potential significant impacts on both the natural and built environments are analyzed and disclosed to the public. Analysis of the project's alternatives and development of mitigation measures to reduce effects are also required. This analysis is presented in the Environmental Impact Report (EIR). The EIR discloses a project's potential environmental effects to assist decision makers in weighing the consequences of a proposed project and making an informed decision.

The San Joaquin Area Flood Control Agency (SJAFCA) is the lead agency and project proponent under CEQA for the Smith Canal Gate Project. SJAFCA has determined that the proposed project may have significant impacts on the environment, triggering the need for an EIR to analyze and disclose those impacts. Overall, CEQA and the EIR process serve to inform decision-makers; increase public awareness and input on projects that would impact their communities; and increase collaboration amongst different agencies. Other Federal, state, and local agencies are participating in the proposed project as decision makers, including the U.S. Army Corps of Engineers, California Department of Water Resources, California Department of Fish and Wildlife, Central Valley Water Quality Control Board, Central Valley Flood Protection Board, County of San Joaquin, City of Stockton, and others.

Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Resources Analyzed and Environmental Impacts

Resources Analyzed in the Draft EIR

The Draft Environmental Impact Report (EIR) examined the impact the proposed project and its alternatives could have on the built and natural environment. It also identifies mitigation measures to reduce these impact or avoid them when possible.

- Flood Risk, Hydrology and Geomorphology
- ***Water Quality ****
- ***Transportation and Navigation***
- ***Air Quality***
- Greenhouse Gases and Climate Change
- ***Noise***
- ***Vegetation and Wetlands***
- ***Fish and Aquatic Resources***
- ***Wildlife***
- ***Visual Resources***
- ***Recreation***
- ***Public Services and Utilities***
- ***Public Health and Hazards***
- ***Cultural Resource***

Environmental Impacts

The Draft EIR analyzes the potential impacts of construction and operation of the proposed project and its alternatives on 14 resources, in accordance with State CEQA Guidelines Sections 15126, 15126.2, and 15143. Impacts are considered and evaluated as to whether they are direct, indirect, or cumulative. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are included in the Draft EIR. Impacts are defined as:

Significant – causing a substantial adverse change in the physical conditions of the environment. Feasible mitigation may be available that would avoid or reduce the environmental impacts to **less-than-significant** levels.

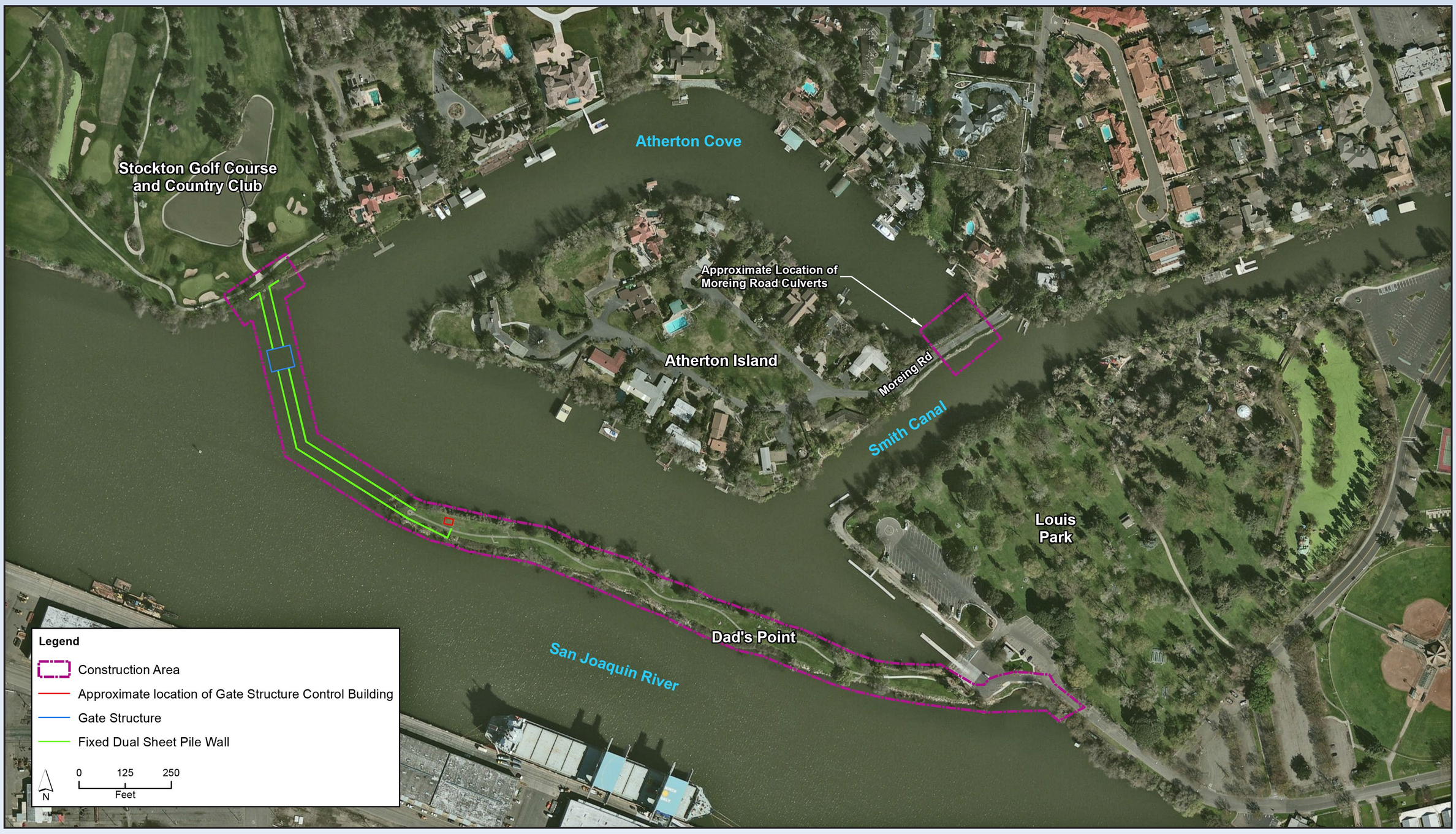
Significant and Unavoidable – causing a substantial adverse change in the environment that cannot be avoided or mitigated to a less-than-significant level if the project is implemented.

* None of the alternatives will have a significant impact on Water Quality. Impacts that are significant would be reduced to a less-than-significant level with mitigation.

Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

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



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. • Six 36-inch culverts with slide gate closures through fixed wall. • Grade raise at Dad's Point. • Culverts under Moreing Road.
Fixed Wall	• Dual sheet pile wall, 800 feet long.
Gate Structure	• Single gate, 50 feet wide.
Tie-In to Existing Levee	• Integrated from Dad's Point into the existing FEMA-accredited levee near the Stockton Golf and Country Club.
Control Building	• Single building, 400 square feet, located at the end of Dad's Point.
Floodwall	• N/A
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
Cost	• $29 million
Funding	• Received conditional approval from DWR for $22.3 million. Existing property assessment is sufficient for local share of project cost.

Alternative 1 – Visual Simulation: View from Atherton Cove

Existing View



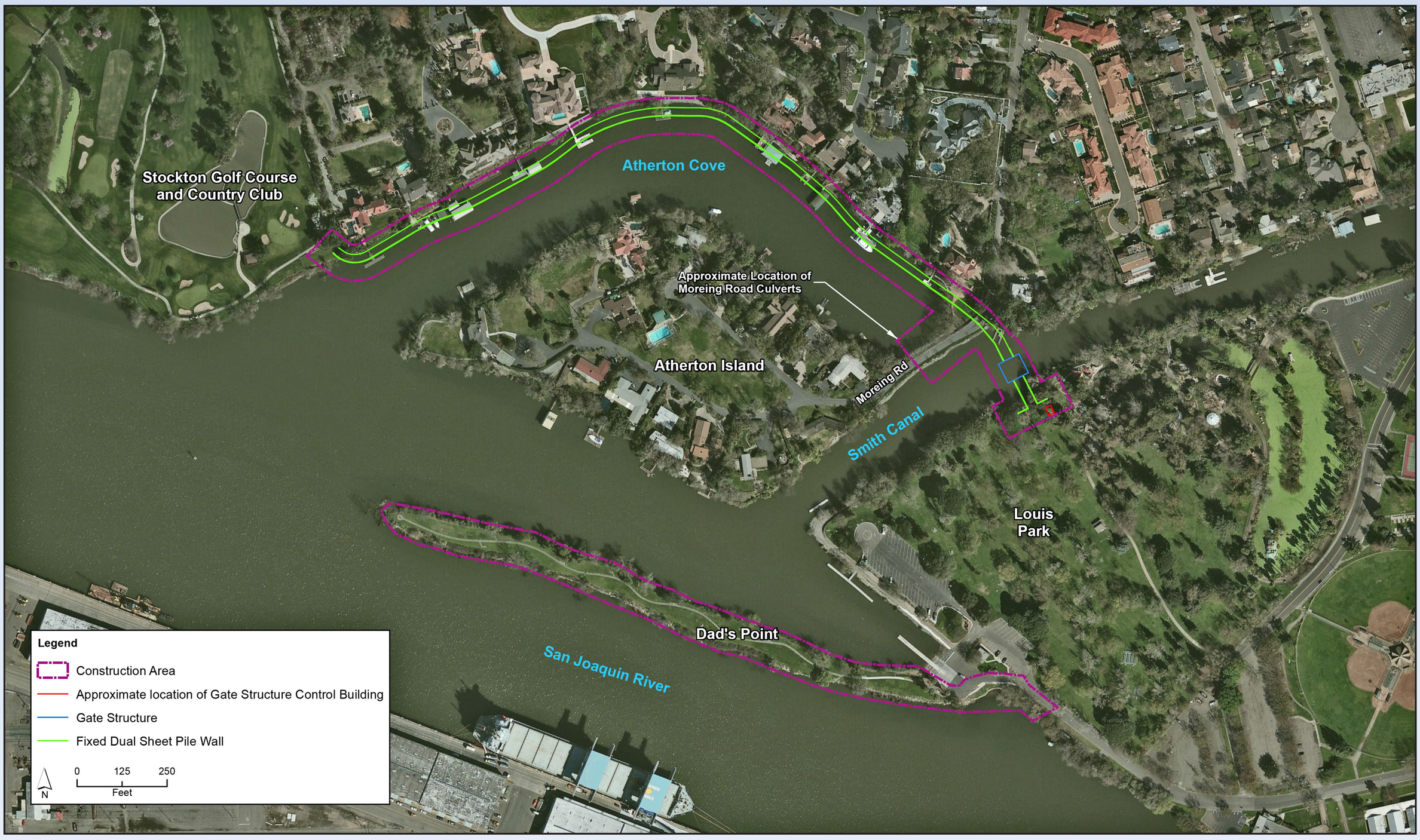
Simulated View



Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Alternative #2: Atherton Cove Flood Wall with Smith Canal Gate



General Description	• One fixed wall with single gate across Smith Canal. • Two 36-inch culverts with slide gate closures through fixed wall. • 2,300-foot floodwall along Atherton Cove. • Culverts under Moreing Road.
Fixed Wall	• Dual sheet pile wall, 225 feet long.
Gate Structure	• Single gate, 50 feet wide.
Tie-In to Existing Levee	• Integrated from Louis Park across Smith Canal and along Atherton Cove to the existing FEMA-accredited levee near the Stockton Golf and Country Club.
Control Building	• Single building, 400 square feet, located at left bank of Smith Canal, in Louis Park.
Floodwall	• Atherton Cove: 2,300 feet, dual sheet pile floodwall. Constructed on waterside of existing levee abutting north side of Atherton Cove.
Dad's Point Improvements	• Install fishing platforms. • Remove invasive species. • Build multi-use interpretive trail with kiosks and benches. • Install bat boxes, if suitable.
Costs	• $51 million
Funding	• Received conditional approval from DWR for $22.3 million. Existing property assessment is insufficient for local share of project cost, which necessitates a new property assessment to cover increased cost.

Alternative 2 – Visual Simulation: View of Smith Canal Gate





Alternative 2 – Visual Simulation: View of Atherton Cove

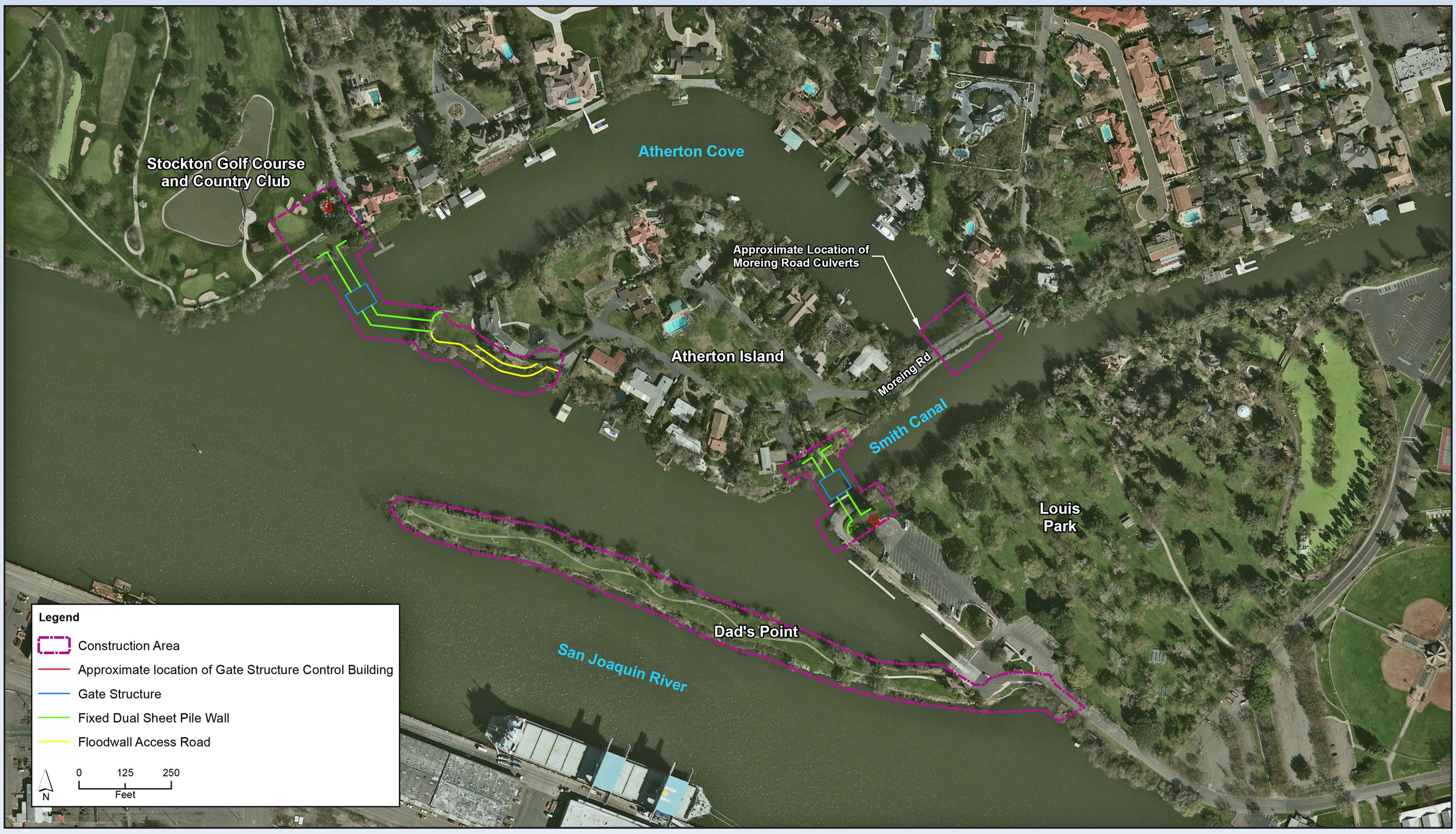




Smith Canal Gate Project

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



General Description	• 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. • Two 36-inch culverts with slide gate closures through each fixed wall. • Culverts under Moreing Road.
Fixed Wall	• Dual sheet pile wall—**Smith Canal wall**: 250 feet; **Atherton Cove wall**: 400 feet.
Gate Structure	• Two single gates, each 50 feet wide.
Tie-In to Existing Levee	• 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.
Control Building	• 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	• N/A
Dad's Point Improvements	• Install fishing platforms. • Remove invasive species. • Build multi-use interpretive trail with kiosks and benches. • Install bat boxes, if suitable.
Atherton Island Improvements	• Install 200-foot-long access road on Atherton Island at southern portion of Atherton Cove fixed wall structure.
Costs	• $42 million
Funding	• Received conditional approval from DWR for $22.3 million. Existing property assessment is insufficient for local share of project cost, which necessitates a new property assessment to cover increased cost.

Alternative 3 – Visual Simulation: View from Atherton Cove

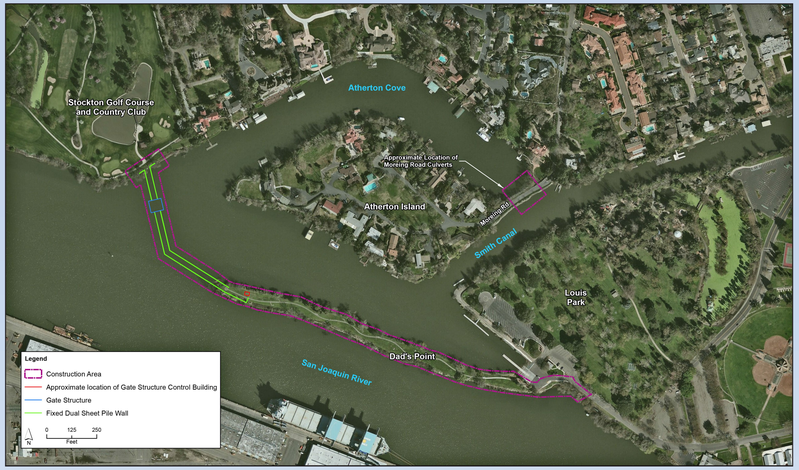




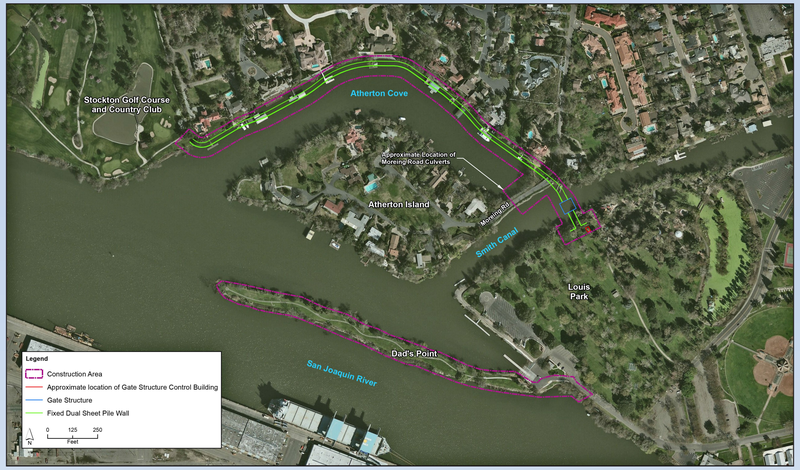
Dot Voting Board

Please place a dot under the alternative you would prefer see constructed for the Smith Canal Gate Project

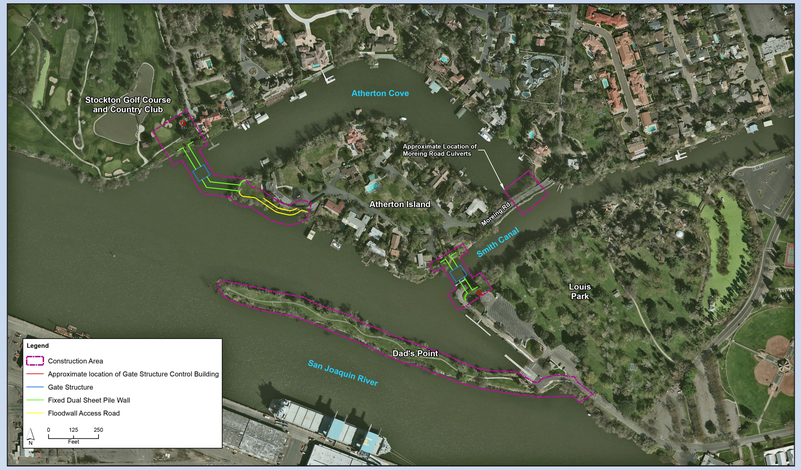
Alternative 1



Alternative 2



Alternative 3



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

Cost $29 million

Pros
- FEMA approved CLOMR
- Protection against sea level rise for Atherton Island
- Shortest construction schedule
- Can be constructed within limits of current property assessment
- Wall would act as breakwater, reducing waves from ships/boats in San Joaquin River

Cons
- Significant vegetation removal from Dad's Point
- Largest aesthetic impact

Alternative 2: Atherton Cove Floodwall with Smith Canal Gate

Cost $51 million

Pros
- Reduced aesthetic impacts for Atherton Cove residents
- Visual and recreational connectivity with San Joaquin River maintained

Cons
- Longest construction schedule
- Costliest alternative
- Smith Canal closed to boaters during construction
- No climate change resiliency for Atherton Island
- Will require a new property assessment to cover increased cost
- Will require FEMA approval of CLOMR

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

Cost $42 million

Pros
- Reduced aesthetic impacts for Atherton Cove residents
- Visual and recreational connectivity with San Joaquin River maintained

Cons
- Smith Canal closed to boaters during construction
- Two gated fixed walls along Smith Canal and Atherton Cove
- No climate change resiliency for Atherton Island
- Will require a new property assessment to cover increased cost
- Will require FEMA approval of CLOMR

Smith Canal Gate Project

SJAFCA
San Joaquin Area FLOOD CONTROL Agency

Smith Canal Gate Project Draft Environmental Impact Report
Fast Facts - July 2015

BACKGROUND

The San Joaquin Area Flood Control Agency, or SJAFCA, is proposing the Smith Canal Gate Project to reduce flood risk in and around the Smith Canal area of Stockton and unicorporated San Joaquin County. The Smith Canal Gate Project (project) proposes to build, operate, and maintain a fixed wall with a gate structure near the mouth of Smith Canal that would isolate the Smith Canal area from the San Joaquin River during high tide and flow events. The project would also provide recreational and habitat improvements to Dad's Point and include installation of culverts under Moreing Road to improve water circulation in that area.

ENVIRONMENTAL REVIEW

SJAFCA has prepared a Draft Environmental Impact Report (DEIR) to satisfy the requirements of the California Environmental Quality Act (CEQA) for disclosing impacts on the physical environment likely to be caused by the proposed project and its alternatives, as well as recommending mitigation measures to reduce such impacts. The DEIR analyzes the potential direct, indirect, cumulative, and growth-inducing environmental impacts of constructing and operating the proposed project, alternatives to the project, as well as the impacts of not undertaking the project. SJAFCA will utilize the DEIR and related public comments to make a decision on approval or disapproval for the project.

The resources analyzed in the DEIR include:

- Flood Risk, Hydrology and Geomorphology
- Water Quality
- Transportation and Navigation
- Air Quality
- Greenhouse Gases and Climate Change
- Noise
- Vegetation and Wetlands
- Fish and Aquatic Resources
- Wildlife
- Visual Resources
- Recreation
- Public Services and Utilities
- Public Health and Hazards
- Cultural Resources

Mitigation measures that avoid, minimize, rectify, reduce, eliminate, or compensate for significant impacts are described in the DEIR. Some of the resources analyzed above would have significant impacts that would cause a substantial adverse change in the physical conditions of the environment; however, feasible mitigation is available that would avoid or reduce the environmental impacts to less-than-significant levels. Other impacts that cannot be reduced to a less-than-significant level by mitigation are significant and unavoidable, meaning the 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. Several impacts related to noise, recreation and visual resources are significant and unavoidable.

Smith Canal Gate Project

SJAFCA San Joaquin Area FLOOD CONTROL Agency

ALTERNATIVES

The DEIR evaluates three alternatives. The alternatives were selected to be analyzed based upon their ability to meet the project purpose and objectives. 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. A description of each alternative and its features is outlined below.

Alternative 1 **Single Gated Wall to Dad's Point (Proposed Project)**	**Alternative 2** **Atherton Cove floodwall with Smith Canal Gate**	**Alternative 3** **Dual Gated Walls to Atherton Cove and Smith Canal**

Features:
• One fixed wall (800 feet long) with single gate from Dad's Point to right bank of San Joaquin River at the Stockton Golf and Country Club
• Six 36-inch culverts with slide gate closures through fixed wall
• Grade raise at Dad's Point
• Culverts under Moreing Road
• $29 million to construct
	Features:
	• One fixed wall (225 feet long) with single gate across Smith Canal
	• 2,300-foot floodwall along Atherton Cove
	• Two 36-inch culverts with slide gate closures through fixed wall
	• Culverts under Moreing Road
	• $51 million to construct
		Features:
		• Two fixed walls with single gates
		  • Smith Canal wall: Louis Park to Atherton Island (250 feet)
		  • Atherton Cove wall: Atherton Island to the Stockton Golf and Country Club (400 feet)
		• Two 36-inch culverts with slide gate closures through fixed walls
		• Culverts under Moreing Road
		• $42 million to construct

PUBLIC COMMENT

The DEIR is available for public comment as part of a 45-day public review period that began June 24, 2015 and concludes August 10, 2015. Members of the public are invited to review the document and provide comments on its contents. The document is available for review at the following locations:

- On SJAFCA's website (http://www.sjafca.com/smith_canal_closure.php)
- At the Stockton Cesar Chavez Central public library, 605 N. El Dorado Street, Stockton
- At Stockton City Hall, 425 N. El Dorado Street, Stockton

Comments can be submitted via mail or email by **August 10, 2015**, to:

Megan Smith
Project Manager
ICF International,
630 K Street, Suite 400
Sacramento, CA 95814
megan.smith@icfi.com

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 _____

Organization or affiliation (if applicable) _____

Address _____

City, State, Zip _____

Phone _____

E-Mail _____

Please write legibly.

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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.

San Joaquin Area FLOOD CONTROL Agency

SJAFCA

FOLD HERE

Megan Smith, Project Manager
ICF International
630 K Street, Suite 400
Sacramento, CA 95814

PLACE
POSTAGE
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Megan Smith, Project Manager
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630 K Street, Suite 400
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SAN JOAQUIN AREA FLOOD CONTROL AGENCY

SMITH CANAL GATE PROJECT

CERTIFIED COPY

PUBLIC HEARING

STOCKTON CIVIL AUDITORIUM

SOUTH HALL

525 NORTH CENTER STREET

STOCKTON, CALIFORNIA

WEDNESDAY, JULY 8, 2015

5:00 P.M.

KATHRYN S. SWANK, CSR, RPR

CERTIFIED SHORTHAND REPORTER, LICENSE NO. 13061

APPEARANCES

PUBLIC SPEAKERS

Don Coelho

Lou Diaz

Richard Gacer

Paul Guerrero

Jim Hoblitzell

David Hui

---o0o---

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.

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.

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.

So I -- I actually voted for the canal as being

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.

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

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?

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.

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.

That goes too -- that's for the algae also.

That's about it.

(Time noted: 5:54 p.m.)

---o0o---

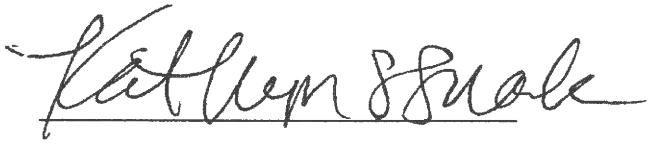
CERTIFICATE OF REPORTER

I, KATHRYN S. SWANK, a Certified Shorthand Reporter of the State of California, do hereby certify:

That I am a disinterested person herein; that the foregoing public hearing was reported in shorthand by me, Kathryn S. Swank, a Certified Shorthand Reporter of the State of California, and thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said public hearing nor in any way interested in the outcome of said public hearing.

IN WITNESS WHEREOF, I have hereunto set my hand this 20th day of July 2015.



KATHRYN S. SWANK, CSR, RPR
Certified Shorthand Reporter
License No. 13061